ACIDF/CARD Matching Grants Project #2004C013D

Optimal Weed Management in Timothy, Meadow Bromegrass and Hybrid Bromegrass Grown for Seed and Timothy Export Hay Market

Final Report

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ABSTRACT

Grass seed growers need to be able to harvest a clean product without weed seeds in order to market their grass seed. Timothy export hay growers need to be able to harvest a clean hay crop that will not be rejected because of weed contamination or herbicide residues once it reaches the buyers in Japan, Taiwan or South Korea. Herbicide application is usually required to manage weeds but spring herbicide application can sometimes injure grass crops and may not always provide satisfactory weed control. This project compared early and late fall application of Ally to early and late spring application on grass seed crops and timothy export hay.

Twenty-six experiments were conducted in central and northern Alberta to investigate the tolerance of five different grass seed crops and timothy for the export hay market to mid-September, mid-October, end of April and end of May application timings of Ally. Both new and established stands of the different grasses were included. Four experiments were conducted to compare weed control with the herbicides Ally and Spectrum in grassland at the four application timings.

Early fall applied Ally provided effective and economical dandelion and alsike clover control without injuring or causing a seed yield or forage yield reduction to timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue. These grass crops were not injured by fall applied Ally, even though the late spring application of Ally injured several of these grasses. Ally provides effective control of dandelion, volunteer alsike clover, narrow-leaved hawk's-beard, common plantain, scentless chamomile, rough cinquefoil, shepherd's-purse, flixweed and stork's-bill into the following year when applied in mid-September to grass seed and timothy hay crops.

Fall applied Ally has been successfully demonstrated in grass seed and timothy hay grower fields in the Peace region of Alberta for several years and over several locations with large interest, especially from the timothy export hay industry. Grower cooperators have expressed their satisfaction with the crop tolerance and weed control obtained with the fall application of Ally. This practice will be readily adopted once the Minor Use registration is received.

These 30 experiments are being submitted to the Canadian Weed Science Society as research reports in order to have the data in the proper format for Minor Use registration applications to add the tolerant grasses with fall application timing to the Ally herbicide label.

The fall application Minor Use registrations, once obtained, will help remove barriers to the marketing of grass seed and compressed timothy hay by providing the industries and growers with a tool to safely and economically produce a clean, high quality product that meets the strict requirements of importing countries.

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BACKGROUND

Forage seed production occurs on over 500,000 acres in Canada with 50 - 60% of the production exported to the U.S. and Europe. The value is now over $136 million at a farm gate level with tremendous value-added possibilities in employment, seed processing, handling, marketing and retailing of the seed. The world trade in turf grass seed production alone is estimated at over $2.5 billion, with Canada annually importing over $15 million in turf grass seed.

Forage seed production has the potential for expansion as a diversification alternative in Alberta. Not only is the climate, environment and land base conducive to grass seed production in Alberta, population levels, environmental pressures and competition for high valued crops are forcing the industry out of traditional grass seed producing areas of the U.S. and Europe. Many world forage seed production and marketing firms are looking for new seed production areas around the world. If Western Canada can develop and prove its capabilities in grass seed production before other areas in Australia, South America, Africa and Eastern Europe, it will have a major opportunity to acquire a significant proportion of this lucrative market.

Timothy hay production for export is also increasing in Canada with over 185, 000 tonnes being exported to Japan, Taiwan and South Korea at a value of over $65 million (Tracy Dow, personal communication).

The timothy hay export market also has room for expansion in Canada and Alberta, especially if the strict import requirements of the Japanese Feed Trade Association (JFTA) can be meet. Japan has a developing concern with food safety and pesticide residues in imported hay. The JFTA monitors hay imports for chemical residues and can reject hay shipments if a residue is found over the Maximum Residue Limit (MRL). The JFTA's continually expanding "toxic item" list is now over 60 chemicals with specific MRL's. For example, a commonly used herbicide for dandelion control in timothy in Alberta, 2,4-D, is on Japan's toxic item list. Since Canada does not have MRL's for chemicals, including herbicides, in hay and animal feed for domestic or export use, the timothy hay export industry has had to address the pesticide residue issue and start monitoring for residues in hay shipments to Japan. The Canadian hay export industry finds it less costly and less complicated to discourage the use of herbicides on the "toxic item" list and encourage the use of registered herbicides that are not on the current "toxic item" list. Fortunately, Ally is not yet on the "toxic item" list and may not be added to the list in the future, as it is applied at a very low rate (3 g/ac).

The Western Canadian provinces are co-operating to efficiently develop and disseminate the production technology skills and marketing expertise to capture the grass seed and timothy hay export market opportunities. Organizations such as the Peace Region Forage Seed Association, Manitoba Forage Seed Association, Saskatchewan Forage Council, Agriculture and Agri-Food Canada and the provincial departments of Agriculture in Alberta, British Columbia, Saskatchewan, and Manitoba have all invested in this co-operative endeavour.

Weeds are one of the major challenges to the production of grass seed and timothy hay export crops in Western Canada. Weeds not only severely reduce seed and hay yields and quality; they also determine whether the seed and hay is marketable. Both

the U.S. and Europe have zero tolereance for many types of weed seed in grass seed sold into these markets. Japan and Taiwan have stringent restrictions on the amount of weed contamination allowed in imported processed timothy hay. For example, dandelion leaves discolor timothy hay and a shipment to Japan or Taiwan may be rejected if there are too many dandelion leaves in the timothy hay shipment (Dow, 2005).

The perennial weeds dandelion, white cockle, volunteer alsike clover and scentless chamomile; the biennial weed rough cinquefoil; and the winter annual weeds narrow-leaved hawk's-beard, cleavers, stork's-bill and flixweed are major broadleaved weed problems in grass seed crops and timothy hay in Western Canada and are more difficult weeds to control with spring or early summer herbicide application than a previous fall application (Cole et al, 2004).

The cost of product being rejected at world wide markets or in Alberta because of herbicide residues, weed seeds or weed contamination, conservatively, may amount to approximately $3.4 million (10% of the value of timothy compressed hay, timothy seed and meadow bromegrass seed) in lost potential sales (David Wong, personal communication).

Alberta Agriculture and Food is not only taking a lead role in developing the necessary weed management tools for successful grass seed production, it has been charged, as part of the Western Canadian co-operative endeavour, with developing the protocols and gathering the information to obtain herbicide registrations on meadow bromegrass, hybrid bromegrass and timothy seed crops and timothy hay through the Minor Use Program. Unregistered uses should be avoided, especially with these high value crops.

Nearly all of the tolerances of grass seed crops to herbicide experiments have been conducted on seedling and established stands in the spring. Dr. Lloyd Darwent, retired from Agriculture and Agri-Food Canada, Beaverlodge, conducted trials on the tolerance of creeping red fescue, smooth bromegrass and timothy seed crops to 2,4-D at different application timings (Darwent and Drabble, 1996). He found that there were significant creeping red fescue and timothy seed yield reductions when 2,4-D was applied in August, September or October of the year of seeding the grass seed crop. Unfortunately, this corresponds to herbicide application timing for optimal perennial, biennial and winter annual weed control (Yoder, 2004). However, Dr. Darwent did also find that 2,4-D applied in the fall after the first seed crop is harvested did not affect subsequent seed yields.

The limited number of herbicides registered for use on timothy as a forage crop continues to challenge producers in maintaining viable and clean stands with good broadleaf and grassy weed control options. Weed contamination continues to result in timothy stands being taken out of production and can be grounds for rejection of timothy hay for the export market. Timothy is also one of the more sensitive grasses to herbicides and Ally applications in the spring will often cause timothy to be stunted and have smaller seed heads (Yoder and Cole, 2006). However, when Ally was applied at 3 g/ac in the fall in AARI Project #2000M642 "Fall Herbicide Application for Effective Control of Problem Perennial Weeds in Grass Seed Crops", it not only provided excellent long-term dandelion, narrow-leaved hawk's-beard, volunteer clover, scentless chamomile and winter annual weed control, it also did not damage the timothy crop (Cole et al, 2004). Ally also controlled some germinating annual weeds the following spring because of its

residual weed activity in the soil. Other advantages to the use of Ally in forage grasses include the lack of grazing or feeding restrictions and the lower cost compared to most other herbicides.

Currently, the only grass crops on the Ally label are established creeping red fescue, orchard grass, crested wheatgrass and intermediate wheatgrass for seed or forage use with Ally applied at the 2 leaf to the shot blade stage of the grass crop (Alberta Agriculture and Food, 2007).

In summary, AARI Project #2000M642, "Fall Herbicide Application for Effective Control of Problem Perennial Weeds in Grass Seed Crops" identified Ally as a herbicide treatment with potential to meet the needs of the grass seed and timothy hay export markets. Once sufficient tolerance and weed control data is collected, ACIDF Project # 2003C009N, "Tolerance of Forage Crops to Herbicides" provides the database and mechanism to apply for the Minor Use registration of fall applied Ally on grass seed crops and timothy for the export hay market as part of this project (Cole and Olstad, 2004).

The grass tolerance and weed control information needs to be developed for Ally applied in the fall compared to the spring on both new grass stands and established stands of timothy grown for seed as well as for export hay. This same information needs to be determined for new and established stands of meadow bromegrass grown for seed as well as the new grass seed crop, hybrid bromegrass.

PROJECT OBJECTIVES

1. To determine the information required to safely manage broadleaved weeds in timothy, meadow bromegrass and hybrid bromegrass.
2. To develop sufficient tolerance and efficacy data to add these established grasses to the Ally label for fall application through the Minor Use program.
3. To obtain the Minor Use registrations.
4. To demonstrate the effectiveness of Ally applied in the fall as a tool for the long-term management of broadleaved weeds in established grass seed and timothy processed hay.
5. To provide this tool for adoption by industry and producers.

KEY RESULTS EXPECTED

1. The optimum fall Ally application time for best weed control and crop safety.
2. The data package required by the Pest Management Regulatory Agency for a Minor Use application.
3. The Minor Use registration adding established timothy, meadow bromegrass and hybrid bromegrass for fall application to the Ally label.
4. Field demonstrations in northern and central Alberta to demonstrate the effectiveness and usefulness of this treatment in obtaining a clean, marketable product.
5. Inclusion of the developed information in the Alberta Crop Protection guide and other extension material as well as inclusion in the Alberta Ag-Info Centre database.

MATERIALS AND METHODS

Thirty experiments were established at the University of Alberta Experimental Farm (Ellerslie), at Crop Diversification Centre North (Edmonton) and at the Agriculture and Agri-Food Canada Research Station (Beaverlodge) between 2000 and 2005. Twenty-six of the experiments were established as tolerance experiments and four were established as efficacy experiments. The 26 tolerance experiments investigated the tolerance of new and established stands of timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue to early fall, late fall, early spring and late spring applications of Ally at the recommended rate and twice the recommended rate. The late spring application of Spectrum or Curtail M was included in the tolerance experiments as a "commonly used" treatment for comparison purposes. Visual % crop injury, forage dry weight yield and seed yield data were collected from the tolerance experiments between 2004 and 2006. The efficacy experiments investigated dandelion and alsike clover management in established grass stands with early fall, late fall, early spring and late spring applications of Ally and Spectrum, both applied at the recommended rate. Visual % control, weed count and weed dry weight yield data were collected from the efficacy experiments between 2004 and 2007.

The early fall herbicide treatments were applied in mid-September, the late fall treatments were applied in mid-October, the early spring treatments were applied the end of April and late spring treatments were applied the end of May. The herbicide treatments were applied in the Ellerslie and Edmonton experiments with a hand held CO_2 sprayer (R & D Sprayers Inc., Opelousas, Louisiana, USA) using 80015 XR nozzles (Spraying Systems Ltd., Calgary, Alberta, Canada) at 138 kPa delivering 100 L of spray solution per hectare. The nozzles were 45 cm above the vegetation canopy height. Similar equipment and spray application were used at Beaverlodge as indicated in the Canadian Weed Science (CWSS) Research Reports provided in the Appendix. The spray dates are provided in table 2 and the growth stages and environmental conditions at the time of spraying for each experiment are included in the individual CWSS Research Reports in the Appendix.

Visual % grass injury and weed control were assessed at approximately 1 week and 3 weeks after the herbicide application as well as the following year.

In Edmonton, a 0.6 m x 2 m (1.2 m^2) area in each plot was harvested with a walk behind flail type forage harvester, the harvested material dried and weighed. For the seed harvest, a 1.5 m x 5.4 m (8.1 m^2) area in each plot was straight combined with a Wintersteiger plot combine, the seed dried at 40ºC, cleaned with a seed scalper and total harvest dry weight taken (Najda et al, 1994). One thousand kernel weight and % seed germination data were also collected from the Edmonton trials. Similar equipment and procedures were used to harvest the grass seed and grass dry weight at the other experimental sites.

Research Design (Darwent et al, 1998)

- Randomized Complete Block Design with 4 replications

- crop tolerance experiments were mostly 10 treatments x 4 reps = 40 plots of each of timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue (dependent on location as described in table 2)
- weed control experiments were 9 treatments x 4 reps = 36 plots on established grass stands with both dandelion and alsike clover present
- plot size: at least 2 m x 6 m sprayed
- total area of each crop tolerance experiment = 20 m x 27 m, with double this area seeded in 2004 to accommodate the area needed for the fall versus spring spraying of established grass experiments the following year
- total area of each weed control experiment = 18 m x 27 m
- harvest area in crop tolerance experiments = 0.6 m x 2 m for forage yield and 1.5 m x 5.4 m for seed yield in each crop tolerance experimental plot in Edmonton
- harvest and plant count area in weed control experiments = 1 m^2 in the center of each plot
- seeding rate: currently recommended seeding rate for seed production (included for each experiment in the Canadian Weed Science Society Research Reports provided in the Appendix)
- row spacing: 30 cm (12")
- seeding depth: varies by soil type, location; generally < 1.25 cm (0.5")
- seeding dates listed in table 2
- not seeded with a cover crop
- experiments conducted on uniform grass stands
- fertility: minimum 100 kg/ha (90 lb/ac) nitrogen applied in the late fall, or split 1/3:2/3, fall:late fall
- harvest timing: from Darwent et al, 1998
- data entry and analysis using Agriculture Research Manager (ARM) program with ANOVA and mean separations with Student-Newman-Keuls test.

Herbicide Application

- the early fall herbicide treatments were applied in mid-September, the late fall treatments in mid-October, the early spring treatments the end of April and the late spring treatments the end of May. The fall treatments were applied after mowing and removing the forage growth.
- post-emergent treatments applied at 100 L/ha (40.5 L/ac), as recommended on the herbicide labels.
- flat fan nozzles.

Herbicide Treatment List (see Tables and Figures and Canadian Weed Science Research Reports for the treatment lists for the individual experiments)

Table 1. List of Fall versus Spring Herbicide Application Treatments on Grasses.

Trade Name	Chemical Name	Concentration Formulation	Rate (kg/ha) a. i.	Rate (L/ha) Product	Rate (L/ac) Product	Approx. $/ac
Check						

Ally 1X + Agral 90	metsulfuron methyl (surfactant)	60% DF	0.0045 0.2% v/v	0.0075 kg/ha 0.2% v/v	0.003 kg/ac 0.2% v/v	6.50
Ally 2X + Agral 90	metsulfuron methyl (surfactant)	60% DF	0.009 0.2% v/v	0.015 kg/ha 0.2% v/v	0.006 kg/ac 0.2% v/v	13.00
Curtail M (1X label rate only)	clopyralid MCPA ester	50 g/L EC 280 g/L EC	0.100 0.560	2.00 L/ha	0.810 L/ac	12.00
Spectrum (1X label rate only)	florasulam clopyralid MCPA ester	50 g/L SC 50 g/L EC 280 g/L EC	0.005 0.075 0.420	0.10 L/ha 1.50 L/ha	0.040 L/ac 0.610 L/ac	14.00

Experiment List and Dates

Table 2. List of Fall versus Spring Herbicide Application Experiments with Seeding, Spraying and Harvest Dates.

Expt #	Experiment I.D.	Location & Year	Seeding Date	Herbicide Application Dates				Forage Harvest Date	Seed Harvest Date
Timothy – New Stand									
T1	FvsS Timothy S04	Edmonton 2004-2005	Jun-1-04	Sep-13-04	Oct-14-04	Apr-25-05	May-27-05	Jul-13-05	Aug-12-05
T2	FvsS Timothy S04-05 Bldg	Beaverlodge 2004-2005	Jun-18-04	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Aug-17-05	Aug-17-05
T3	FvsS Timothy S05	Edmonton 2005-2006	May-26- 05	Sep-16-05	Oct-11-05	Apr-26-06	May 31-06	Jul-24-06	Aug-9-06
T4	AllyS Timothy 0506 Bldg	Beaverlodge 2005-2006	May-30-05	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Aug-8-06	Aug-8-06
Timothy – Established Stand									
T5	FvsS Tim 3E03	Ellerslie 2003-2004	Jun-5-01		Oct-6-03	Apr-30-04	Jun-8-04		Aug-11-04
T6	FvsS Tim 4E03	Ellerslie 2003-2004	Jun-5-00		Oct-6-03	Apr-30-04	Jun-8-04		Aug-11-04
T7	FvsS Timothy E04-05 Bldg	Beaverlodge 2004-2005	May-23-03	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Aug-5-05	Aug-5-05
T8	FvsS TimothyE05	Edmonton 2005-2006	Jun-1-04	Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Jul-25-06	Aug-9-06
T9	Ally ETimothy 0506 Bldg	Beaverlodge 2005-2006	Jun-18-04	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Aug-8-06	Aug-8-06
Meadow Bromegrass – New Stand									
MB1	FvsS MBrome S04	Edmonton 2004-2005	Jun-1-04	Sep-13-04	Oct-14-04	Apr-25-05	May-27-05	Jul-21-05	Jul-29-05
MB2	FvsS Mbrome S04-05 Bldg	Beaverlodge 2004-2005	Jun-18-04	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Aug-3-05	Aug-3-05
MB3	FvsS MBrome S05	Edmonton 2005-2006	May-26-05	Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Jul-24-06	Aug-1-06
MB4	AllySMeadowB 0506 Bldg	Beaverlodge 2005-2006	May-30-05	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Jul-17-06	Jul-17-06
Meadow Bromegrass – Established Stand									
MB5	FvsS MB 3E03	Ellerlsie 2003-2004	Jun-1-01		Oct-6-03	Apr-30-04	Jun-8-04		Aug-4-04
MB6	FvsS MBrome E04-05 Bldg	Beaverlodge 2004-2005	May-23-03	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Jul-25-05	Jul-25-05
MB7	FvsS MBrome E05	Edmonton 2005-2006	Jun-1-04	Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Jul-25-06	Aug-1-06
MB8	AllyEMEadowB 0506 Bldg	Beaverlodge 2005-2006	Jun-18-04	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Jul-17-06	Jul-17-06
Smooth Bromegrass – New Stand									
SB1	AllySSBrome 0506 Bldg	Beaverlodge 2005-2006	May-30-05	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Jul-26-06	Jul-26-06
Smooth Bromegrass – Established Stand									
SB2	FvsS Sbrome E04-05 Bldg	Beaverlodge 2004-2005	May-23-03	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Aug-8-05	Aug-8-05

Hybrid Bromegrass – New Stand									
HB1	FvsS HBromeS04	Edmonton 2004-2005	Jun-1-04	Sep-13-04	Oct-14-04	Apr-25-05	May-27-05	Jul-21-05	Aug-5-05
HB2	FvsS HBrome S04-05 Bldg	Beaverlodge 2004-2005	Jun-18-04	Sep-13-04	Oct-14-04	May-5-05	May-26-05	Aug-12-05	Aug-12-05
HB3	FvsS Hbrome S05	Edmonton 2005-2006	May-26-05	Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Jul-24-06	Aug-8-06
HB4	AllySHBrome 0506 Bldg	Beaverlodge 2005-2006	May-30-05	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Jul-24-06	Jul-24-06
Hybrid Bromegrass – Established Stand									
HB5	FvsS Hbrome E05	Edmonton 2005-2006	Jun-1-04	Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Jul-25-06	Aug-8-06
HB6	AllyEHBrome 0506 Bldg	Beaverlodge 2005-2006	Jun-18-04	Sep-17-05	Oct-14-05	May-1-06	Jun-2-06	Jul-25-06	Jul-25-06
Tall Fescue – Established Stand									
TF1	FvsS TF 3E03	Ellerslie 2003-2004	Jun-1-01		Oct-6-03	Apr-30-04	Jun-8-04		Aug-4-04
Weed Control									
WC1	WeedCon FvsS 04	Edmonton 2004-2005		Sep-13-04	Oct-14-04	Apr-25-05	May-27-05	Aug-19-05	
WC2	FallWeedConBldg 0405	Beaverlodge 2004-2005		Sep-13-04	Oct-14-04	May-5-05	May-26-05		
WC3	WeedCon FvsS 05	Edmonton 2005-2006		Sep-16-05	Oct-11-05	Apr-26-06	May-31-06	Aug-23-06	
WC4	Fall Spring Weed Con 05/06	Beaverlodge 2005-2006		Sep-17-05	Oct-14-05	May-1-06	Jun-2-06		

RESULTS AND DISCUSSION

Herbicide tolerance data was collected from 26 grass seed experiments established in Alberta from 2003 to 2006 on 5 different grass seed crops. Weed control data was collected from 4 separate experiments on two weeds. See Tables 3 - 34 for the individual experiment results and Tables 35 - 52 and Figures 1 – 21 for the summary results.

Early fall treatments were applied the middle of September, the late fall treatments were applied the middle of October, the early spring treatments were applied the end of April and the late spring treatments were applied the end of May.

Tolerance of Grasses to Fall versus Spring Applied Ally

Timothy

- The early fall, late fall and early spring Ally applications at the recommended rate and twice the recommended rate did not cause noticeable long-term injury, a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction to new or established timothy stands in any of the nine experiments conducted at Edmonton, Ellerslie and Beaverlodge. (Tables 3 – 11 & 35 – 38, Figures 1 – 4)
- The late spring Ally applications at both rates did cause noticeable stunting in 3 of the 4 experiments in new timothy stands and a significant height reduction in the 2005-2006 new timothy stand experiment at Edmonton. This is also the new timothy stand experiment in which there was a significant seed yield reduction from Ally applied in the late spring at twice the recommended rate. (Tables 3 – 6, 35 & 37, Figures 1 & 3)
- There was even more damage to the established stands of timothy from Ally being applied in the late spring. There was noticeable initial stunting in 4 of the 5

experiments in established timothy and this stunting was measured as a significant height reduction for both Ally rates applied in the late spring in the 2005-2006 established timothy experiment at Edmonton. The late spring spraying of Ally at twice the recommended rate caused a significant forage yield reduction in the 2004-2005 established timothy experiment at Beaverlodge as well as significant seed yield reduction at both Ally application rates. There was also a significant seed yield reduction from Ally applied at the recommended rate on timothy in the 2003-2004 established timothy experiment at Ellerslie. (Tables 7 – 11, 36 & 38, Figures 2 & 4)

- Relative to the untreated check plots, Ally applied in late spring on established timothy tended to have more injury and lower forage and seed yields than Ally applied on new stands of timothy. The younger timothy may be more vigorous and less prone to injury from the late spring applied Ally. (Tables 35 – 38, Figures 1 - 4)
- Relative to the untreated check plots, Ally applied in late spring on new and established timothy stands tended to have lower seed yields than forage yields. Late spring applications of Ally seemed to affect timothy's seed producing capabilities more than its forage producing capabilities. (Tables 35 – 38, Figures 1 – 4)

Meadow Bromegrass

- The early fall, late fall and early spring Ally applications at the recommended rate and twice the recommended rate did not cause noticeable injury, a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction to new or established meadow bromegrass stands in any of the eight experiments conducted at Edmonton, Ellerslie and Beaverlodge. (Tables 12 – 19 & 39 - 42, Figures 5 – 8)
- Although the late spring Ally applications did cause initial stunting in 3 of the 4 experiments in new meadow bromegrass stands, there was not a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction in any of the four experiments conducted at Edmonton or Beaverlodge. (Tables 12 – 15, 39 & 41, Figures 5 & 7)
- The established meadow bromegrass experiments also had initial visible stunting from the late spring application of Ally, with the 2005-2006 established meadow bromegrass experiment at Edmonton having a significant height reduction from the Ally treatment applied in the late spring at twice the recommended rate. Even with the stunting there was not a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction from Ally being applied in the late spring in any of the four established meadow bromegrass experiments conducted at Edmonton, Ellerslie and Beaverlodge. (Tables 16 – 19, 40 & 42, Figures 6 & 8)
- Relative to the untreated check plots, Ally applied in late spring on established meadow bromegrass tended to have lower seed yields than forage yields and lower seed yields than on new stands of meadow bromegrass. (Tables 39 – 42, Figures 5 - 8)
- The meadow bromegrass forage and seed yields were more variable than the timothy yields. This was most likely due to lodging in the meadow bromegrass. It is more difficult to harvest lodged grass with either the forage harvester or the header on the plot combine so yields are not as consistent. (Tables 12 – 19 & 39 - 42, Figures 5 - 8)

Smooth Bromegrass

- The early fall, late fall and early spring Ally applications at the recommended rate and twice the recommended rate did not cause noticeable injury or a significant forage yield or seed yield reduction to new or established smooth bromegrass in either of the two experiments conducted at Beaverlodge. (Tables 20, 21, 43 & 44, Figures 9 & 10)
- Although the late spring Ally applied at twice the recommended rate did cause initial stunting in both the new and established smooth bromegrass experiments, there was not a significant forage or seed yield reduction in the two experiments conducted at Beaverlodge. (Tables 20, 21, 43 & 44, Figures 9 & 10)
- Spectrum also caused some initial stunting to the new stand of smooth bromegrass when applied in the late spring but, here again, there was not significant forage or seed yield reduction. (Table 20, 43 & 44, Figures 9 & 10)
- The herbicide treatments in the new stand of smooth bromegrass tended to provide higher forage and seed yields than the herbicide treatments in the established smooth bromegrass relative to the unsprayed check treatments. This may indicate more grass vigour with the new stand compared to the established stand. (Tables 43 & 44, Figures 9 & 10)

Hybrid Bromegrass

- The early fall, late fall and early spring Ally applications at the recommended rate and twice the recommended rate did not cause noticeable injury, a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction to new hybrid bromegrass stands in any of the four experiments conducted at Edmonton and Beaverlodge. (Tables 22 – 25, 45 & 47, Figures 11 & 13)
- Although the late spring Ally applications did cause some initial stunting and less lodging in all four of the experiments conducted on new hybrid bromegrass stands, there was not a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction where these treatments where applied in any of the four experiments conducted at Edmonton or Beaverlodge. (Tables 22 – 25, 45 & 47, Figures 11 & 13)
- The early fall and late fall Ally applications at the recommended rate and twice the recommended rate did not cause noticeable injury, a significant forage yield, seed yield, 1000 kernel weight (where measured) or % seed germination (where measured) reduction to established hybrid bromegrass stands in either of the two experiments conducted at Edmonton and Beaverlodge. (Tables 26, 27, 46 & 48, Figures 12 & 14)
- The early spring Ally applications, the late spring Ally applications and the late spring Spectrum application caused a significant forage yield reduction in the 2005-2006 established hybrid bromegrass experiment at Beaverlodge. Seed yields were not affected by the spring treatments in this experiment and the other established hybrid bromegrass experiment at Edmonton did not have a forage or seed yield reduction. (Tables 26, 27, 46 & 48, Figures 12 & 14)

Tall Fescue

- The late fall and early spring Ally applications at the recommended rate and twice the recommended rate did not cause noticeable injury or a significant seed yield reduction to established tall fescue in the one experiment conducted at Ellerslie. (Table 28, Figure 15)
- Although the late spring Ally applications did cause some initial stunting of established tall fescue at Ellerslie, there was not a significant seed yield reduction where the late spring treatments where applied. (Table 28, Figure 15)
- The three-year-old tall fescue stand at Ellerslie had low and variable seed production due to winterkill and patches of quackgrass growth. (Table 28, Figure 15)

Weed Control with Fall versus Spring Applied Ally and Spectrum

Dandelion

- Both Ally and Spectrum, applied at the recommended rates, provided dandelion control in the grassland experiments. There was a significant reduction in dandelion plant number, as compared to the untreated check, when Ally was applied in the previous early fall, late fall, early spring and late spring in all four experiments at Edmonton and Beaverlodge. There was a significant reduction in dandelion plant number when Spectrum was applied in the previous early fall, late fall and late spring in all four experiments at Edmonton and Beaverlodge, except in the late fall application of the 2005-2006 weed control experiment at Beaverlodge. The early spring application of Spectrum only provided a significant reduction in dandelion plant number in the 2005-2006 experiment at Edmonton, while the other three experiments did not have a significant reduction in dandelion plant number from the early spring applied Spectrum. (Tables 29, 31, 32, 34, 49, Figure 16)
- Harvested dandelion leaf or top growth dry weight provided the same information as plant numbers. There was a significant reduction in dandelion leaf dry weight, as compared to the untreated check yields, at all four Ally application timings in the two experiments at Edmonton where dandelion top growth data was collected. Here again, Spectrum provided a significant reduction in dandelion leaf dry weight only in the early fall and late spring treatments of both experiments and the late fall treatment of the 2005-2006 experiment at Edmonton. The only treatment where there was not a significant reduction in dandelion leaf dry weight was Spectrum applied in the early spring. (Tables 29, 32, 50, Figure 17)
- The visual assessments of dandelion control also indicate that the best and most consistent dandelion control in the year of spring application was obtained with Ally and Spectrum applied in the early fall and Ally applied in the late spring. The poorest dandelion control was obtained with Spectrum applied in the early spring. (Tables 29, 31, 32, 34, 51, Figures 16 – 19)
- Ally provided better dandelion control than Spectrum when both were applied in the late fall, early spring or late spring. However, the effective dandelion control was similar between Ally and Spectrum when they were applied in the early fall. (Tables 29, 31, 32, 34, 49 - 51, Figures 16 – 19)
- The early fall application of Ally and Spectrum and the late spring application of Ally continued to provide long term dandelion control into the year after the spring

applications. There was reduced dandelion control into the following year in the late fall and early spring treatments as well as the late spring Spectrum treatments over the four experiments at Edmonton and Beaverlodge. (Tables 29, 31, 32, 34, 51, Figures 18 & 19)

Alsike Clover

- Both Ally and Spectrum, at all four application times, provided a significant reduction in alsike clover plant numbers compared to the untreated check in the year of spring spraying in the two Edmonton weed management experiments. (Tables 30 & 33)
- Ally and Spectrum provided better and more consistent alsike clover control than dandelion control and Spectrum provided better and longer-term alsike clover control than Ally in all four experiments at Edmonton and Beaverlodge. (Tables 30, 31, 33, 34, 52, Figures 20 & 21)
- Spectrum controlled alsike clover well into the year after the spring spraying with the late spring application providing the most consistent long term control. Ally controlled or suppressed alsike clover into the the following year as well, with the early fall and late spring application providing better long term control than late fall or early spring application. This was observed in both the Edmonton experiments and the Beaverlodge experiments. (Tables 30, 31, 33, 34, 52, Figures 20 & 21)

CONCLUSIONS

The application of the herbicide Ally in the fall looks promising as a tool for managing broadleaved weeds in grass seed crops without damaging the grasses. When sprayed at the more commonly used spring time application, Ally often stunts grass seed crops, causes the seed heads to be smaller and can cause a seed yield reduction, especially in timothy. The 26 tolerance experiments conducted in this project did show later spring applied Ally causing initial stunting to timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue as well as significant timothy seed yield and forage yield reduction and significant hybrid bromegrass forage yield reduction. The tolerance experiments also provided data showing that fall applied Ally does not cause the injury to grasses that spring application can cause. Ally applied in the fall at the recommended rate and twice the recommended rate did not injure or reduce the seed yields of timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass or tall fescue. Although there was only one tall fescue tolerance experiment in this project, AARI Project #2000M642 "Fall Herbicide Application for Effective Control of Problem Perennial Weeds in Grass Seed Crops" included 10 tall fescue experiments showing no injury or seed yield reduction from the fall application of Ally.

Timothy export hay growers can also benefit from the early fall application of Ally for effective control of dandelion, alsike clover, scentless chamomile, white clover, narrow-leaved hawk’s-beard, common plantain, rough cinquefoil, flixweed and other problem weeds. The 9 tolerance of timothy to Ally experiments in this project showed late spring application causing stunting and a significant height reduction as well as a significant forage yield reduction in one experiment. The early fall application of Ally did not cause stunting or a timothy hay yield reduction so injury is avoided and better weed control is

achieved. The timothy export hay growers are also interested in Ally because of its lower cost (approximately $6.50/acre) and its low use rate (3 grams/acre) so that less herbicide is being applied to the exported hay. The Japanese Feed Trade Association (JFTA) is monitoring for pesticide and herbicide residues in timothy hay being shipped to Japan and so far Ally is not on the JFTA's toxic items list and it would be difficult to detect when applied at such a low use rate. In Canada, there are no grazing or feeding restrictions for Ally applied to cereal, forage or any crop on the label. So there appears to be a fit for fall applied Ally on timothy for the hay export market and this is why timothy hay was included in this project and forage yields were collected along with seed yields.

Neither Ally fall application time included in this project caused injury to timothy or the other four grasses. Neither the early fall application in the middle of September nor the late fall application in the middle of October caused a significant seed yield or forage yield reduction, even with Ally applied at twice the recommended rate. As well, the early spring application of Ally at the end of April did not cause noticeable injury or affect seed or forage yields of the five grasses. It was only the late spring application of Ally at the end of May, when broad-leaved weed herbicides are typically applied to grasses, that caused injury and seed and forage yield losses in some of the grasses.

Unfortunately, the tolerance provided by the early spring application of Ally does not correspond with optimum control of weeds like dandelion and alsike clover. Early fall and late spring application controlled dandelion and alsike clover more effectively than early spring application in the four weed management experiments included in this project. Dandelion and alsike clover are commonly found in grass seed crops and timothy for the export hay market and can be costly problems to these industries.

Early fall application of Ally provided effective long term control of dandelion and alsike clover in the four weed control experiments. Other experiments have shown effective control of other problem weeds including narrow-leaved hawk's-beard, scentless chamomile, volunteer white clover, common plantain, rough cinquefoil, cleavers, stork's-bill and flixweed when Ally is fall applied (Cole et al, 2004).

Spectrum is another herbicide that looks promising for the grass seed and timothy export hay market. Spectrum appears to be somewhat safer on the grass seed and timothy hay crops than Ally and it has a shorter residue period in the soil for following sensitive crops. It also appears to provide somewhat more effective and longer term alsike clover control over more application timings. Ally, on the other hand, appears to provide more effective and longer term dandelion control, some residual weed control and is less costly. Timing does not appear to be as critical for Ally application on dandelion as for Spectrum application.

Other conclusions derived from the 26 tolerance experiments conducted at Beaverlodge and Edmonton include the observation that Ally applied on grasses, especially timothy, at the typical time in late spring may cause more damage to seed crops than hay crops. Also, Ally applied in the late spring seemed to cause more damage to established grass stands than to new stands.

In summary, the middle of September application of Ally combines timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue tolerance with good dandelion, volunteer alsike clover and other broad-leaved weed management. It is safer on the grass seed and hay crops than the commonly used end of May application.

IMPLICATIONS AND RECOMMENDATIONS

This project developed and pulled together tolerance and efficacy data for Minor Use submission that will provide grass seed and timothy growers with a registered weed management option that is safe, economical and enables them to meet the strict requirements of the grass seed and timothy export hay markets. It took the findings of AARI Research Project #2000M642, "Fall Herbicide Application for Effective Control of Problem Perennial Weeds in Grass Seed Crops" and developed them into a practical solution for managing broadleaved weeds in established timothy grown for export hay and established timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue grown for seed.

To meet Project Objective 3. “To obtain Minor Use registrations”, the research data developed from this project will be submitted to the Canadian Weed Science Society Research Report, along with other data submitted by weed researchers from across Canada. The Pest Management Regulatory Agency prefers to receive Minor Use application data in the CWSS Research Report format. The CWSS Research Report data will also be compiled and summarized in Alberta Agriculture and Food’s database “Tolerance of Forage Crops to Herbicides”. This database is useful for locating and compiling the data available for Minor Use proposals. Minor Use registration proposals to add seedling and established timothy, meadow bromegrass, smooth bromegrass, hybrid bromegrass and tall fescue for fall application to the Ally label will then be submitted to the Pest Management Regulatory Agency along with the 30 CWSS research reports included in the appendix of this final report as the supporting data.

There may be sufficient data collected from AARI Project #2000M642 "Fall Herbicide Application for Effective Control of Problem Perennial Weeds in Grass Seed Crops" and other research to request the addition of creeping red fescue, chewings fescue and hard fescue to the Ally label for fall application as well.

There may be enough interest in adding all eight of these grasses to the Spectrum label for fall application, especially to the growers who have a healthy Canada thistle or perennial sow-thistle problem in the fall. If the Canada thistle or perennial sow-thistle is actively growing in the fall, Spectrum can provide long-term control. Spectrum also provides management of fall growing cleavers.

To meet Project Objective 4. “To demonstrate the effectiveness of Ally applied in the fall as a tool for the long-term management of broadleaved weeds in established grass seed and timothy processed hay”, the grass seed industry and, especially, the timothy hay export industry have already set up several demonstration plots in the Peace River region over the last several years. The fall application of Ally has being demonstrated in the Peace region by Northern Forage and Enterprises Macay on timothy hay being grown for the overseas market as well as by several grass seed growers in Alberta and B.C.

To meet Project Objective 5. “To provide this tool for adoption by industry and producers”, once a Minor Use registration is approved, this information will be transferred to the seed growers and timothy processed hay growers via Alberta Agriculture and Food extension specialists, the seed and hay processing industries, Ropin' the Web, Crop Protection Guide, Forage Seed News and Alberta Ag-Info Centre for incorporation into their production systems. The growers will then be able to produce a quality grass seed and timothy export hay that will meet or exceed marketing standards.

The seed trade and the Peace Region Forage Seed Association continue to play a key role in the extension of seed production information to the producers. The timothy processing industry plays a very important role in the extension of timothy hay production information.

As fall herbicide application tends to cause less injury to grass seed or hay crops than spring application, fall application should be encouraged if the crop is under drought or some other form of stress.

As Ally can leave a residue in the soil that can affect following seeded crops such as canola or legumes, it is important not to use Ally if the soil pH is above 7.0 and there is drought or low organic matter soil. It is important to follow cropping restrictions on the label for subsequently seeded crops when Ally has been used in the previous four years.

From previous research, Ally should not be applied at any time of the year to Kentucky bluegrass or perennial ryegrass. The fine-leaved fescues such as creeping red fescue, hard fescue and chewings fescue have shown good tolerance to Ally.

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LIST OF PUBLICATIONS ARISING FROM THIS PROJECT

(Refer to Appendix for CWSS Research Reports)

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Application of Ally on a New Stand of Timothy – Edmonton – 04/05. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Application of Ally on a New Stand of Timothy – Edmonton – 05/06. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Ally Applications on 3 Year Old Timothy – Ellerslie – 03/04. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Ally Applications on 4 Year Old Timothy – Ellerslie – 03/04. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Application of Ally on Established Timothy – Edmonton – 05/06. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

Cole, D., Kimmel, N. and Yoder, C. 2007. Fall vs. Spring Application of Ally on a New Stand of Meadow Bromegrass – Edmonton – 04/05. Canadian Weed Science Society Research Report. To be submitted to CWSS internet site.

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TABLES AND FIGURES

Grass Tolerance with Fall versus Spring Herbicide Applications

Table 3. Fall versus Spring Application of Ally on a New Stand of Timothy – Edmonton 2004-2005 (Expt.#T1)

Herbicide x Recom. Rate	Application Timing	% Visual Injury				ForageYield		Seed Yield		1000 kwt	Germination
		Oct-14-04	Apr-22-05	Jun-15-05	Jul-21-05	kg/ha	% of Check	kg/ha	% of Check	grams	%
Check		0	0	0	0	6299	100	984	100	0.6	95
Ally 1X	Early Fall	16	0	0	0	6103	97	921	94	0.6	95
Ally 2X	Early Fall	25	0	0	0	6881	109	1084	110	0.6	95
Ally 1X	Late Fall		10	0	0	6602	105	1048	106	0.6	93
Ally 2X	Late Fall		15	0	0	6021	96	971	99	0.5	94
Ally 1X	Early Spring			0	0	5792	92	986	100	0.4	95
Ally 2X	Early Spring			0	0	5966	95	844	86	0.5	93
Ally 1X	Late Spring			25	10	6111	97	1130	115	0.5	93
Ally 2X	Late Spring			30	19	5751	91	837	85	0.5	91
Spectrum	Late Spring			20	14	6403	102	1100	112	0.5	94
LSD (P=.05)						**1329**		**230**		**0.14**	**4.6**

Table 4. Fall versus Spring Application of Ally on a New Stand of Timothy – Beaverlodge 2004-2005 (Expt.#T2)

Herbicide x Recom. Rate	Application Timing	% Visual Injury						ForageYield		Seed Yield	
		Oct-14-04	May-5-05	May-20-05	Jun-6-05	Jun-20-05	Aug-4-05	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	0	11,332	100	1177	100
Ally 1X	Early Fall	3	1	0	0	0	0	10,388	92	1102	94
Ally 2X	Early Fall	8	5	0	4	0	0	10,943	97	1075	91
Ally 1X	Late Fall		1	0	0	0	0	11,277	100	1133	96
Ally 2X	Late Fall		14	0	0	0	0	10,555	93	1080	92
Ally 1X	Early Spring			0	3	0	0	11,221	99	1176	100
Ally 2X	Early Spring			8	5	1	3	11,554	102	1351	115
Ally 1X	Late Spring				14	13	8	11,110	98	1269	108
Ally 2X	Late Spring				25	30	19	11,110	98	1349	115
Spectrum	Late Spring				0	1	0	10,077	89	1156	98
LSD								**1482**		**209**	

(P=.05)				

Table 5. Fall versus Spring Application of Ally on a New Stand of Timothy – Edmonton 2005-2006 (Expt.#T3)

Herbicide x Recom. Rate	Application Timing	% Visual Injury				Plant Height	ForageYield		Seed Yield	
		Oct-14-05	May-24-06	Jun-19-06	Jul-28-06	cm	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	97	6045	100	679	100
Ally 1X	Early Fall	16	0	0	0	97	6080	101	706	104
Ally 2X	Early Fall	25	0	5	0	97	6223	103	772	114
Ally 1X	Late Fall		0	0	0	97	6157	102	768	113
Ally 2X	Late Fall		0	5	0	97	6530	108	747	110
Ally 1X	Early Spring		0	0	0	97	5936	98	823	121
Ally 2X	Early Spring		0	0	0	97	6425	106	765	113
Ally 1X	Late Spring			14	0	94	6056	100	695	102
Ally 2X	Late Spring			25	19	86	6189	102	55	81
Spectrum	Late Spring			13	0	96	6536	108	737	109
LSD (P=.05)						**1.3**	**1205**		**110**	

Table 6. Fall versus Spring Application of Ally on a New Stand of Timothy – Beaverlodge 2005-2006 (Expt.#T4)

Herbicide x Recom. Rate	Application Timing	% Visual Injury						Forage Yield		Seed Yield	
		Oct-14-05	May-18-06	June-2-06	Jun-12-06	Jun-22-06	July-11-06	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	0	3583	100	415	100
Ally 1X	Early Fall	0	0	0	0	0	0	4125	115	465	112
Ally 2X	Early Fall	0	0	0	0	0	0	3916	109	460	111
Ally 1X	Late Fall		0	0	0	0	0	4000	112	428	103
Ally 2X	Late Fall		0	0	0	0	0	4042	113	460	111
Ally 1X	Early Spring		0	0	0	0	0	3291	92	352	85
Ally 2X	Early Spring		0	0	0	0	0	3916	109	411	99
Ally 1X	Late Spring				0	0	0	3666	102	413	100
Ally 2X	Late Spring				0	0	0	3875	108	432	104
Spectrum	Late Spring				0	0	0	3625	101	411	99
LSD (P=.05)								**750**		**104**	

Table 7. Fall versus Spring Application of Ally on Established Timothy – Edmonton 2003-2004 (Expt.#T5)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			Seed Yield	
		May-31-04	Jun-21-04	Jul-21-04	kg/ha	% of Check
Check		0	0	0	395	100
Ally 1X	Late Fall	0	0	0	366	93
Ally 2X	Late Fall	8	0	0	394	100
Ally 1X	Early Spring	0	5	4	367	93
Ally 2X	Early Spring	16	3	4	404	102
Ally 1X	Late Spring		31	34	231	58
Ally 2X	Late Spring		34	34	264	67
Curtail M	Late Spring		4	3	357	90
LSD (P=.05)					**94**	

Table 8. Fall versus Spring Application of Ally on Established Timothy – Edmonton 2003-2004 (Expt.#T6)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			Seed Yield	
		May-31-04	Jun-21-04	Jul-21-04	kg/ha	% of Check
Check		0	0	0	162	100
Ally 1X	Late Fall	0	0	3	121	75
Ally 2X	Late Fall	5	0	0	159	98

Ally 1X	Early Spring	0	0	0	198	122
Ally 2X	Early Spring	11	0	1	183	113
Ally 1X	Late Spring		24	18	127	78
Ally 2X	Late Spring		31	31	101	62
Curtail M	Late Spring		0	3	104	64
LSD (P=.05)					**68**	

Table 9. Fall versus Spring Application of Ally on Established Timothy – Beaverlodge 2004-2005 (Expt.#T7)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**						**Forage Yield**		**Seed Yield**	
		Oct-14-04	**May-5-05**	**May-20-05**	**Jun-6-05**	**Jun-20-05**	**Aug-4-05**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**
Check		0	0	0	0	0	0	8547	100	416	100
Ally 1X	Early Fall	10	6	0	0	0	0	8658	101	360	87
Ally 2X	Early Fall	14	10	0	1	3	3	8519	100	388	93
Ally 1X	Late Fall		9	0	0	0	0	8427	99	423	102
Ally 2X	Late Fall		20	3	0	0	0	8473	99	426	102
Ally 1X	Early Spring			10	6	0	3	9029	106	440	106
Ally 2X	Early Spring			26	25	21	9	7917	93	408	98
Ally 1X	Late Spring			0	23	21	14	7671	90	306	74
Ally 2X	Late Spring			0	34	35	34	6297	74	251	60
Spectrum	Late Spring			0	0	0	0	9631	113	404	97
LSD (P=.05)								**1177**		**64**	

Table 10. Fall versus Spring Application of Ally on Established Timothy – Edmonton 2005-2006 (Expt.#T8)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**			**Plant Ht**	**ForageYield**		**Seed Yield**		**1000 kwt**	**Germination**
		May-24-06	**Jun-19-06**	**Jul-28-06**	**cm**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**grams**	**%**
Check		0	0	0	90	2302	100	336	100	0.40	97
Ally 1X	Early Fall	0	0	0	92	2422	105	361	107	0.37	99
Ally 2X	Early Fall	0	3	0	91	3005	131	375	111	0.41	98
Ally 1X	Late Fall	0	0	0	91	2950	128	365	109	0.42	95
Ally 2X	Late Fall	0	0	0	92	2414	105	374	111	0.44	98
Ally 1X	Early Spring	0	0	0	91	3131	136	367	109	0.39	97
Ally 2X	Early Spring	0	0	0	91	2550	111	392	117	0.40	97
Ally 1X	Late Spring		18	0	86	3089	134	369	110	0.40	98
Ally 2X	Late Spring		31	21	79	2469	107	272	81	0.42	96
Spectrum	Late Spring		13	0	88	2873	125	288	86	0.41	96
LSD (P=.05)					**2.6**	**774**		**138**		**0.03**	**3.6**

Table 11. Fall versus Spring Application of Ally on Established Timothy – Beaverlodge 2005-2006 (Expt.#T9)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**					**Forage Yield**		**Seed Yield**	
		Oct-14-05	**May-18-06**	**June-2-06**	**Jun-12-06**	**Jun-22-06**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**
Check		0	0	0	0	0	3376	100	462	100
Ally 1X	Early Fall	0	0	0	0	0	3357	99	408	88
Ally 2X	Early Fall	0	0	0	0	0	3042	90	401	87
Ally 1X	Late Fall		0	0	0	0	3563	106	446	96
Ally 2X	Late Fall		0	0	0	0	3313	98	461	100
Ally 1X	Early Spring		0	0	0	0	3167	94	401	87
Ally 2X	Early Spring		10	0	0	0	3668	109	491	106
Ally 1X	Late Spring				0	0	3355	99	475	103
Ally 2X	Late Spring				0	0	2813	83	380	82
Spectrum	Late Spring				0	0	2751	81	336	73
LSD (P=.05)							**524**		**104**	

Table 12. Fall versus Spring Application of Ally on a New Stand of Meadow Bromegrass – Edmonton 2004-2005 (Expt.#MB1)

Herbicide x Recom. Rate	Application Timing	% Visual Injury				ForageYield		Seed Yield		1000 kwt	Germination
		Oct-14-04	Apr-22-05	Jun-15-05	Jul-21-05	kg/ha	% of Check	kg/ha	% of Check	grams	%
Check		0	0	0	0	5939	100	1987	100	6.7	85
Ally 1X	Early Fall	10	0	0	0	5081	86	1993	100	6.1	82
Ally 2X	Early Fall	15	0	0	0	5018	84	1889	95	6.6	90
Ally 1X	Late Fall		0	0	0	5377	91	2036	102	6.7	88
Ally 2X	Late Fall		0	0	0	4047	68	1970	99	7.5	87
Ally 1X	Early Spring			0	0	5793	98	1911	96	6.9	89
Ally 2X	Early Spring			0	0	5815	98	1888	95	6.4	90
Ally 1X	Late Spring			14	5	4523	76	1978	100	6.6	92
Ally 2X	Late Spring			20	20	4732	80	2197	111	6.5	91
Spectrum	Late Spring			0	0	4993	84	1970	99	6.4	85
LSD (P=.05)						**1945**		**386**		**1.5**	**7.8**

Table 13. Fall versus Spring Application of Ally on a New Stand of Meadow Bromegrass – Beaverlodge 2004-2005 (Expt.#MB2)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			ForageYield		Seed Yield	
		Oct-14-04	May-5-05	May-20-05	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	9666	100	1744	100
Ally 1X	Early Fall	0	0	0	9832	102	1861	107
Ally 2X	Early Fall	0	0	0	9083	94	1507	86
Ally 1X	Late Fall		0	0	10916	113	1935	111
Ally 2X	Late Fall		0	0	10082	104	1754	101
Ally 1X	Early Spring			0	9583	99	1497	86
Ally 2X	Early Spring			4	8000	83	1453	83
Ally 1X	Late Spring				10582	109	2027	116
Ally 2X	Late Spring				11249	116	1877	108
Spectrum	Late Spring				8999	93	1552	89
LSD (P=.05)					**2371**		**751**	

Table 14. Fall versus Spring Application of Ally on a New Stand of Meadow Bromegrass – Edmonton 2005-2006 (Expt.#MB3)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			ForageYield		Seed Yield		1000 kwt	Germination
		May-24-06	Jun-19-06	Jul-28-06	kg/ha	% of Check	kg/ha	% of Check	grams	%
Check		0	0	0	5344	100	1167	100	4.9	96
Ally 1X	Early Fall	0	0	0	5197	97	1440	123	4.6	93
Ally 2X	Early Fall	0	3	0	5761	108	1274	109	4.4	92
Ally 1X	Late Fall	0	0	0	5043	94	1268	109	5.0	91
Ally 2X	Late Fall	0	3	0	5669	106	1361	117	4.8	91
Ally 1X	Early Spring	0	0	0	5747	108	1515	130	4.7	95
Ally 2X	Early Spring	13	0	0	4766	89	1311	112	4.8	95
Ally 1X	Late Spring		14	0	6719	126	1655	142	5.0	96
Ally 2X	Late Spring		20	20	7085	133	1667	143	4.9	95
Spectrum	Late Spring		0	0	7043	132	1432	123	4.3	93
LSD (P=.05)					**2249**		**235**		**0.5**	**5.6**

Table 15. Fall versus Spring Application of Ally on a New Stand of Meadow Bromegrass – Beaverlodge 2005-2006 (Expt.#MB4)

Herbicide x Recom. Rate	Application Timing	% Visual Injury						Forage Yield		Seed Yield	
		Oct-14-05	May-18-06	Jun-2-06	Jun-12-06	Jun-22-06	July-11-06	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	0	6723	100	896	100
Ally 1X	Early Fall	0	0	0	0	0	0	5500	82	831	93

Ally 2X	Early Fall	0	0	0	0	0	0	7833	116	807	90
Ally 1X	Late Fall		0	0	0	0	0	6249	93	810	90
Ally 2X	Late Fall		0	0	0	0	0	5722	85	766	86
Ally 1X	Early Spring		0	0	0	0	0	7055	105	819	91
Ally 2X	Early Spring		0	0	0	0	0	6333	94	870	97
Ally 1X	Late Spring				6	0	0	5222	78	872	97
Ally 2X	Late Spring				19	15	0	6666	99	823	92
Spectrum	Late Spring				6	3	0	5375	80	880	98
LSD (P=.05)								**1505**		**128**	

Table 16. Fall versus Spring Application of Ally on Established Meadow Bromegrass – Ellerslie 2003-2004 (Expt.#MB5)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**			**Seed Yield**	
		May-31-04	**Jun-21-04**	**Jul-21-04**	**kg/ha**	**% of Check**
Check		0	0	0	425	100
Ally 1X	Late Fall	0	0	0	468	110
Ally 2X	Late Fall	0	0	3	520	122
Ally 1X	Early Spring	0	0	0	443	104
Ally 2X	Early Spring	0	0	0	545	128
Ally 1X	Late Spring		23	14	382	90
Ally 2X	Late Spring		28	19	411	97
Curtail M	Late Spring		0	0	486	114
LSD (P=.05)					**155**	

Table 17. Fall versus Spring Application of Ally on Established Meadow Bromegrass – Beaverlodge 2004-2005 (Expt.#MB6)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**					**Forage Yield**		**Seed Yield**	
		Oct-14-04	**May-5-05**	**May-20-05**	**Jun-6-05**	**July 22-05**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**
Check		0	0	0	0	0	6505	100	572	100
Ally 1X	Early Fall	0	0	0	0	0	6551	101	414	72
Ally 2X	Early Fall	0	0	0	0	0	7061	109	555	97
Ally 1X	Late Fall		0	0	0	0	6491	100	368	64
Ally 2X	Late Fall		0	0	1	0	6436	99	400	70
Ally 1X	Early Spring			0	11	0	6598	101	425	74
Ally 2X	Early Spring			0	11	5	6713	103	493	86
Ally 1X	Late Spring				34	16	5510	85	309	54
Ally 2X	Late Spring				34	23	5936	91	471	82
Spectrum	Late Spring				9	4	5788	89	422	74
LSD (P=.05)							**1277**		**247**	

Table 18. Fall versus Spring Application of Ally on Established Meadow Bromegrass – Edmonton 2005-2006 (Expt.#MB7)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**			**Plant Height**	**ForageYield**		**Seed Yield**		**1000 kwt**	**Germination**
		May-24-06	**Jun-19-06**	**Jul-28-06**	**cm**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**grams**	**%**
Check		0	0	0	112	6384	100	696	100	5.0	87
Ally 1X	Early Fall	0	0	0	111	5960	93	895	129	4.9	87
Ally 2X	Early Fall	0	0	0	112	6432	101	708	102	4.8	91
Ally 1X	Late Fall	0	0	0	112	5243	82	754	108	5.0	87
Ally 2X	Late Fall	0	0	0	112	6070	95	797	115	4.8	89
Ally 1X	Early Spring	0	0	0	112	6025	94	654	94	4.7	88
Ally 2X	Early Spring	15	0	0	112	6563	103	776	111	4.8	88
Ally 1X	Late Spring		20	0	97	5980	94	620	89	4.7	86
Ally 2X	Late Spring		28	0	90	6567	103	686	99	4.8	80
Spectrum	Late Spring		3	0	110	5895	92	657	94	4.5	84
LSD (P=.05)					**5.0**	**1597**		**325**		**0.42**	**11.2**

Table 19. Fall versus Spring Application of Ally on Established Meadow Bromegrass – Beaverlodge 2005-2006 (Expt.#MB8)

Herbicide x Recom. Rate	Application Timing	% Visual Injury					Forage Yield		Seed Yield	
		Oct-14-05	May-18-06	June-2-06	Jun-12-06	July 13-06	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	4100	100	55	100
Ally 1X	Early Fall	0	0	0	0	0	3230	79	64	117
Ally 2X	Early Fall	0	0	0	0	0	3643	89	65	119
Ally 1X	Late Fall		0	0	0	0	3698	90	48	87
Ally 2X	Late Fall		0	0	0	0	3433	84	42	77
Ally 1X	Early Spring		0	0	0	0	3709	90	50	90
Ally 2X	Early Spring		0	0	0	0	4257	104	65	119
Ally 1X	Late Spring				0	0	3698	90	44	81
Ally 2X	Late Spring				0	0	3754	92	48	88
Spectrum	Late Spring				0	0	3813	93	61	111
LSD (P=.05)							**849**		**20**	

Table 20. Fall versus Spring Application of Ally on a New Stand of Smooth Bromegrass – Beaverlodge 2005-2006 (Expt.#SB1)

Herbicide x Recom. Rate	Application Timing	% Visual Injury						Forage Yield		Seed Yield	
		Oct-14-05	May-18-06	June-2-06	Jun-12-06	June 22-06	July 11-06	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	0	6249	100	968	100
Ally 1X	Early Fall	0	4	0	0	0	0	7249	116	1005	104
Ally 2X	Early Fall	0	5	0	0	0	0	7000	112	1000	103
Ally 1X	Late Fall		0	0	0	0	0	7583	121	982	101
Ally 2X	Late Fall		0	3	0	0	0	8083	129	1149	119
Ally 1X	Early Spring		3	0	0	0	0	7462	119	974	101
Ally 2X	Early Spring		0	0	5	6	4	6916	111	982	101
Ally 1X	Late Spring				8	5	9	6666	107	1005	104
Ally 2X	Late Spring				20	19	15	7041	113	942	97
Spectrum	Late Spring				20	21	13	6208	99	831	86
LSD (P=.05)								**1337**		**200**	

Table 21. Fall versus Spring Application of Ally on Established Smooth Bromegrass – Beaverlodge 2004-2005 (Expt.#SB2)

Herbicide x Recom. Rate	Application Timing	% Visual Injury						ForageYield		Seed Yield	
		Oct-14-04	May-5-05	May-20-05	Jun-6-05	Jul-20-05	Aug-4-05	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	0	10,788	100	1012	100
Ally 1X	Early Fall	3	0	0	0	3	4	10,510	97	1027	101
Ally 2X	Early Fall	6	0	0	3	5	3	10,325	96	885	87
Ally 1X	Late Fall		0	0	0	0	0	11,297	105	1048	104
Ally 2X	Late Fall		0	0	0	0	0	11,020	102	917	91
Ally 1X	Early Spring			0	3	0	0	10,556	98	886	88
Ally 2X	Early Spring			0	0	0	0	10,788	100	765	76
Ally 1X	Late Spring				3	0	0	11,575	107	952	94
Ally 2X	Late Spring				16	10	16	10,696	99	1035	102
Spectrum	Late Spring				3	3	9	10,742	100	763	75
LSD (P=.05)								**1446**		**190**	

Table 22. Fall versus Spring Application of Ally on a New Stand of Hybrid Bromegrass – Edmonton 2004-2005 (Expt.#HB1)

Herbicide x Recom. Rate	Application Timing	% Visual Injury				ForageYield		Seed Yield		1000 kwt	Germination
		Oct-14-04	Apr-22-05	Jun-15-05	Jul-21-05	kg/ha	% of Check	kg/ha	% of Check	grams	%
Check		0	0	0	0	6440	100	2061	100	3.8	70
Ally 1X	Early Fall	8	0	0	0	5345	83	1740	84	4.2	81
Ally 2X	Early Fall	19	0	0	0	7571	118	1979	96	4.0	83

Ally 1X	Late Fall		0	0	0	5294	82	1855	90	4.4	78
Ally 2X	Late Fall		0	0	0	6833	106	1833	89	4.2	73
Ally 1X	Early Spring			0	0	6458	100	2111	102	4.7	80
Ally 2X	Early Spring			0	0	5611	87	1941	94	4.2	83
Ally 1X	Late Spring			20	10	6016	93	1994	97	4.0	79
Ally 2X	Late Spring			25	20	7419	115	1964	95	4.2	79
Spectrum	Late Spring			15	9	6911	107	2115	103	4.5	78
LSD (P=.05)						**2285**		**287**		**0.83**	**12.2**

Table 23. Fall versus Spring Application of Ally on a New Stand of Hybrid Bromegrass – Beaverlodge 2004-2005 (Expt.#HB2)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**						**ForageYield**		**Seed Yield**	
		Oct-14-04	**May-5-05**	**May-20-05**	**Jun-6-05**	**Jun-20-05**	**Aug-4-05**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**
Check		0	0	0	0	0	0	11,832	100	1823	100
Ally 1X	Early Fall	0	0	0	0	0	0	10,666	90	1612	88
Ally 2X	Early Fall	0	0	0	0	0	0	11,277	95	1671	92
Ally 1X	Late Fall		0	0	0	0	0	12,721	108	1880	103
Ally 2X	Late Fall		0	0	0	0	0	11,777	99	1536	84
Ally 1X	Early Spring			0	0	0	0	11,221	95	1571	86
Ally 2X	Early Spring			0	0	0	0	11,444	97	1924	106
Ally 1X	Late Spring				8	3	0	11,166	94	1600	88
Ally 2X	Late Spring				19	27	15	11,221	95	1882	103
Spectrum	Late Spring				3	0	0	11,110	94	1736	95
LSD (P=.05)								**2403**		**331**	

Table 24. Fall versus Spring Application of Ally on a New Stand of Hybrid Bromegrass – Edmonton 2005-2006 (Expt.#HB3)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**			**ForageYield**		**Seed Yield**		**1000 kwt**	**Germination**
		May-24-06	**Jun-19-06**	**Jul-28-06**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**grams**	**%**
Check		0	0	0	8072	100	1476	100	3.5	81
Ally 1X	Early Fall	0	0	0	6268	78	1442	98	3.6	81
Ally 2X	Early Fall	0	0	0	7025	87	1380	93	3.6	73
Ally 1X	Late Fall	0	0	0	6852	85	1498	102	3.6	83
Ally 2X	Late Fall	0	0	0	6045	75	1410	96	3.6	80
Ally 1X	Early Spring	0	0	0	6373	79	1438	97	3.9	82
Ally 2X	Early Spring	0	0	0	6638	82	1420	96	3.7	82
Ally 1X	Late Spring		3	0	8146	101	1488	101	3.3	70
Ally 2X	Late Spring		16	0	7886	98	1455	99	3.3	79
Spectrum	Late Spring		0	0	6048	75	1447	98	3.7	79
LSD (P=.05)					**2198**		**194**		**0.37**	**13.6**

Table 25. Fall versus Spring Application of Ally on a New Stand of Hybrid Bromegrass – Beaverlodge 2005-2006 (Expt.#HB4)

Herbicide x Recom. Rate	**Application Timing**	**% Visual Injury**						**Forage Yield**		**Seed Yield**	
		Oct-14-05	**May-18-06**	**June-2-06**	**Jun-12-06**	**June 22-06**	**July 11-06**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**
Check		0	0	0	0	0	0	7166	100	752	100
Ally 1X	Early Fall	0	0	0	0	0	0	6958	97	658	88
Ally 2X	Early Fall	0	0	0	0	0	0	6874	96	673	89
Ally 1X	Late Fall		0	0	0	0	0	7166	100	692	92
Ally 2X	Late Fall		0	0	0	0	0	6833	95	629	84
Ally 1X	Early Spring		0	0	0	0	0	6958	97	609	81
Ally 2X	Early Spring		0	0	0	0	0	7291	102	627	83
Ally 1X	Late Spring				0	3	0	7166	100	738	98
Ally 2X	Late Spring				16	15	0	6416	90	616	82
Spectrum	Late Spring				8	6	0	6791	95	657	87
LSD (P=.05)								**848**		**139**	

Table 26. Fall versus Spring Application of Ally on Established Hybrid Bromegrass – Edmonton 2005-2006 (Expt.#HB5)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			ForageYield		Seed Yield		1000 kwt	Germination
		May-24-06	Jun-19-06	Jun-28-06	kg/ha	% of Check	kg/ha	% of Check	grams	%
Check		0	0	0	7513	100	581	100	3.6	71
Ally 1X	Early Fall	0	0	0	7363	98	740	127	3.9	81
Ally 2X	Early Fall	0	0	0	7900	105	730	126	3.9	80
Ally 1X	Late Fall	0	0	0	8475	113	731	126	3.7	76
Ally 2X	Late Fall	0	0	0	7455	99	692	119	4.0	77
Ally 1X	Early Spring	0	0	0	7755	103	678	117	3.5	71
Ally 2X	Early Spring	0	0	0	7523	100	769	132	3.8	81
Ally 1X	Late Spring		0	0	7464	99	730	126	3.7	70
Ally 2X	Late Spring		11	4	7982	106	678	117	3.7	70
Spectrum	Late Spring		0	0	9043	120	722	124	3.8	75
LSD (P=.05)					**1720**		**104**		**0.36**	**12.8**

Table 27. Fall versus Spring Application of Ally on Established Hybrid Bromegrass – Beaverlodge 2005-2006 (Expt.#HB6)

Herbicide x Recom. Rate	Application Timing	% Visual Injury					Forage Yield		Seed Yield	
		Oct-14-05	May-18-06	June-2-06	Jun-12-06	Jul-11-06	kg/ha	% of Check	kg/ha	% of Check
Check		0	0	0	0	0	5421	100	227	100
Ally 1X	Early Fall	0	0	0	0	0	4558	84	219	97
Ally 2X	Early Fall	0	3	0	0	0	4538	84	247	109
Ally 1X	Late Fall		0	0	0	0	4641	86	206	91
Ally 2X	Late Fall		0	3	0	0	4371	81	210	93
Ally 1X	Early Spring		0	0	0	0	4392	81	226	99
Ally 2X	Early Spring		3	0	0	0	4246	78	222	98
Ally 1X	Late Spring				0	0	3976	73	236	104
Ally 2X	Late Spring				0	0	4288	79	228	100
Spectrum	Late Spring				0	0	4267	79	198	87
LSD (P=.05)							**699**		**53**	

Table 28. Fall versus Spring Application of Ally on Established Tall Fescue – Ellerslie 2003-2004 (Expt.#TF1)

Herbicide x Recom. Rate	Application Timing	% Visual Injury			Seed Yield	
		May-31-04	Jun-21-04	Jul-21-04	kg/ha	% of Check
Check		0	0	0	150	100
Ally 1X	Late Fall	0	0	0	188	125
Ally 2X	Late Fall	16	10	0	87	58
Ally 1X	Early Spring	0	0	0	133	89
Ally 2X	Early Spring	15	13	0	101	67
Ally 1X	Late Spring		14	6	125	83
Ally 2X	Late Spring		28	24	62	41
Curtail M	Late Spring		4	3	147	98
LSD (P=.05)					**136**	

Weed Control with Fall versus Spring Herbicide Applications

Table 29. Dandelion Control (Visual % Control, Plant Counts and Dry Weight Yields) with Fall versus Spring Herbicide Application - Edmonton 2004-2005 (Expt.#WC1)

Herbicide	Application Timing	Visual % Control				Plant #/m^2			Dry Wt g/m^2	
		April-25-05	June-15-05	Aug-26-05	June-2-06	Aug-19-05	July-14-06	Aug-25-06	Aug-19-05	Aug-25-06

Check		0	0	0	0	73	58	155	16.7	15.5
Ally	Early Fall	99	94	88	88	10	24	66	1.0	1.2
Spectrum	Early Fall	100	85	90	89	10	21	89	0.7	1.1
Ally	Late Fall	78	99	83	61	19	25	68	1.5	5.5
Spectrum	Late Fall	84	59	64	46	38	24	78	12.0	4.8
Ally	Early Spring		55	59	56	32	64	100	4.1	10.1
Spectrum	Early Spring		30	31	1	61	56	73	20.7	13.0
Ally	Late Spring		33	94	84	5	61	87	0.5	2.1
Spectrum	Late Spring		24	70	43	17	42	66	1.8	10.5
LSD (P=.05)						**27.1**	**32.4**	**52.7**	**5.9**	**7.1**

Table 30. Alsike Clover Control (Visual % Control and Plant Counts) with Fall versus Spring Herbicide Application - Edmonton 2004-2005 (Expt.#WC1)

Herbicide	**Application Timing**	**Visual % Control**				**Plant #/m^2 – July-14-06**		
		April-25-05	**June-15-05**	**Aug-26-05**	**June-02-06**	**Seedling**	**Flowering**	**Total**
Check		0	0	0	0	18	11	29
Ally	Early Fall	100	100	94	80	4	4	8
Spectrum	Early Fall	100	100	91	55	2	3	4
Ally	Late Fall	85	100	99	78	11	2	13
Spectrum	Late Fall	96	100	98	93	2	1	3
Ally	Early Spring		100	96	95	2	0	2
Spectrum	Early Spring		100	86	75	3	2	5
Ally	Late Spring		75	100	94	9	1	9
Spectrum	Late Spring		73	99	94	4	0	4
LSD (P=.05)						**2.8**	**13.5**	**14.8**

Table 31. Weed Control with Fall versus Spring Herbicide Application - Beaverlodge 2004-2005 (Expt.#WC2)

Herbicide	**Application Timing**	**Dandelion**						**Alsike Clover**				
		Visual % Control					**Plant #/m^2**	**Visual % Control**				
		May-20-05	**July-29-05**	**Sept-30-05**	**June-2-06**	**Aug-22-06**	**July - 29-05**	**May-20-05**	**July - 29-05**	**Sept-30-05**	**June-2-06**	**Aug-22-06**
Check		0	0	0	0	0	39	0	0	0	0	0
Ally	Early Fall	100	96	84	89	88	5	100	99	99	99	100
Spectrum	Early Fall	99	85	73	81	80	3	100	94	95	98	99
Ally	Late Fall	98	68	51	58	55	15	94	73	78	63	66
Spectrum	Late Fall	96	51	38	33	36	22	99	83	94	91	99
Ally	Early Spring	64	76	58	45	46	16	64	84	69	55	41
Spectrum	Early Spring	65	40	38	30	28	26	70	70	90	86	100
Ally	Late Spring		99	88	84	66	0		94	93	95	99
Spectrum	Late Spring		63	54	55	38	20		94	98	81	100
LSD (P=.05)							**12.5**					

Table 32. Dandelion Control (Visual % Control, Plant Counts and Dry Weight Yields) with Fall versus Spring Herbicide Application - Edmonton 2005-2006 (Expt.#WC3)

Herbicide	**Application Timing**	**Visual % Control**		**Plant #/m^2**		**Dry Wt g/m^2**
		May-26-06	**Sept-24-07**	**July-14-06**	**Aug-23-06**	**Aug-23-06**
		0	0	80	92	24.7
Ally	Early Fall	86	71	23	31	6.9
Spectrum	Early Fall	80	61	45	32	12.6
Ally	Late Fall	84	64	22	27	5.6
Spectrum	Late Fall	85	51	29	26	10.0
Ally	Early Spring	85	65	21	40	10.6
Spectrum	Early Spring	81	39	53	59	33.4
Ally	Late Spring		79	20	5	0.5
Spectrum	Late Spring		51	23	19	3.9

LSD (P=.05)			**20.5**	**25.3**	**7.5**

Table 33. Alsike Clover Control (Visual % Control and Plant Counts) with Fall versus Spring Herbicide Application - Edmonton 2005-2006 (Expt.#WC3)

Herbicide	**Application Timing**	**Visual % Control**		**Plant #/m^2 - July-14-06**		
		May-26-06	**Sept-24-07**	**Seedling**	**Flowering**	**Total**
Check		0	0	8	10	18
Ally	Early Fall	100	44	0	2	2
Spectrum	Early Fall	100	66	0	1	2
Ally	Late Fall	100	55	3	0	3
Spectrum	Late Fall	100	83	0	1	1
Ally	Early Spring	91	44	2	1	3
Spectrum	Early Spring	99	95	0	0	0
Ally	Late Spring		85	3	0	3
Spectrum	Late Spring		96	2	0	2
LSD (P=.05)				**4.8**	**4.0**	**5.8**

Table 34. Weed Control with Fall versus Spring Herbicide Application - Beaverlodge 2005-2006 (Expt.#WC4)

Herbicide	**Application Timing**	**Dandelion**						**Alsike Clover**				
		Visual % Control					**Plant #/m^2**	**Visual % Control**				
		June-2-06	**July-11-06**	**Aug-15-06**	**Oct-2-06**	**June-25-07**	**July-25-06**	**June-2-06**	**July-11-06**	**Aug-15-06**	**Oct-2-06**	**June-25-07**
Check		0	0	0	0	0	23	0	0	0	0	0
Ally	Early Fall	100	100	94	79	74	0	100	100	99	99	100
Spectrum	Early Fall	94	88	76	70	78	4	100	100	100	100	100
Ally	Late Fall	85	58	43	58	50	13	90	86	70	70	60
Spectrum	Late Fall	50	45	34	39	30	25	100	100	99	100	100
Ally	Early Spring	81	91	55	48	48	4	66	78	54	53	28
Spectrum	Early Spring	74	44	38	53	10	16	88	88	90	93	60
Ally	Late Spring		80	83	79	5	6		81	81	83	75
Spectrum	Late Spring		81	59	65	20	5		88	98	100	94
LSD (P=.05)							**7.6**					

Summary of Grass Tolerance with Fall versus Spring Herbicide Applications

Table 35. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on New Stands of Timothy over Four Experiments

Herbicide x Recom. Rate	**Application Timing**	**Edmonton 2004-05 (Exp T1)**		**Beaverlodge 2004-05 (Exp T2)**		**Edmonton 2005-06 (Exp T3)**		**Beaverlodge 2005-06 (Exp T4)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		6299	100	11,332	100	6045	100	3583	100	100
Ally 1X	Early Fall	6103	97	10,388	92	6080	101	4125	115	101
Ally 2X	Early Fall	6881	109	10,943	97	6223	103	3916	109	105
Ally 1X	Late Fall	6602	105	11,277	100	6157	102	4000	112	104
Ally 2X	Late Fall	6021	96	10,555	93	6530	108	4042	113	102
Ally 1X	Early Spring	5792	92	11,221	99	5936	98	3291	92	95
Ally 2X	Early Spring	5966	95	11,554	102	6425	106	3916	109	103
Ally 1X	Late Spring	6111	97	11,110	98	6056	100	3666	102	99
Ally 2X	Late Spring	5751	91	11,110	98	6189	102	3875	108	100
Spectrum	Late Spring	6403	102	10,777	95	6536	108	3625	101	102
LSD (P=.05)		**1329**		**1482**		**1205**		**750**		

Table 36. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on Established Stands of Timothy over Three Experiments

Herbicide x Recom. Rate	Application Timing	Beaverlodge 2004-05 (Exp T7)		Edmonton 2005-06 (Exp T8)		Beaverlodge 2005-06 (Exp T9)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		8547	100	2302	100	3376	100	100
Ally 1X	Early Fall	8658	101	2422	105	3357	99	102
Ally 2X	Early Fall	8519	100	3005	131	3042	90	107
Ally 1X	Late Fall	8427	99	2950	128	3563	106	111
Ally 2X	Late Fall	8473	99	2414	105	3313	98	101
Ally 1X	Early Spring	9029	106	3131	136	3167	94	112
Ally 2X	Early Spring	7917	93	2550	111	3668	109	104
Ally 1X	Late Spring	7671	90	3089	134	3355	99	108
Ally 2X	Late Spring	6297	74	2469	107	2813	83	88
Spectrum	Late Spring	9631	113	2873	125	2751	81	106
LSD (P=.05)		**1177**		**774**		**524**		

Table 37. Summary of Seed Yields From Fall versus Spring Application of Ally on New Stands of Timothy over Four Experiments

Herbicide x Recom. Rate	Application Timing	Edmonton 2004-05 (Exp T1)		Beaverlodge 2004-05 (Exp T2)		Edmonton 2005-06 (Exp T3)		Beaverlodge 2005-06 (Exp T4)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		984	100	1177	100	679	100	415	100	100
Ally 1X	Early Fall	921	94	1102	94	706	104	465	112	101
Ally 2X	Early Fall	1084	110	1075	91	772	114	460	111	107
Ally 1X	Late Fall	1048	106	1133	96	768	113	428	103	105
Ally 2X	Late Fall	971	99	1080	92	747	110	460	111	103
Ally 1X	Early Spring	986	100	1176	100	823	121	352	85	102
Ally 2X	Early Spring	844	86	1351	115	765	113	411	99	103
Ally 1X	Late Spring	1130	115	1269	108	695	102	413	100	106
Ally 2X	Late Spring	837	85	1349	115	550	81	432	104	96
Spectrum	Late Spring	1100	112	1156	98	737	109	411	99	104
LSD (P=.05)		**230**		**209**		**110**		**104**		

Table 38. Summary of Seed Yields From Fall versus Spring Application of Ally on Established Stands of Timothy over Five Experiments

Herbicide x Recom. Rate	Application Timing	Ellerslie 2003-04 (Exp T5)		Ellerslie 2003-04 (Exp T6)		Beaverlodge 2004-05 (Exp T7)		Edmonton 2005-06 (Exp T8)		Beaverlodge 2005-06 (Exp T9)		Aver. of Exp
		kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		395	100	162	100	416	100	336	100	462	100	100
Ally 1X	Early Fall					360	87	361	107	408	88	94
Ally 2X	Early Fall					388	93	375	111	401	87	97
Ally 1X	Late Fall	366	93	121	75	423	102	365	109	446	96	95
Ally 2X	Late Fall	394	100	159	98	426	102	374	111	461	100	102
Ally 1X	Early Spring	367	93	198	122	440	106	367	109	401	87	103
Ally 2X	Early Spring	404	102	183	113	408	98	392	117	491	106	107
Ally 1X	Late Spring	231	58	127	78	306	74	369	110	475	103	85
Ally 2X	Late Spring	264	67	101	62	251	60	272	81	380	82	71
Spectrum	Late Spring					404	97	288	86	336	73	85
LSD (P=.05)		**94**		**68**		**64**		**138**		**104**		

Table 39. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on New Stands of Meadow Bromegrass over Four Experiments

Herbicide x Recom. Rate	Application Timing	Edmonton 2004-05 (#MB1)		Beaverlodge 2004-05 (#MB2)		Edmonton 2005-06 (#MB3)		Beaverlodge 2005-06 (#MB4)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	% of Check

Check		5939	100	9666	100	5344	100	6723	100	100
Ally 1X	Early Fall	5081	86	9832	102	5197	97	5500	82	92
Ally 2X	Early Fall	5018	84	9083	94	5761	108	7833	116	101
Ally 1X	Late Fall	5377	91	10916	113	5043	94	6249	93	98
Ally 2X	Late Fall	4047	68	10082	104	5669	106	5722	85	91
Ally 1X	Early Spring	5793	98	9583	99	5747	108	7055	105	102
Ally 2X	Early Spring	5815	98	8000	83	4766	89	6333	94	91
Ally 1X	Late Spring	4523	76	10582	109	6719	126	5222	78	97
Ally 2X	Late Spring	4732	80	11249	116	7085	133	6666	99	107
Spectrum	Late Spring	4993	84	8999	93	7043	132	5375	80	97
LSD (P=.05)		**1945**		**2371**		**2249**		**1505**		

Table 40. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on Established Stands of Meadow Bromegrass over Three Experiments

Herbicide x Recom. Rate	**Application Timing**	**Beaverlodge 2004-05 (#MB6)**		**Edmonton 2005-06 (#MB7)**		**Beaverlodge 2005-06 (#MB8)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		6505	100	6384	100	4100	100	100
Ally 1X	Early Fall	6551	101	5960	93	3230	79	91
Ally 2X	Early Fall	7061	109	6432	101	3643	89	99
Ally 1X	Late Fall	6491	100	5243	82	3698	90	91
Ally 2X	Late Fall	6436	99	6070	95	3433	84	93
Ally 1X	Early Spring	6598	101	6025	94	3709	90	95
Ally 2X	Early Spring	6713	103	6563	103	4257	104	103
Ally 1X	Late Spring	5510	85	5980	94	3698	90	90
Ally 2X	Late Spring	5936	91	6567	103	3754	92	95
Spectrum	Late Spring	5788	89	5895	92	3813	93	91
LSD (P=.05)		**1277**		**1597**		**849**		

Table 41. Summary of Seed Yields From Fall versus Spring Application of Ally on New Stands of Meadow Bromegrass over Four Experiments

Herbicide x Recom. Rate	**Application Timing**	**Edmonton 2004-05 (#MB1)**		**Beaverlodge 2004-05 (#MB2)**		**Edmonton 2005-06 (#MB3)**		**Beaverlodge 2005-06 (#MB4)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		1987	100	1744	100	1167	100	896	100	100
Ally 1X	Early Fall	1993	100	1861	107	1440	123	831	93	106
Ally 2X	Early Fall	1889	95	1507	86	1274	109	807	90	95
Ally 1X	Late Fall	2036	102	1935	111	1268	109	810	90	103
Ally 2X	Late Fall	1970	99	1754	101	1361	117	766	86	101
Ally 1X	Early Spring	1911	96	1497	86	1515	130	819	91	101
Ally 2X	Early Spring	1888	95	1453	83	1311	112	870	97	97
Ally 1X	Late Spring	1978	100	2027	116	1655	142	872	97	114
Ally 2X	Late Spring	2197	111	1877	108	1667	143	823	92	113
Spectrum	Late Spring	1970	99	1552	89	1432	123	880	98	95
LSD (P=.05)		**386**		**751**		**235**		**128**		

Table 42. Summary of Seed Yields From Fall versus Spring Application of Ally on Established Stands of Meadow Bromegrass over Four Experiments

Herbicide x Recom. Rate	**Application Timing**	**Ellerslie 2003-04 (#MB5)**		**Beaverlodge 2004-05 (#MB6)**		**Edmonton 2005-06 (#MB7)**		**Beaverlodge 2005-06 (#MB8)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		425	100	572	100	696	100	55	100	100
Ally 1X	Early Fall			414	72	895	129	64	117	106
Ally 2X	Early Fall			555	97	708	102	65	119	106
Ally 1X	Late Fall	468	110	368	64	754	108	48	87	93
Ally 2X	Late Fall	520	122	400	70	797	115	42	77	96
Ally 1X	Early Spring	443	104	425	74	654	94	50	90	91
Ally 2X	Early Spring	545	128	493	86	776	111	65	119	111

Ally 1X	Late Spring	382	90	309	54	620	89	44	81	78
Ally 2X	Late Spring	411	97	471	82	686	99	48	88	91
Spectrum	Late Spring			422	74	657	94	61	111	93
LSD (P=.05)		**155**		**247**		**325**		**20**		

Table 43. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on New and Established Stands of Smooth Bromegrass over Two Experiments

Herbicide x Recom. Rate	**Application Timing**	**Beaverlodge - New 2005-06 (#SB1)**		**Beaverlodge– Establ. 2004-05 (#SB2)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		6249	100	10,788	100	100
Ally 1X	Early Fall	7249	116	10,510	97	107
Ally 2X	Early Fall	7000	112	10,325	96	104
Ally 1X	Late Fall	7583	121	11,297	105	113
Ally 2X	Late Fall	8083	129	11,020	102	116
Ally 1X	Early Spring	7462	119	10,556	98	109
Ally 2X	Early Spring	6916	111	10,788	100	105
Ally 1X	Late Spring	6666	107	11,575	107	107
Ally 2X	Late Spring	7041	113	10,696	99	106
Spectrum	Late Spring	6208	99	10,742	100	99
LSD (P=.05)		**1337**		**1446**		

Table 44. Summary of Seed Yields From Fall versus Spring Application of Ally on New and Established Stands of Smooth Bromegrass over Two Experiments

Herbicide x Recom. Rate	**Application Timing**	**Beaverlodge - New 2005-06 (#SB1)**		**Beaverlodge– Establ. 2004-05 (#SB2)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		968	100	1012	100	100
Ally 1X	Early Fall	1005	104	1027	101	103
Ally 2X	Early Fall	1000	103	885	87	95
Ally 1X	Late Fall	982	101	1048	104	103
Ally 2X	Late Fall	1149	119	917	91	105
Ally 1X	Early Spring	974	101	886	88	94
Ally 2X	Early Spring	982	101	765	76	89
Ally 1X	Late Spring	1005	104	952	94	99
Ally 2X	Late Spring	942	97	1035	102	100
Spectrum	Late Spring	831	86	763	75	81
LSD (P=.05)		**200**		**190**		

Table 45. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on New Stands of Hybrid Bromegrass over Four Experiments

Herbicide x Recom. Rate	**Application Timing**	**Edmonton 2004-05 (#HB1)**		**Beaverlodge 2004-05 (#HB2)**		**Edmonton 2005-06 (#HB3)**		**Beaverlodge 2005-06 (#HB4)**		**Average of Expts**
		kg/ha	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**kg/ha**	**% of Check**	**% of Check**
Check		6440	100	11,832	100	8072	100	7166	100	100
Ally 1X	Early Fall	5345	83	10,666	90	6268	78	6958	97	87
Ally 2X	Early Fall	7571	118	11,277	95	7025	87	6874	96	99
Ally 1X	Late Fall	5294	82	12,721	108	6852	85	7166	100	94
Ally 2X	Late Fall	6833	106	11,777	100	6045	75	6833	95	94
Ally 1X	Early Spring	6458	100	11,221	95	6373	79	6958	97	93
Ally 2X	Early Spring	5611	87	11,444	97	6638	82	7291	102	92
Ally 1X	Late Spring	6016	93	11,166	94	8146	101	7166	100	97
Ally 2X	Late Spring	7419	115	11,221	95	7886	98	6416	90	99
Spectrum	Late Spring	6911	107	11,110	94	6048	75	6791	95	93
LSD (P=.05)		**2285**		**2403**		**2198**		**848**		

Table 46. Summary of Forage Dry Weight Yields From Fall versus Spring Application of Ally on Established Stands of Hybrid Bromegrass over Two Experiments

Herbicide x Recom. Rate	Application Timing	Edmonton 2005-06 (#HB5)		Beaverlodge 2005-06 (#HB6)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		7513	100	5421	100	100
Ally 1X	Early Fall	7363	98	4558	84	91
Ally 2X	Early Fall	7900	105	4538	84	94
Ally 1X	Late Fall	8475	113	4641	86	99
Ally 2X	Late Fall	7455	99	4371	81	90
Ally 1X	Early Spring	7755	103	4392	81	92
Ally 2X	Early Spring	7523	100	4246	78	89
Ally 1X	Late Spring	7464	99	3976	73	86
Ally 2X	Late Spring	7982	106	4288	79	93
Spectrum	Late Spring	9043	120	4267	79	100
LSD (P=.05)		**1720**		**699**		

Table 47. Summary of Seed Yields From Fall versus Spring Application of Ally on New Stands of Hybrid Bromegrass over Four Experiments

Herbicide x Recom. Rate	Application Timing	Edmonton 2004-05 (#HB1)		Beaverlodge 2004-05 (#HB2)		Edmonton 2005-06 (#HB3)		Beaverlodge 2005-06 (#HB4)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		2061	100	1823	100	1476	100	752	100	100
Ally 1X	Early Fall	1740	84	1612	88	1442	98	658	88	90
Ally 2X	Early Fall	1979	96	1671	92	1380	93	673	89	93
Ally 1X	Late Fall	1855	90	1880	103	1498	102	692	92	97
Ally 2X	Late Fall	1833	89	1536	84	1410	96	629	84	88
Ally 1X	Early Spring	2111	102	1571	86	1438	97	609	81	92
Ally 2X	Early Spring	1941	94	1924	106	1420	96	627	83	95
Ally 1X	Late Spring	1994	97	1600	88	1488	101	738	98	96
Ally 2X	Late Spring	1964	95	1882	103	1455	99	616	82	95
Spectrum	Late Spring	2115	103	1736	95	1447	98	657	87	96
LSD (P=.05)		**287**		**331**		**194**		**139**		

Table 48. Summary of Seed Yields From Fall versus Spring Application of Ally on Established Stands of Hybrid Bromegrass over Two Experiments

Herbicide x Recom. Rate	Application Timing	Edmonton 2005-06 (#HB5)		Beaverlodge 2005-06 (#HB6)		Average of Expts
		kg/ha	% of Check	kg/ha	% of Check	% of Check
Check		581	100	227	100	100
Ally 1X	Early Fall	740	127	219	97	112
Ally 2X	Early Fall	730	126	247	109	117
Ally 1X	Late Fall	731	126	206	91	108
Ally 2X	Late Fall	692	119	210	93	106
Ally 1X	Early Spring	678	117	226	99	108
Ally 2X	Early Spring	769	132	222	98	115
Ally 1X	Late Spring	730	126	236	104	115
Ally 2X	Late Spring	678	117	228	100	109
Spectrum	Late Spring	722	124	198	87	106
LSD (P=.05)		**104**		**53**		

Summary of Weed Control with Fall versus Spring Herbicide Applications

Table 49. Summary of Dandelion Control (% control calculated from plant counts) in Year of Spring Spraying with Fall versus Spring Herbicide Applications over Four Experiments

Herbicide	Application Timing	Edmonton 2004-05 (#WC1)		Beaverlodge 2004-05 (#WC2)		Edmonton 2005-06 (#WC3)		Beaverlodge 2005-06 (#WC4)		Average of Expts
		#/m^2	% Control	#/m^2	% Control	#/m^2	% Control	#/m^2	% Control	% Control
Check		73	0	39	0	92	0	23	0	0
Ally	Early Fall	10	86	5	87	31	66	0	100	85
Spectrum	Early Fall	10	86	3	92	32	65	4	83	82
Ally	Late Fall	19	74	15	62	27	70	13	43	62
Spectrum	Late Fall	38	48	22	44	26	72	25	0	41
Ally	Early Spring	32	56	16	59	40	57	4	83	64
Spectrum	Early Spring	61	15	26	33	59	36	16	30	37
Ally	Late Spring	5	93	0	100	5	95	6	74	91
Spectrum	Late Spring	17	76	20	49	19	79	5	78	71
LSD (P=.05)		**27.1**		**12.5**		**25.3**		**7.6**		

Table 50. Summary of Dandelion Control (% control calculated from dandelion dry weight yields harvested in the year of spring spraying) with Fall versus Spring Herbicide Applications over Two Experiments

Herbicide	Application Timing	Edmonton 2004-05 (#WC1)		Edmonton 2005-06 (#WC3)		Average of Expts
		Dry Wt g//m^2	% Control	Dry Wt g//m^2	% Control	% Control
Check		16.7	0	24.7	0	0
Ally	Early Fall	1.0	94	6.9	72	83
Spectrum	Early Fall	0.7	96	12.6	49	73
Ally	Late Fall	1.5	91	5.6	77	84
Spectrum	Late Fall	12.0	28	10.0	60	44
Ally	Early Spring	4.1	75	10.6	57	66
Spectrum	Early Spring	20.7	0	33.4	0	0
Ally	Late Spring	0.5	97	0.5	98	98
Spectrum	Late Spring	1.8	89	3.9	84	87
LSD (P=.05)		**5.9**		**7.5**		

Table 51. Summary of Dandelion Control (% control using the last visual assessment in the year of spring spraying and in the following year) with Fall versus Spring Herbicide Applications over Four Experiments

Herbicide	Application Timing	Edmonton 2004-05 (#WC1)		Beaverlodge 2004-05 (#WC2)		Edmonton 2005-06 (#WC3)		Beaverlodge 2005-06 (#WC4)		Average of Expts	
		Aug-26-05	June-2-06	Sept-30-05	Aug-22-06	May-26-06	Sept-24-07	Oct-6-06	June-25-07	In Year of Spraying	In Year After Spraying
Check		0	0	0	0	0	0	0	0	0	0
Ally	Early Fall	88	88	84	88	86	71	79	74	88	80
Spectrum	Early Fall	90	89	73	80	80	61	70	78	80	77
Ally	Late Fall	83	61	51	55	84	64	58	50	65	58
Spectrum	Late Fall	64	46	38	36	85	51	39	30	55	41
Ally	Early Spring	59	56	58	46	85	65	48	48	64	54
Spectrum	Early Spring	31	1	38	28	81	39	53	10	47	20
Ally	Late Spring	94	84	88	66		79	79	5	88	59
Spectrum	Late Spring	70	43	54	38		51	65	20	61	38

Table 52. Summary of Alsike Control (% control using the last visual assessment in the year of spring spraying and in the following year) with Fall versus Spring Herbicide Applications over Four Experiments

Herbicide	Application Timing	Edmonton 2004-05 (#WC1)	Beaverlodge 2004-05 (#WC2)	Edmonton 2005-06 (#WC3)	Beaverlodge 2005-06 (#WC4)	Average of Expts

		Aug-26-05	June-2-06	Sept-30-05	Aug-22-06	May-26-06	Sept-24-07	Oct-6-06	June-25-07	In Year of Spraying	In Year After Spraying
Check		0	0	0	0	0	0	0	0	0	0
Ally	Early Fall	94	80	99	100	100	44	99	100	98	81
Spectrum	Early Fall	91	55	95	99	100	66	100	100	97	80
Ally	Late Fall	99	78	78	66	100	55	70	60	87	65
Spectrum	Late Fall	98	93	94	99	100	83	100	100	98	94
Ally	Early Spring	96	95	69	41	91	44	53	28	77	52
Spectrum	Early Spring	86	75	90	100	99	95	93	60	92	83
Ally	Late Spring	100	94	93	99		85	83	75	92	88
Spectrum	Late Spring	99	94	98	100		96	100	94	99	96

Bar Graphs of Grass Tolerance and Weed Control

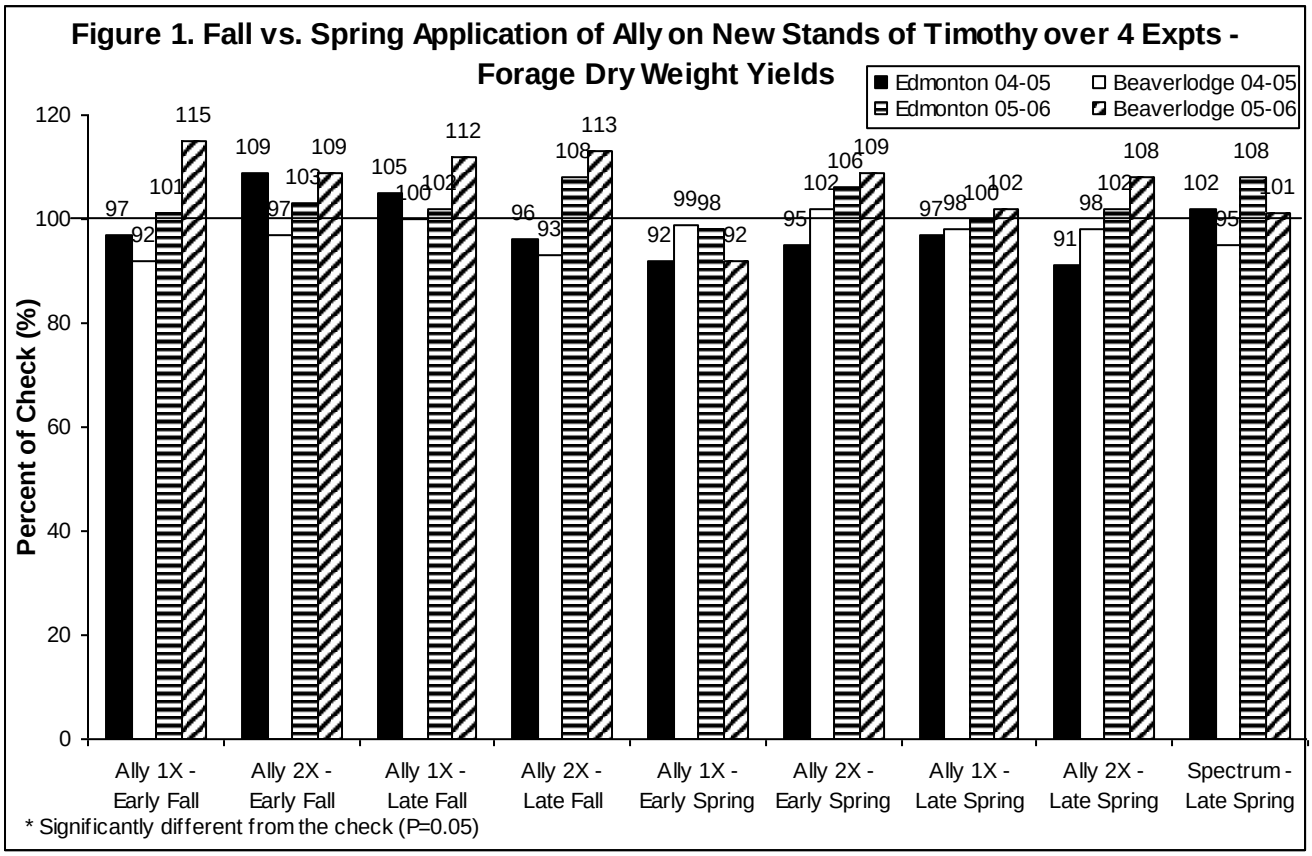


Figure 1. Fall vs. Spring Application of Ally on New Stands of Timothy over 4 Expts - Forage Dry Weight Yields
Edmonton 04-05
Beaverlodge 04-05
Edmonton 05-06
Beaverlodge 05-06
Percent of Check (%)
0
20
40
60
80
100
120
97 92 101 115
109 97 103 109
105 100 102 112
96 93 108 113
92 99 98 92
95 102 106 109
97 98 100 102
91 98 102 108
102 95 108 101
Ally 1X - Early Fall
Ally 2X - Early Fall
Ally 1X - Late Fall
Ally 2X - Late Fall
Ally 1X - Early Spring
Ally 2X - Early Spring
Ally 1X - Late Spring
Ally 2X - Late Spring
Spectrum - Late Spring
* Significantly different from the check (P=0.05)

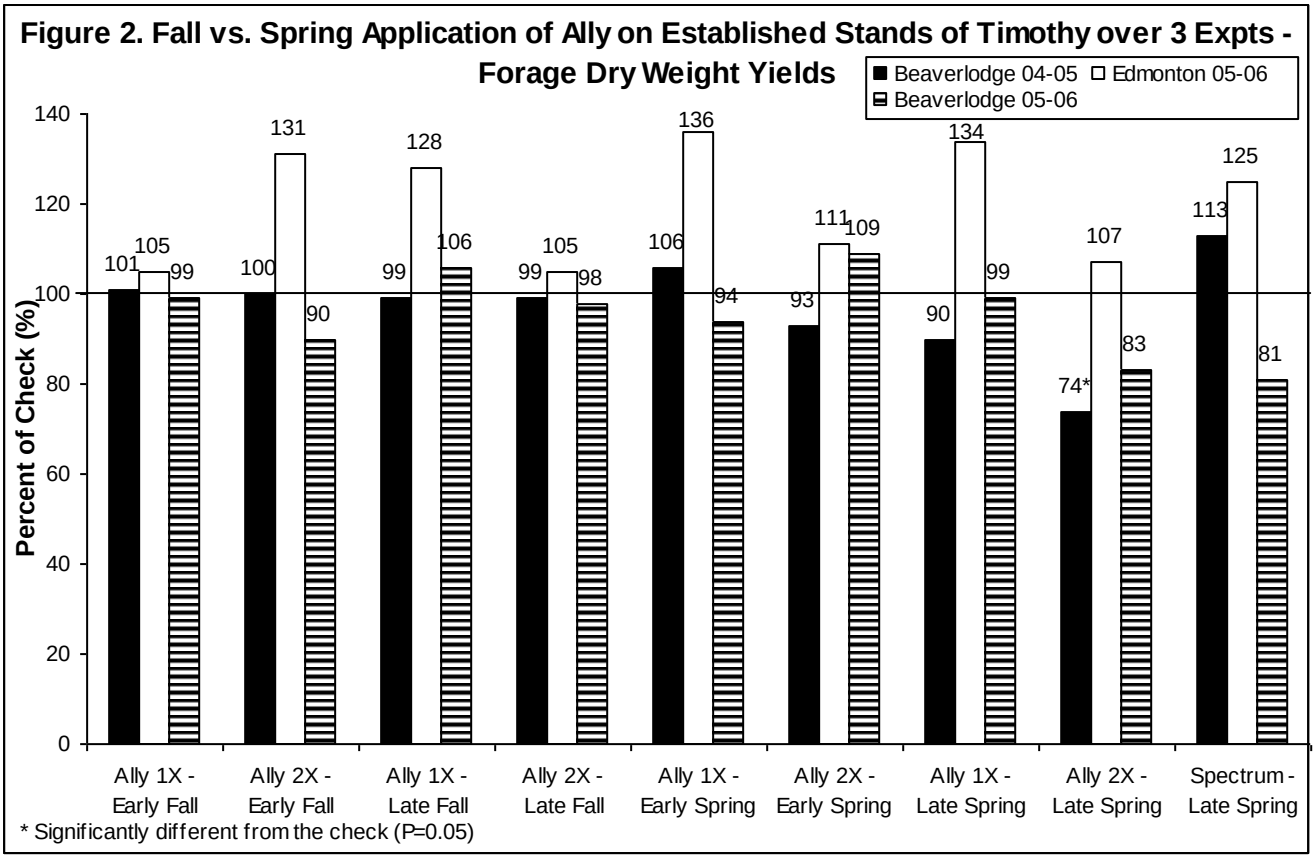
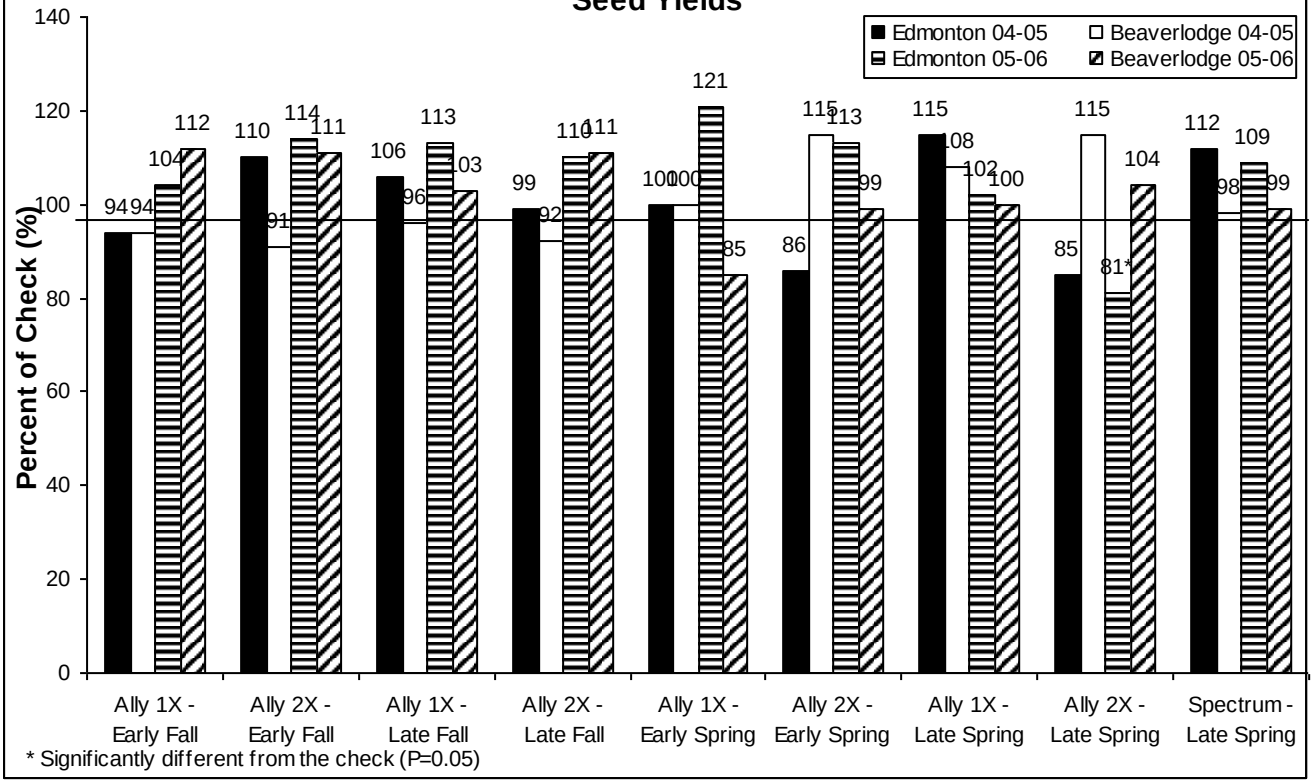


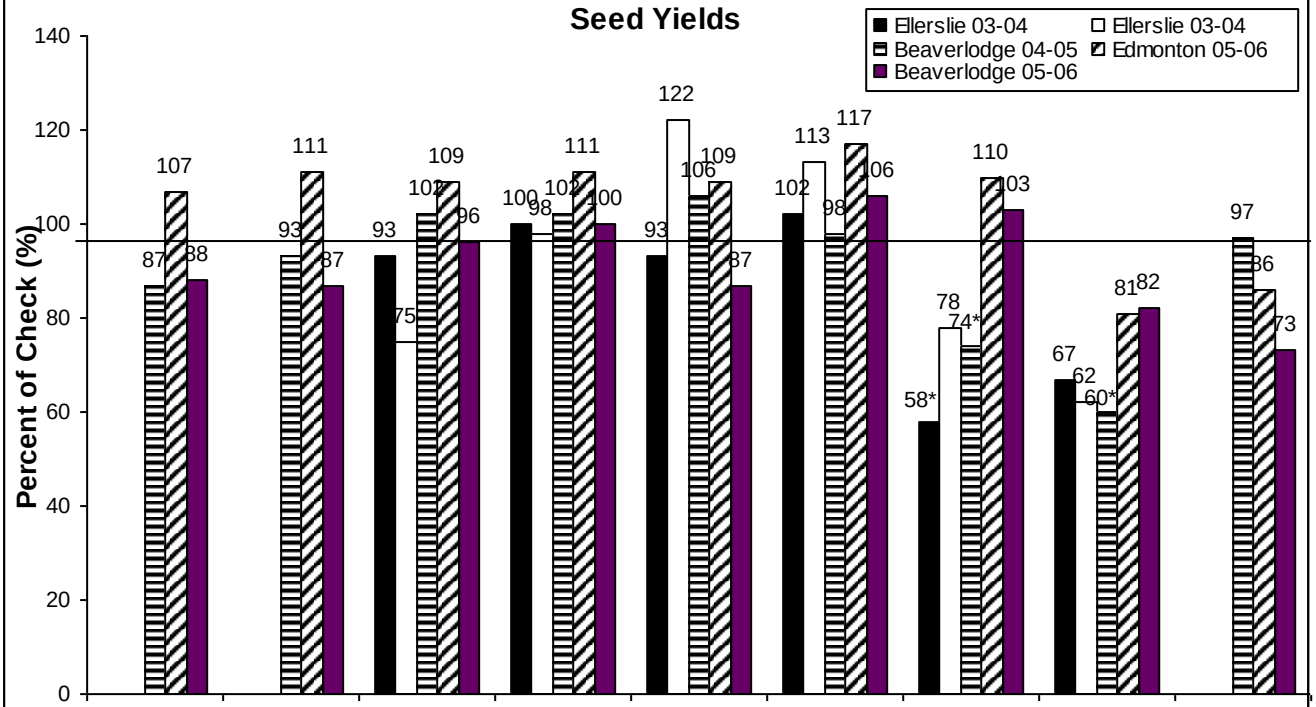
Figure 2. Fall vs. Spring Application of Ally on Established Stands of Timothy over 3 Expts - Forage Dry Weight Yields
Beaverlodge 04-05
Edmonton 05-06
Beaverlodge 05-06
Percent of Check (%)
0
20
40
60
80
100
120
140
101 105 99
100 131 90
99 128 106
99 105 98
106 136 94
93 111 109
90 134 99
74* 107 83
113 125 81
Ally 1X - Early Fall
Ally 2X - Early Fall
Ally 1X - Late Fall
Ally 2X - Late Fall
Ally 1X - Early Spring
Ally 2X - Early Spring
Ally 1X - Late Spring
Ally 2X - Late Spring
Spectrum - Late Spring
* Significantly different from the check (P=0.05)

Figure 3. Fall vs. Spring Application of Ally on New Stands of Timothy over 4 Expts - Seed Yields



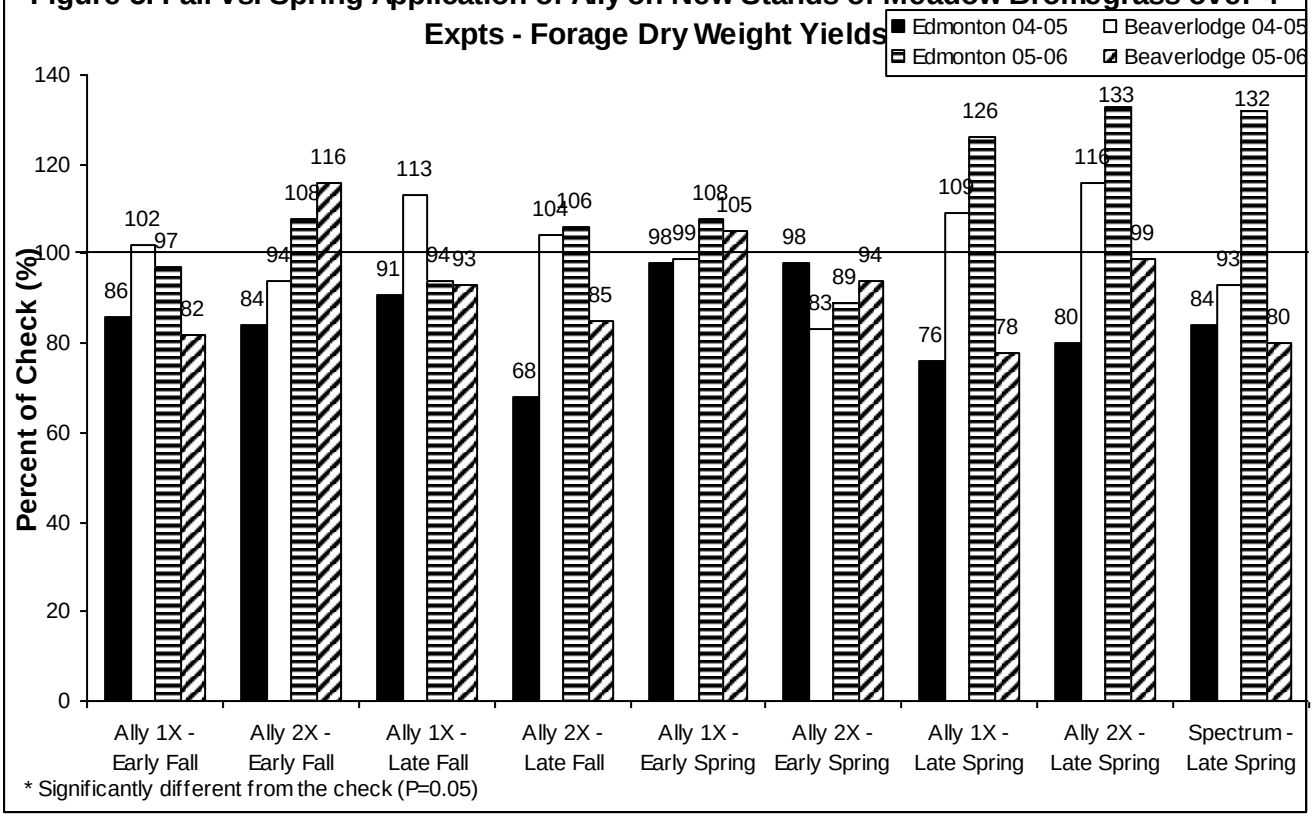
* Significantly different from the check (P=0.05)

Figure 4. Fall vs. Spring Application of Ally on Established Stands of Timothy over 5 Expts - Seed Yields



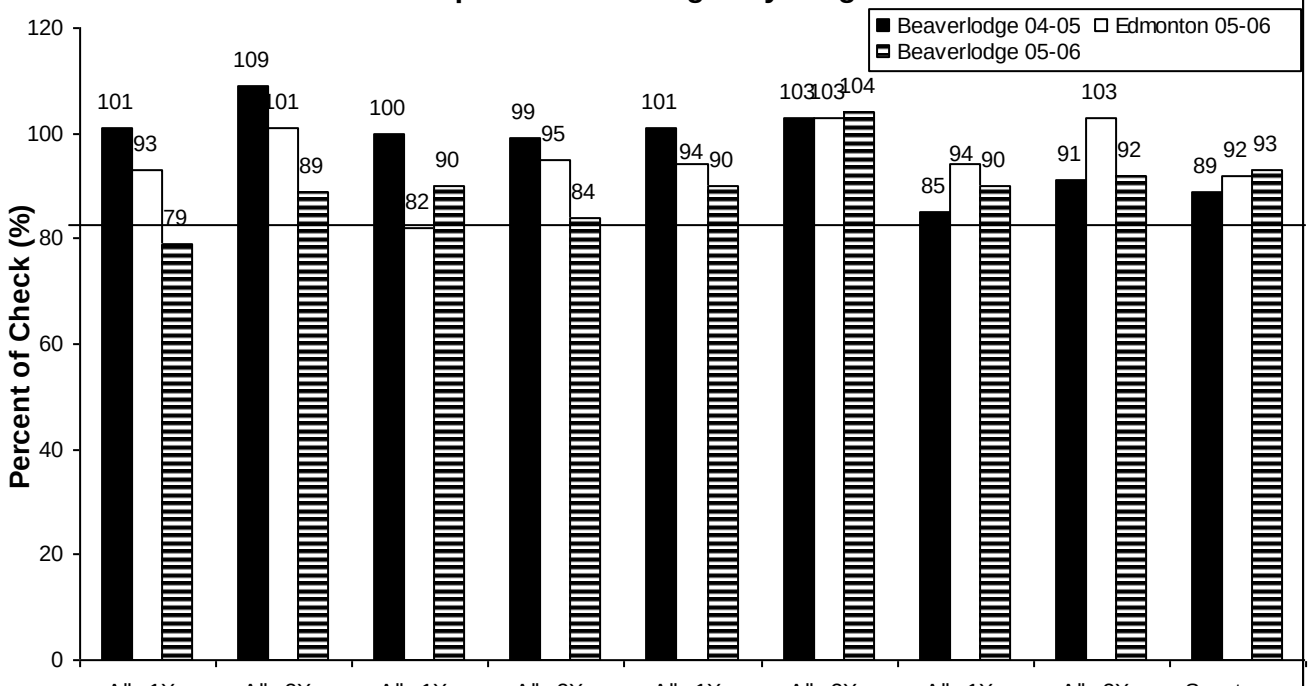
* Significantly different from the check (P=0.05)

Figure 5. Fall vs. Spring Application of Ally on New Stands of Meadow Bromegrass over 4 Expts - Forage Dry Weight Yields



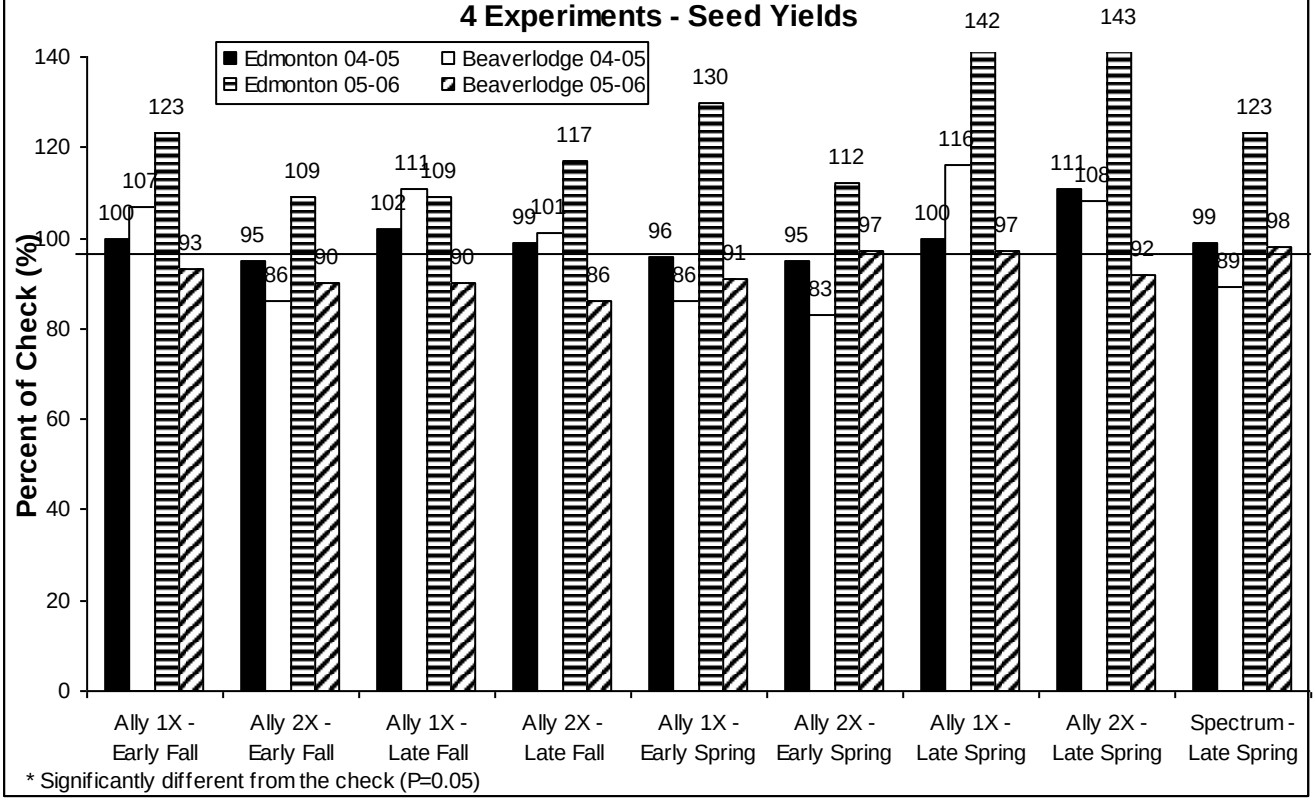
* Significantly different from the check (P=0.05)

Figure 6. Fall vs. Spring Application of Ally on Established Stands of Meadow Bromegrass over 3 Experiments - Forage Dry Weight Yields



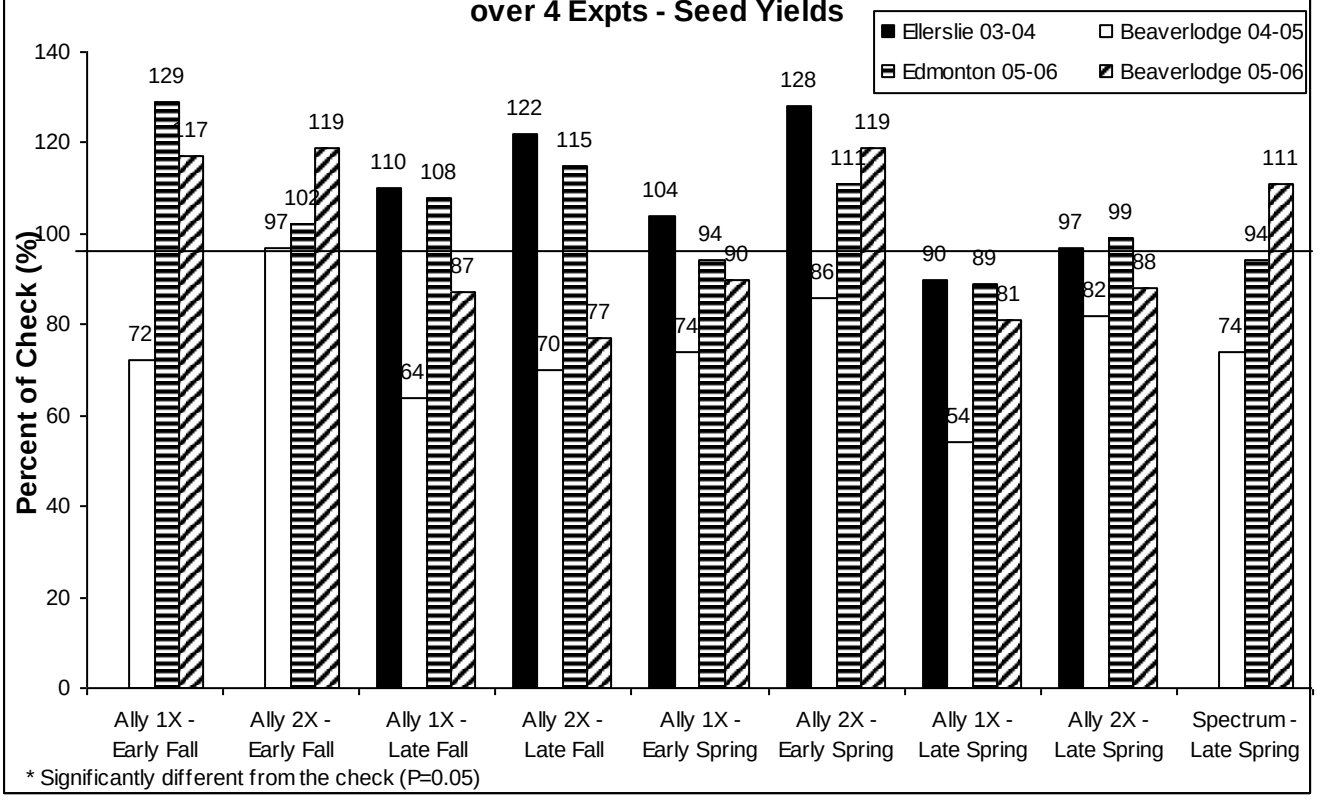
* Significantly different from the check (P=0.05)

Figure 7. Fall vs. Spring Application of Ally on New Stands of Meadow Bromegrass over 4 Experiments - Seed Yields



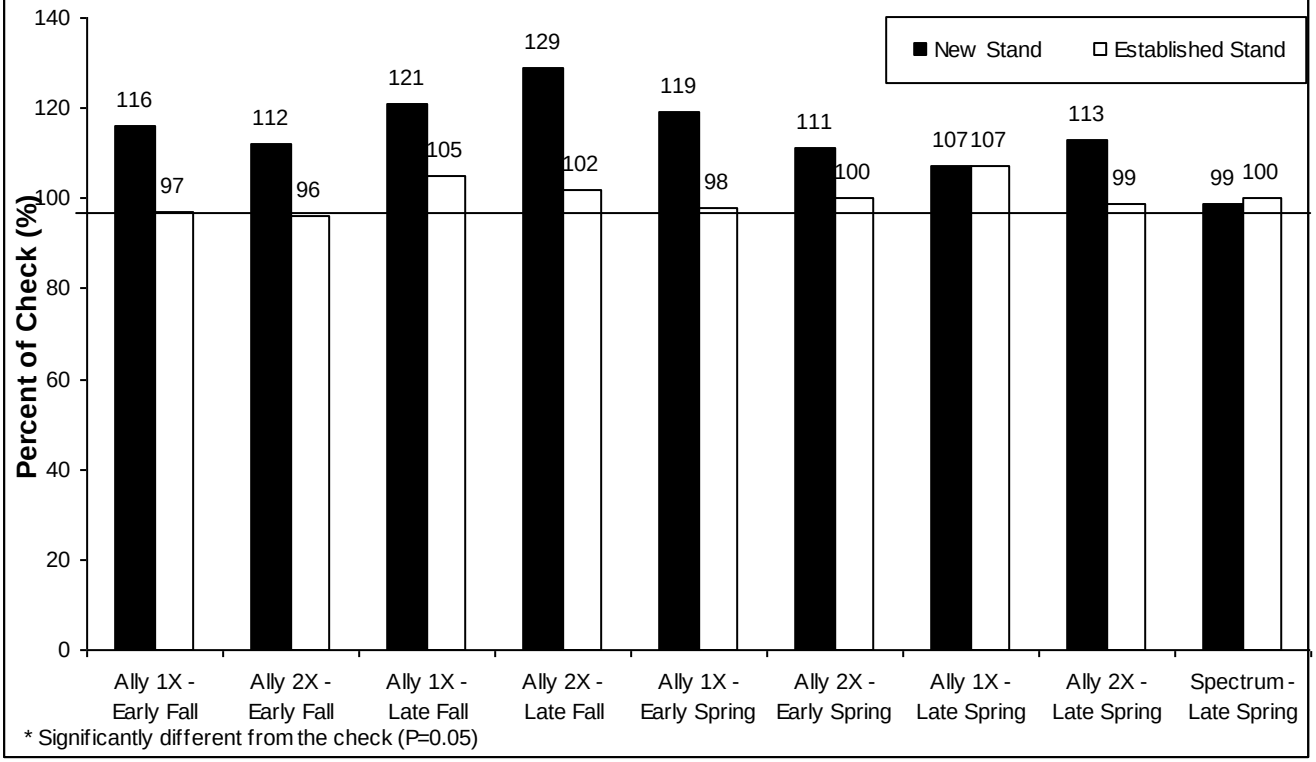
* Significantly different from the check (P=0.05)

Figure 8. Fall vs. Spring Application of Ally on Established Stands of Meadow Bromegrass over 4 Expts - Seed Yields



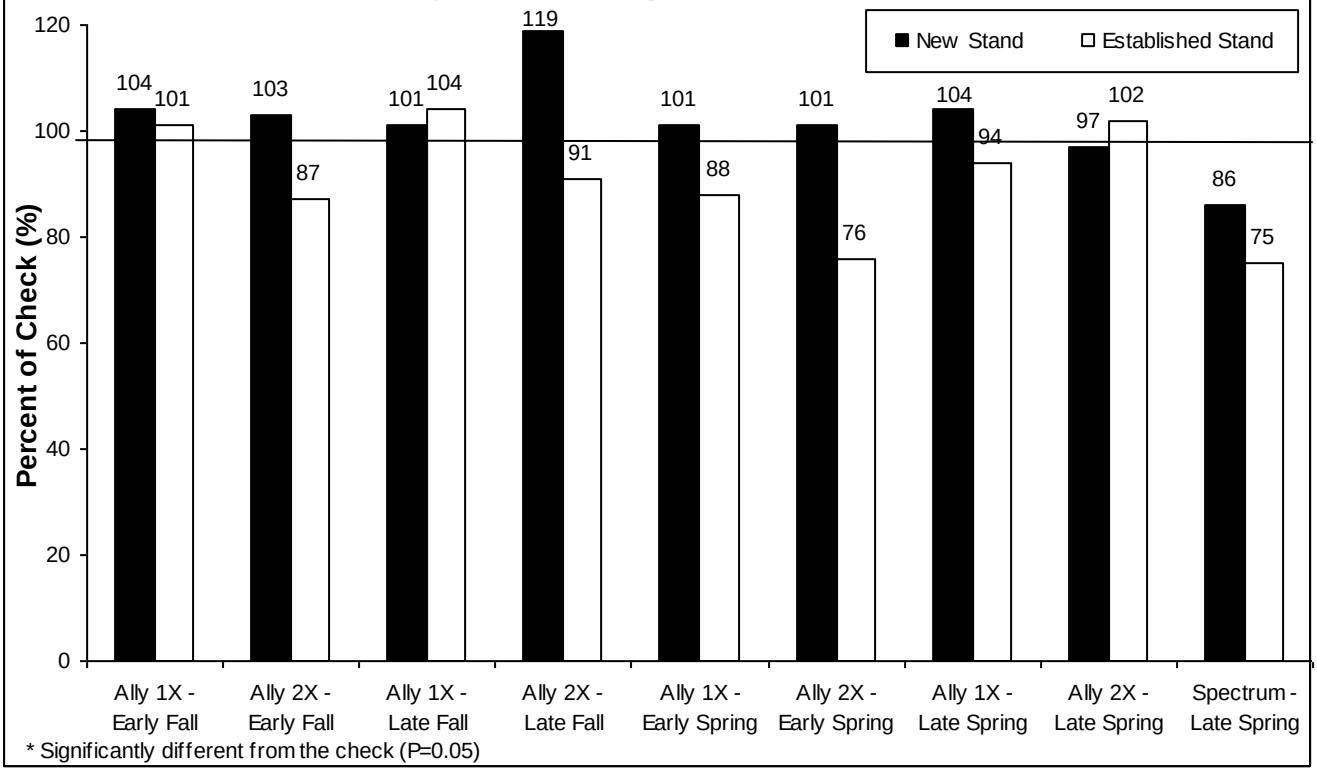
* Significantly different from the check (P=0.05)

Figure 9. Fall vs. Spring Application of Ally on New & Established Stands of Smooth Bromegrass over 2 Experiments - Forage Dry Weight Yields



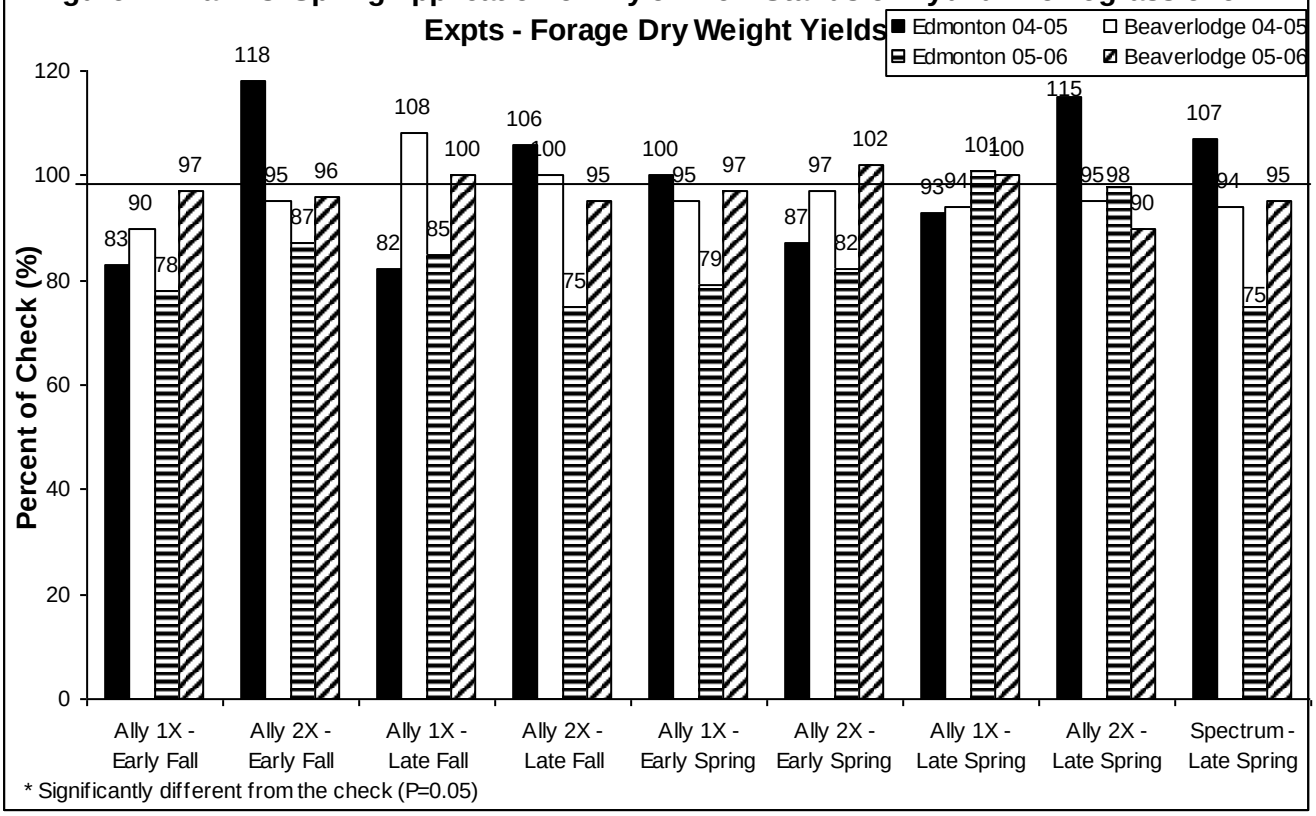
* Significantly different from the check (P=0.05)

Figure 10. Fall vs. Spring Application of Ally on New & Established Stands of Smooth Bromegrass over 2 Experiments - Seed Yields



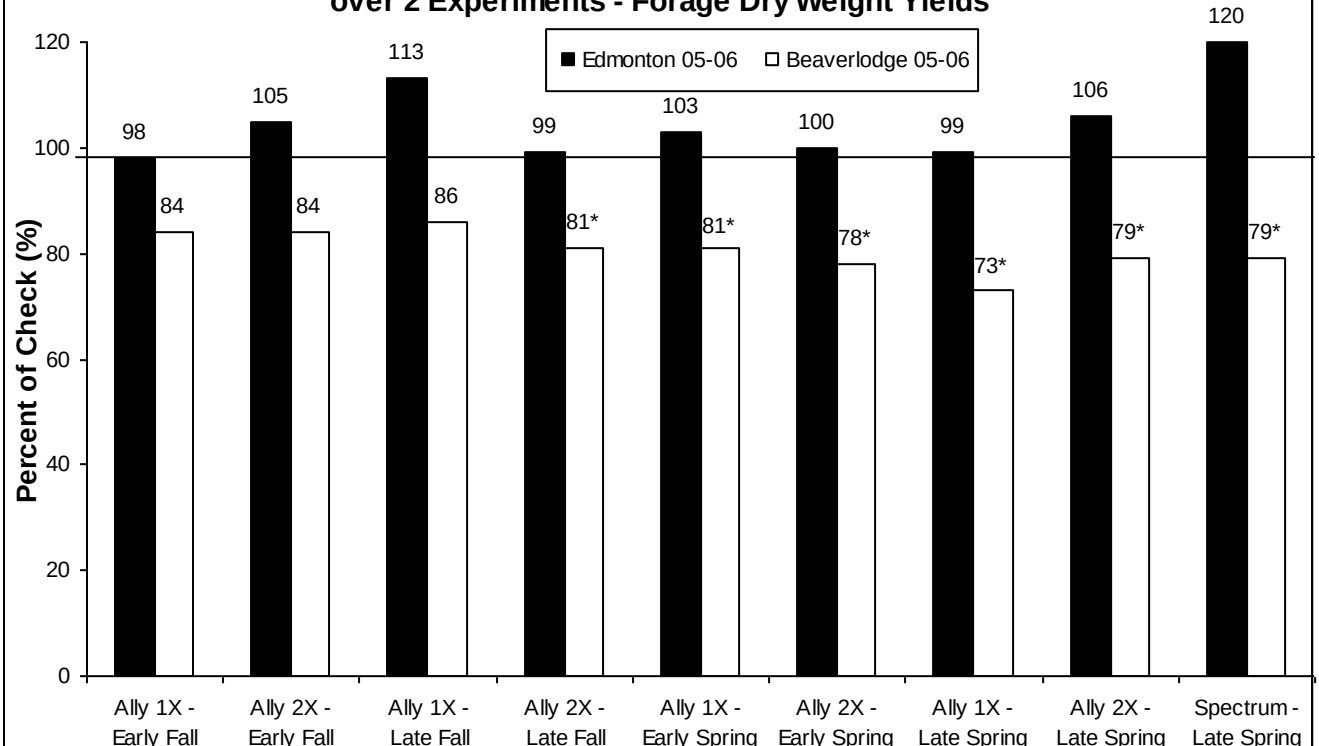
* Significantly different from the check (P=0.05)

Figure 11. Fall vs. Spring Application of Ally on New Stands of Hybrid Bromegrass over 4 Expts - Forage Dry Weight Yields



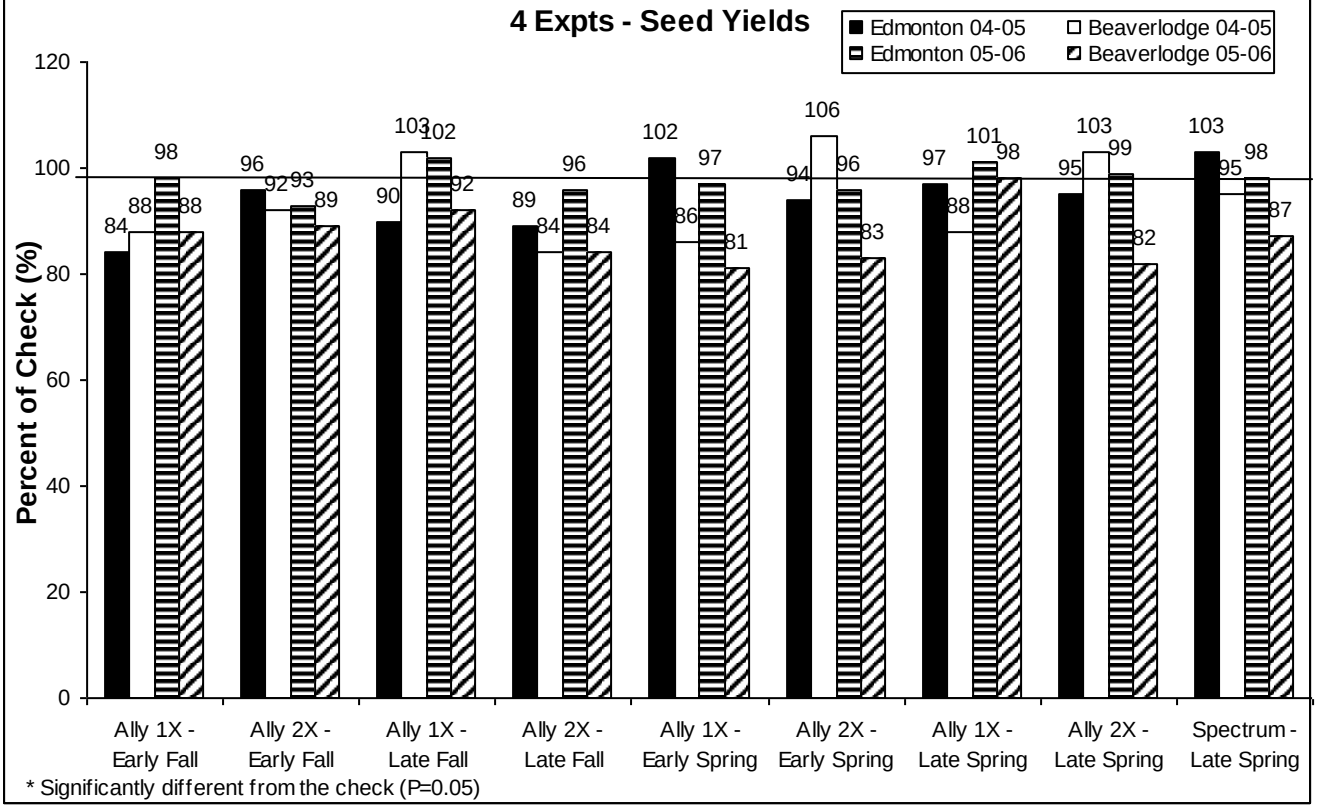
* Significantly different from the check (P=0.05)

Figure 12. Fall vs. Spring Application of Ally on Established Stands of Hybrid Bromegrass over 2 Experiments - Forage Dry Weight Yields



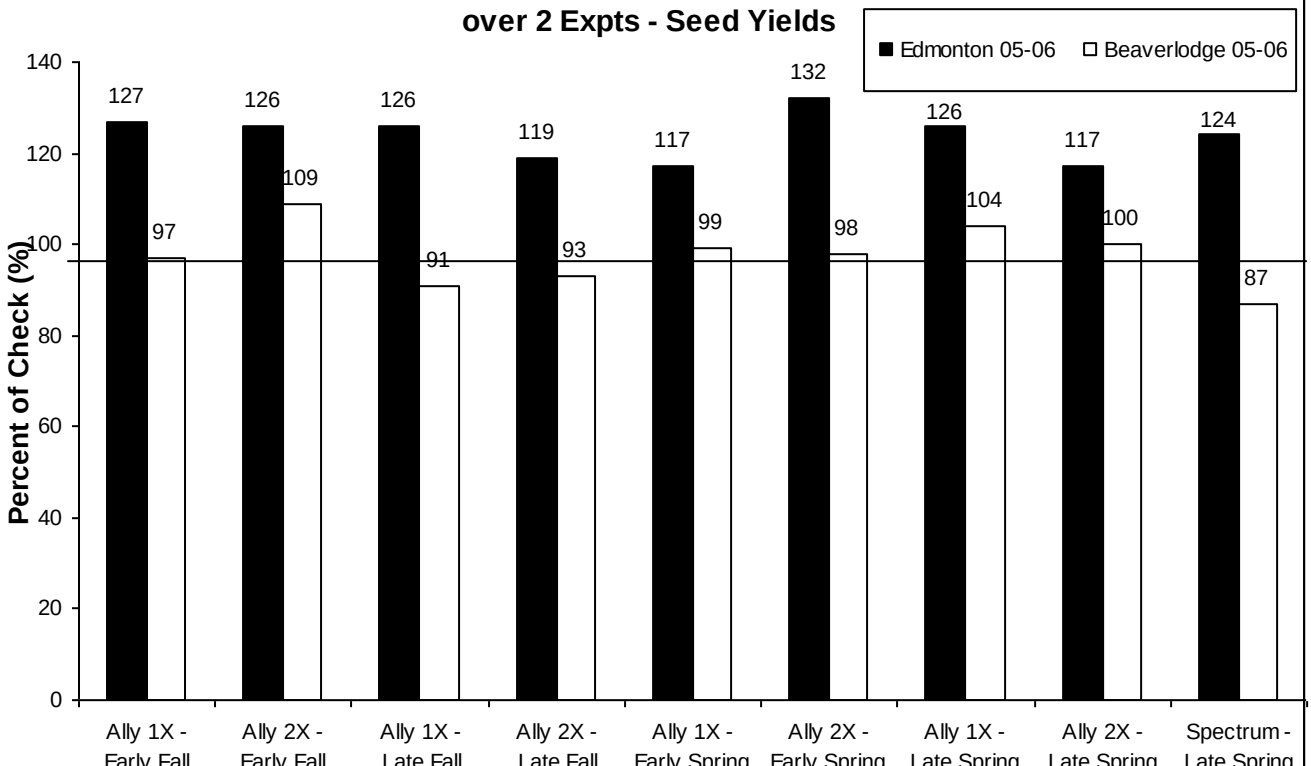
* Significantly different from the check (P=0.05)

Figure 13. Fall vs. Spring Application of Ally on New Stands of Hybrid Bromegrass over 4 Expts - Seed Yields



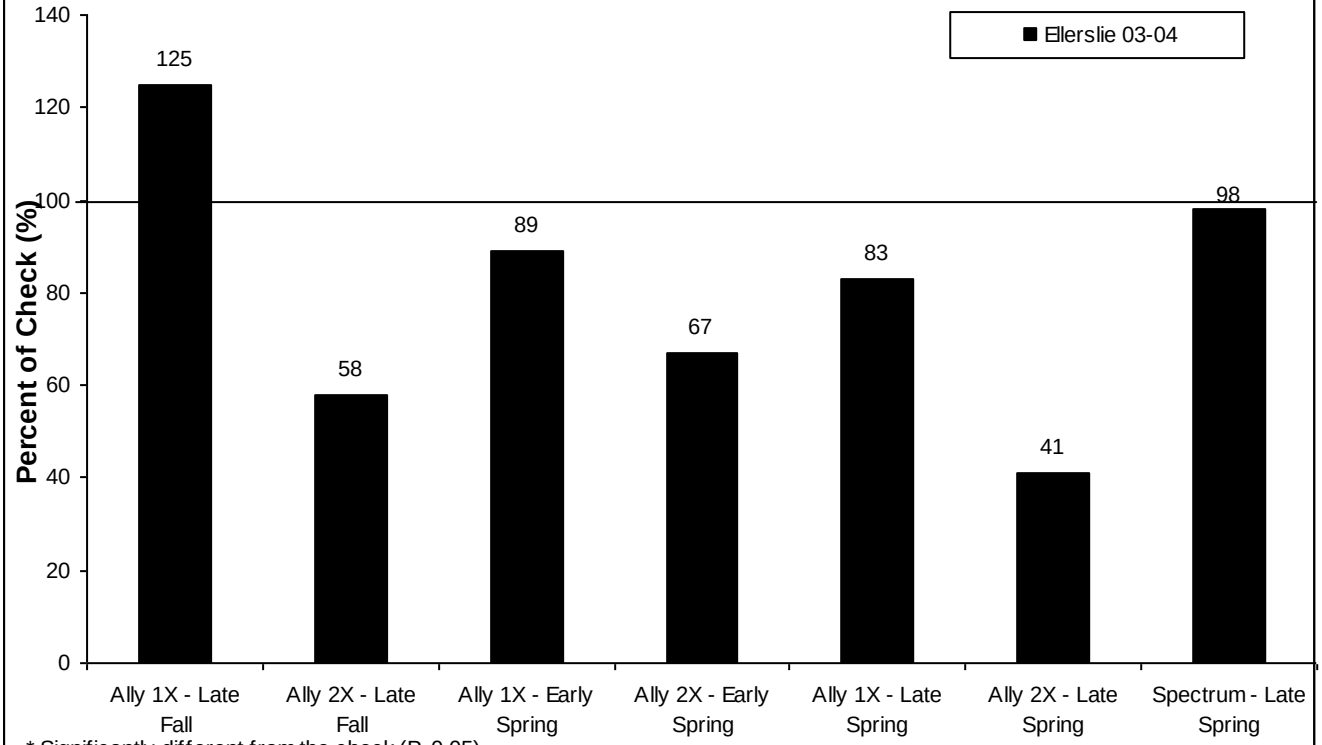
* Significantly different from the check (P=0.05)

Figure 14. Fall vs. Spring Application of Ally on Established Stands of Hybrid Bromegrass over 2 Expts - Seed Yields



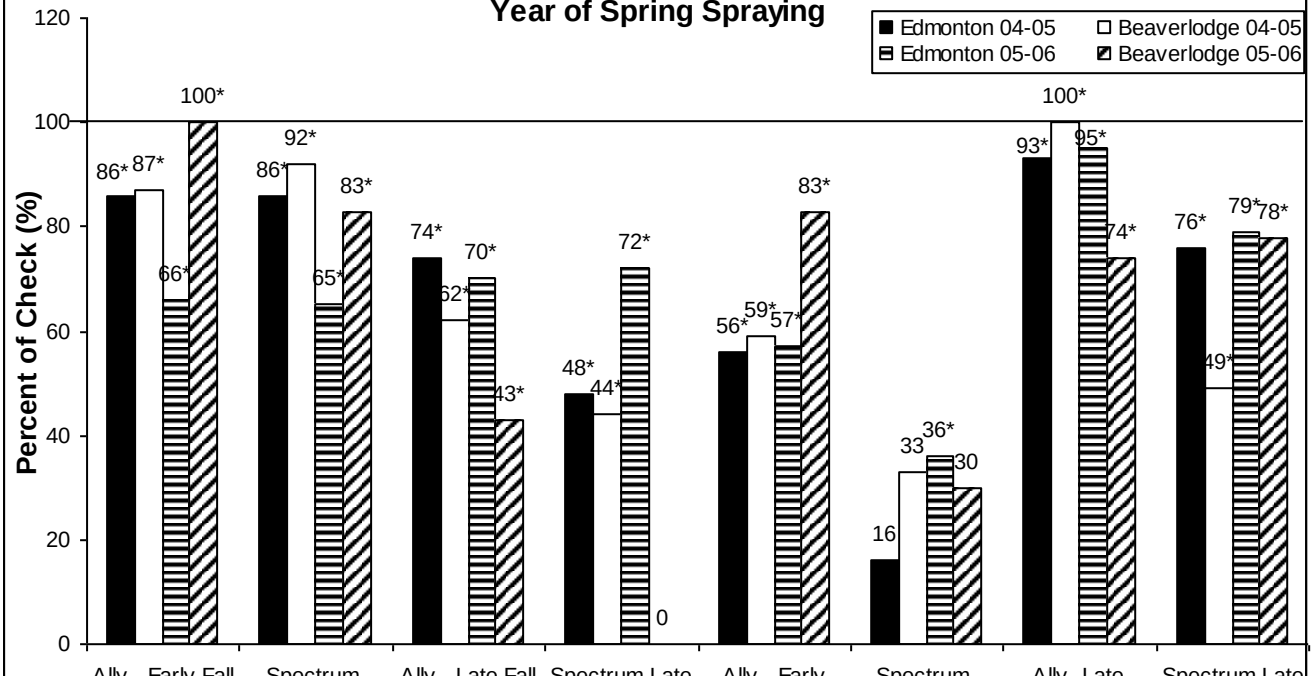
* Significantly different from the check (P=0.05)

Figure 15. Fall vs. Spring Application of Ally on Established Stand of Tall Fescue - Seed Yields



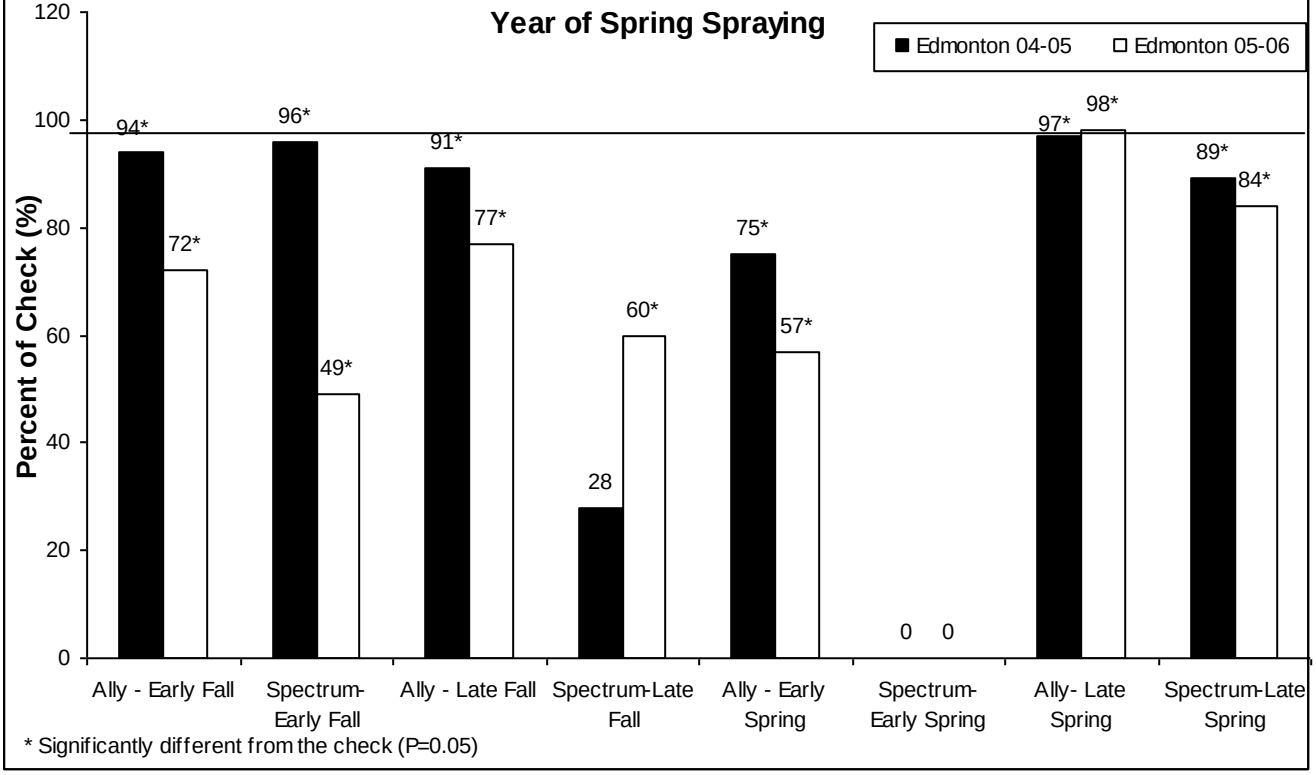
* Significantly different from the check (P=0.05)

Figure 16. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 4 Experiments - Dandelion % Control Using Dandelion Plant Counts in Year of Spring Spraying



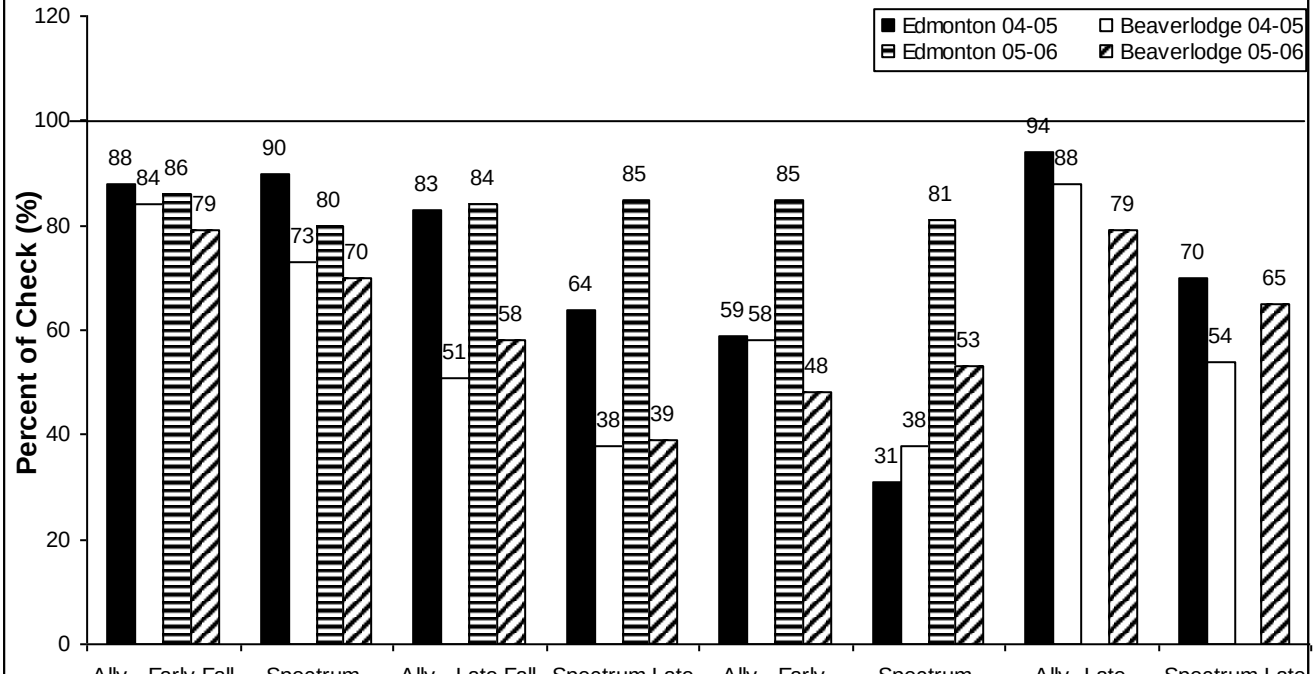
* Significantly different from the check (P=0.05)

Figure 17. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 2 Experiments - Dandelion % Control Using Dandelion Leaf Dry Weight in Year of Spring Spraying



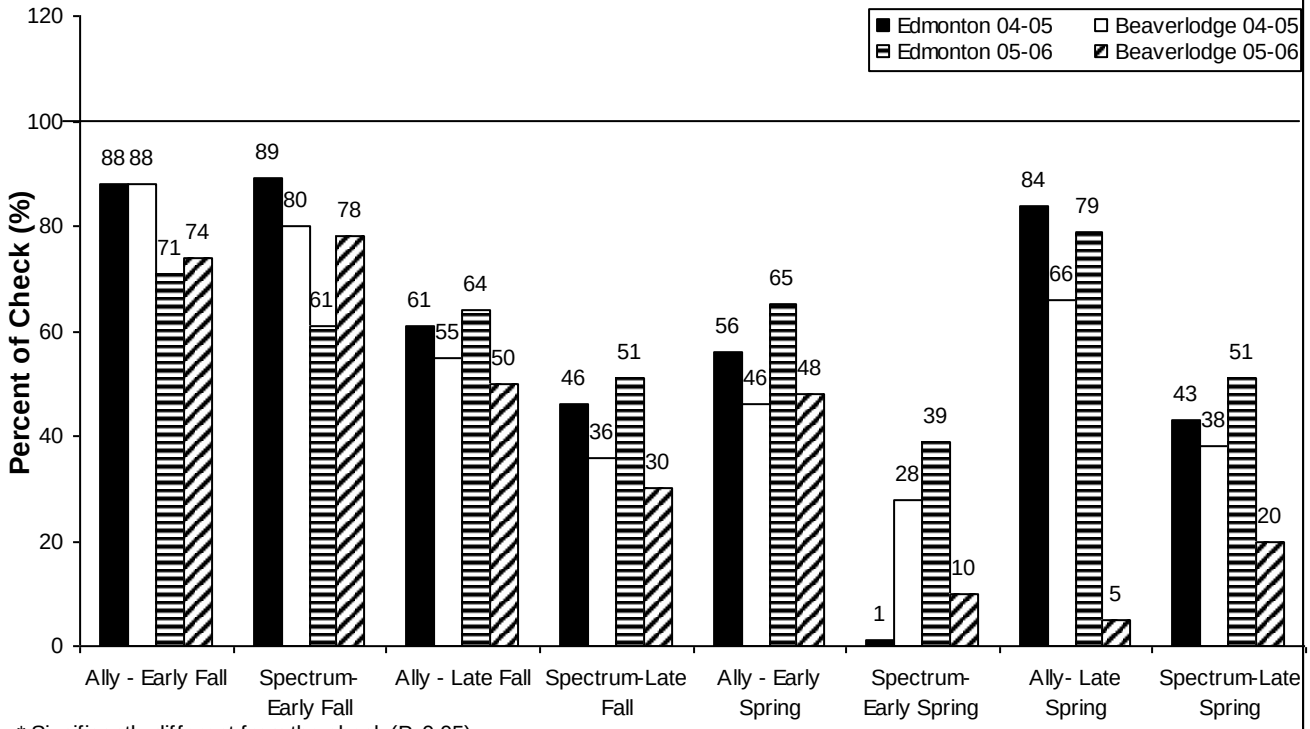
* Significantly different from the check (P=0.05)

Figure 18. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 4 Experiments - Dandelion Visual % Control in Year Of Spring Spraying



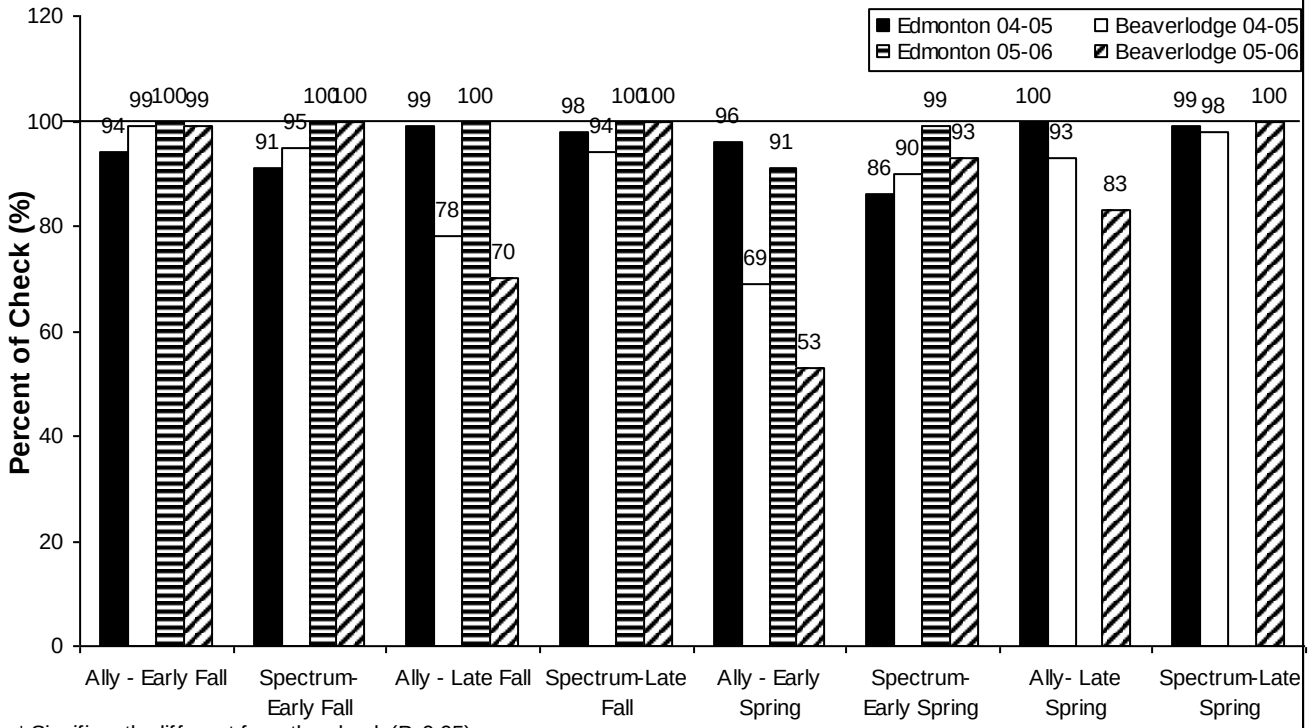
* Significantly different from the check (P=0.05)

Figure 19. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 4 Experiments - Dandelion Visual % Control One Year After Spring Spraying



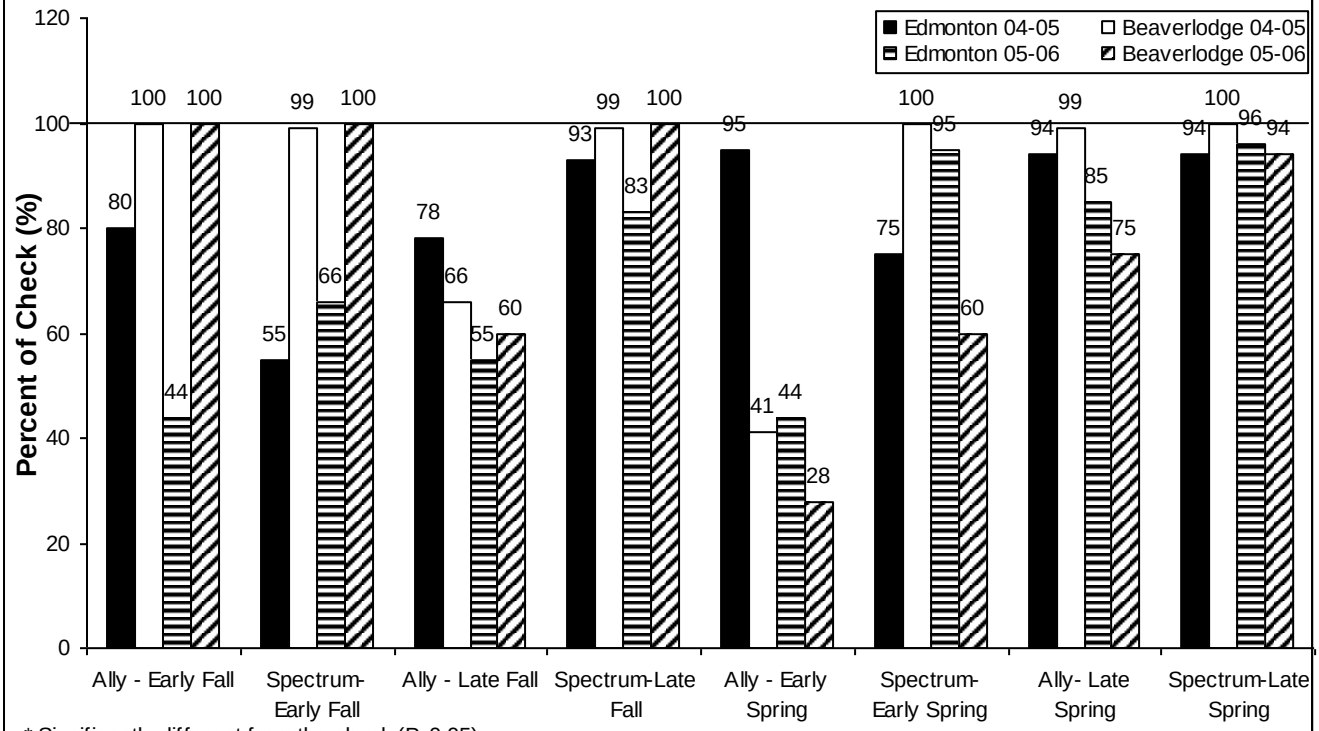
* Significantly different from the check (P=0.05)

Figure 20. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 4 Experiments - Alsike Clover Visual % Control in Year Of Spring Spraying



* Significantly different from the check (P=0.05)

Figure 21. Fall vs. Spring Application of Ally and Spectrum on Grass Land for Weed Control over 4 Experiments - Alsike Clover Visual % Control One Year After Spring Spraying



* Significantly different from the check (P=0.05)

Plate 1. Established timothy with Ally applied in the late spring on the left and untreated check on the right.

Plate 2. Established timothy with herbicides applied in the late spring: Ally 1x recommended rate on the left, Ally 2x in the middle and Spectrum 1x on the right.

Plate 3. Established meadow bromegrass with Ally applied in the late spring on the left and untreated check on the right.

Plate 4. Established meadow bromegrass with Ally applied in the late fall on the left, in the late spring in the middle and in the early fall on the right.

Plate 5. Dandelion control with early fall applied Ally on the left and untreated check on the right.

Plate 6. Alsike clover control with untreated check on the left and early fall applied Ally on the right.

APPENDIX
Canadian Weed Science Society Research Reports

Fall vs. Spring Application of Ally on a New Stand of Timothy – Edmonton – 04/05 (Expt. #T1)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food
Experiment ID: FvsS TimothyS04
2004-05 Experiment

CROP: PHLPR Climax Timothy 2.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C
D								
Date	: Sep-13-2004	Oct-14-2004	Apr-25-2005	May-27-2005				
Time of Day:	11:30 am	9:00 am	11:00 am	9:45 am	Crop 1	PHLPR	Timothy	
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage:	Cut @ 10 cm in Fall		
'04								
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				4 lf
6 lf	Placement	: SURFACE	SURFACE	SURFACE	SURFACE		Height:	9cm
22cm	15cm	43cm						
Air Temp.	: 14 C	10 C	17 C	16 C				
% Humidity	: 64	42	34	42				
Wind Speed	: 5 KPH	5 KPH	5 KPH	5 KPH				
Dew Present	: y	n	n	y				
Cloud Cover	: 0%	100%	0%	0%				
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type	: TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size	: 80015XR	80015XR	80015XR	80015XR				
Noz.Spacing	: 50 CM	50 CM	50 CM	50 CM				
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height	: 45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crops.

Crop Code						PHLPR	PHLPR
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						Oct-14-2004	Apr-22-2005
Trt-Eval Interval						31/0/0/0 DAA	221/190/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	16	0

	Agral 90			0.2	% V/V		
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	25	0
	Agral 90			0.2	% V/V		
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		10
	Agral 90			0.2	% V/V		
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		15
	Agral 90			0.2	% V/V		
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V		
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V		
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V		
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V		
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING		
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							PHLPR	PHLPR
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							Jun-15-2005	Jul-21-2005
Trt-Eval Interval							275/244/51/ 19 DAA	311/280/87/ 55 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	25	10
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	30	19
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	20	14
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							PHLPR	PHLPR
Part Rated							FORAGE	SEED
Rating Data Type							WEIDRY	YIELD
Rating Unit							kg/ha	KG/HA
Rating Date							Jul-13-2005	Aug-12-2005
Trt-Eval Interval							303/272/79/49 DAA	333/302/109/77 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						6299 a (100%)	984 a (100%)

2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	6103 a	921 a
	Agral 90			0.2	% V/V		(97%)	(94%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	6881 a	1084 a
	Agral 90			0.2	% V/V		(109%)	(110%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	6602 a	1048 a
	Agral 90			0.2	% V/V		(105%)	(106%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	6021 a	971 a
	Agral 90			0.2	% V/V		(96%)	(99%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	5792 a	986 a
	Agral 90			0.2	% V/V		(92%)	(100%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	5966 a	844 a
	Agral 90			0.2	% V/V		(95%)	(86%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	6111 a	1130 a
	Agral 90			0.2	% V/V		(97%)	(115%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	5751 a	837 a
	Agral 90			0.2	% V/V		(91%)	(85%)
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	6403 a	1100 a
	clopyralid	50	EC	0.075	KG A/HA		(102%)	(112%)
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							1328.56	229.5
Standard Deviation							915.63	158.2
CV							14.79	15.97
Bartlett's X2							9.268	6.558
P(Bartlett's X2)							0.413	0.683
Treatment F							0.609	1.666
Treatment Prob(F)							0.7783	0.1466

Crop Code							PHLPR	PHLPR
Part Rated							SEED	SEED
Rating Data Type							1000 kwt	GERMIN
Rating Unit							grams	percent
Rating Date								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						0.6 a	95 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0.6 a	95 a
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0.6 a	95 a
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0.6 a	93 a
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0.5 a	94 a
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0.4 a	95 a
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0.5 a	93 a
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0.5 a	93 a
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0.5 a	91 a
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	0.5 a	94 a
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							0.14	4.6
Standard Deviation							0.09	3.2
CV							18.31	3.39
Bartlett's X2							15.923	7.533
P(Bartlett's X2)							0.044*	0.582

Treatment F	1.656	0.625
Treatment Prob(F)	0.1493	0.7653

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally applied early fall, late fall, early spring or late spring to established timothy did not cause a significant forage dry weight yield, seed yield, 1000 kernel weight or % germination reduction. The timothy that was sprayed with Ally at twice the recommended rate in the early spring and late spring had the lowest seed yields, although not significant.

Fall vs. Spring Application of Ally on a New Stand of Timothy – Beaverlodge - 04/05 (Expt. #T2)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS Timothy S04-05 Bldg**
Alberta Agriculture and Food, Smoky Applied Research and Demonstration Association and Agriculture and Agri-Food Canada
2004-05 Experiment

CROP: PHLPR, TIMOTHY (Climax). 5.0 kg/ha. Planted: Jun-18-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: November 4, 2004 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION				
Application:	A	B	C	D	Application:	A	B	C	D
Date :	13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005	Crop 1 PHLPR Timothy				
Time of Day:	1:30 pm	10:30 am	9:15 am	10:15 am	Stage:	vegetative	shot		
Method :	SPRAY	SPRAY	SPRAY	SPRAY					blade
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING	Height:	12cm	20cm	10cm	40cm
Placement :	SURFACE	SURFACE	SURFACE	SURFACE					
Air Temp. :	17 C	10 C	11 C	12 C					
% Humidity :	40	75	50						
Wind Speed :	2 MPH	0 MPH	3 MPH	0 MPH					
Dew Present:	n								
Soil Moist.:	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE					
Cloud Cover:	60%	80%	80%	0%					
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC					
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa					
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet					
Nozzle Size:	XR80015	XR80015	XR80015	XR80015					
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm					
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M					
Boom Height:	45 cm	45 cm	45 cm	45 cm					
Carrier :	Water	Water	Water	Water					
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA					
Propellant :	Propane	Propane	Propane	Propane					

Comments: Yields were collected on August 17, 2005 by harvesting 3 m^2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code	PHLPR	PHLPR
Part Rated	TOPGROW	TOPGROW
Rating Data Type	VISINJ	VISINJ
Rating Unit	percent	percent
Rating Date	14/Oct/2004	5/May/2005
Trt-Eval Interval	31/0/0/0	234/203/0/

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	DAA	0 DAA
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	3	1
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	8	5
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		1
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		14
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

							PHLPR TOPGROW VISINJ percent 20/May/2005 249/218/15/ 0 DAA	PHLPR TOPGROW VISINJ percent 6/Jun/2005 266/235/32 /11 DAA
Crop Code								
Part Rated								
Rating Data Type								
Rating Unit								
Rating Date								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	4
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	3
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	8	5
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		14
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		25
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		0
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

							PHLPR TOPGROW VISINJ percent 20/Jun/2005 280/249/6/25 DAA	PHLPR TOPGROW VISINJ percent 4/Aug/2005 325/294/91 /70 DAA
Crop Code								
Part Rated								
Rating Data Type								
Rating Unit								
Rating Date								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		

No.	Name	Conc	Type	Rate	Rate Unit	Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	0
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	1	3
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	13	8
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	30	19
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	1	0
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code							PHLPR	PHLPR
Part Rated							FORAGE	SEED
Rating Data Type							WEIDRY	YIELD
Rating Unit							kg/ha	kg/ha
Rating Date							17/Aug/2005	17/Aug/2005
Trt-Eval Interval							338/307/104 /83 DAA	338/307/104 /83 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						11332 a	1177 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	10388 a	1102 a
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	10943 a	1075 a
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	11277 a	1133 a
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	10555 a	1080 a
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	11221 a	1176 a
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	11554 a	1351 a
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	11110 a	1269 a
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	11110 a	1349 a
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	10777 a	1156 a
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			
LSD (P=.05)							1482.3	209.5
Standard Deviation							864.1	122.1
CV							7.84	10.29
Bartlett's X2							9.19	7.428
P(Bartlett's X2)							0.42	0.593
Treatment F							0.530	2.125
Treatment Prob(F)							0.8344	0.0829

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The early fall application of Ally caused discoloration to the timothy. The amount of

regrowth of the timothy did not appear to be affected. Ally applied late spring at the 2x rate caused severe visual damage to timothy. There were no significant differences in forage or seed yields among the treatments. Moisture conditions were well above average in 2005.

Fall vs. Spring Application of Ally on a New Stand of Timothy – Edmonton – 05/06 (Expt. #T3)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food
Experiment ID: FvsS TimothyS05
2005-06 Experiment

CROP: PHLPR Climax Timothy 2.0 kg/ha. Planted: May-26-2005, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C
D								
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2005	May-31-2006				
Time of Day:	9:00 am	9:00 am	9:00 am	10:30 am	Crop 1 PHLPR Timothy			
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage: Cut @ 10 cm in Fall '05			
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				4 lf
6 lf	Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Height:		
17cm	18cm	9cm	45cm					
Air Temp.	: 7 C	7 C	9 C	19 C				
% Humidity	: 80	66	46	49				
Wind Speed	: 0 KPH	7 KPH	0 KPH	6 KPH				
Dew Present	: y	n	n	n				
Cloud Cover	: 100%	10%	20%	0%				
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type	: TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size	: 80015XR	80015XR	80015XR	80015XR				
Noz.Spacing	: 50 CM	50 CM	50 CM	50 CM				
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height	: 45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code						PHLPR	PHLPR	PHLPR
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						Oct-14-2005	May-24-2006	Jun-19-2006
Trt-Eval Interval						28/3/-194/-229 DAA	250/225/28/-7 DAA	276/251/54/19 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	16	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	25	0	5

	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	5
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		14
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		25
	Agral 90			0.2	% V/V			
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING		13
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	PHLPR PLANT HEIGHT cm Jun-19-2006 276/251/54/ 19 DAA	PHLPR TOPGROW VISINJ percent Jul-28-2006 315/290/93/ 58 DAA	PHLPR FORAGE WEIDRY KG/HA Jul-24-2006 311/286/89/ 54 DAA
1	Check						97 a	0	6045 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	97 a	0	6080 a
	Agral 90			0.2	% V/V				(101%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	97 a	0	6223 a
	Agral 90			0.2	% V/V				(103%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	97 a	0	6157 a
	Agral 90			0.2	% V/V				(102%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	97 a	0	6530 a
	Agral 90			0.2	% V/V				(108%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	97 a	0	5936 a
	Agral 90			0.2	% V/V				(98%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	97 a	0	6425 a
	Agral 90			0.2	% V/V				(106%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	94 b	0	6056 a
	Agral 90			0.2	% V/V				(100%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	86 c	19	6189 a
	Agral 90			0.2	% V/V				(102%)
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	96 a	0	6536 a
	clopyralid	50	EC	0.075	KG A/HA				(108%)
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)							1.3		1204.9
Standard Deviation							0.9		830.4
CV							0.94		13.36
Bartlett's X2							8.433		7.815
P(Bartlett's X2)							0.134		0.553
Treatment F							62.395		0.258
Treatment Prob(F)							0.0001		0.9806

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	PHLPR SEED YIELD KG/HA Aug-9-2006 327/302/10 5/70 DAA

No.	Name	Conc	Type	Rate	Unit	Code		
1	Check						679	a
							(100%)	
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	706	a
	Agral 90			0.2	% V/V		(104%)	
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	772	a
	Agral 90			0.2	% V/V		(114%)	
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	768	a
	Agral 90			0.2	% V/V		(113%)	
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	747	a
	Agral 90			0.2	% V/V		(110%)	
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	823	a
	Agral 90			0.2	% V/V		(121%)	
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	765	a
	Agral 90			0.2	% V/V		(113%)	
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	695	a
	Agral 90			0.2	% V/V		(102%)	
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	550	b
	Agral 90			0.2	% V/V		(81%)	
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	737	a
	clopyralid	50	EC	0.075	KG A/HA		(109%)	
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							110.1	
Standard Deviation							75.9	
CV							10.48	
Bartlett's X2							9.071	
P(Bartlett's X2)							0.431	
Treatment F							3.864	
Treatment Prob(F)							0.0030	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally applied in late spring at the recommended rate and twice the recommended rate caused a significant height reduction and at twice the recommended rate caused a significant seed yield reduction.

Fall vs. Spring Application of Ally on a New Stand of Timothy – Beaverlodge - 05/06 (Expt. #T4)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food

Experiment ID: AllySTimothy 0506 Bldg

2005-06 Experiment

CROP: PHLPR, Timothy (Climax). Planted: May-30-2005, 5 kg/ha, 1 cm Deep, 30 cm Row Width. Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Fertilizer: Trial area was fertilized with 70 kg/ha of nitrogen on October 13, 2005. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION

Application:	A	B	C	D
Date	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006
Time of Day:	9:30 am	10:30 am	8:00	8:45
Method	SPRAY	SPRAY	SPRAY	SPRAY
Timing	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING
Placement	Surface	Surface	Surface	Surface
Air Temp.	10 C	1 C	4 C	15 C
% Humidity	20	81	45	
Wind Speed	0 KPH	0 KPH	6 KPH	0 KPH
Soil Moist.:	Poor	Poor	Poor	Fair
Cloud Cover:		40%	15%	

STAGE AT APPLICATION

Application:	A	B	C	D
Crop 1 PHLPR				
Height	9cm	11cm	9cm	40cm

Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa
Nozzle Type	: TeeJet	TeeJet	TeeJet	TeeJet
Nozzle Size	: XR80015	XR80015	XR80015	XR80015
Noz.Spacing	: 50 cm	50 cm	50 cm	50 cm
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	: 45 cm	45 cm	45 cm	45 cm
Carrier	: Water	Water	Water	Water
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant	: Propane	Propane	Propane	Propane

Comments: Plots were clipped and material removed the 2nd week of September, 2005. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on August 8, 2006 by harvesting a 3 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	PHLPR TOPGROW VISINJ percent Oct-14-2005 27/0/0/0 DAA	PHLPR TOPGROW VISINJ percent May-18-2006 243/216/17/ 0 DAA	PHLPR TOPGROW VISINJ percent Jun-2-2006 258/231/32 /0 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		8	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	PHLPR TOPGROW VISINJ percent Jun-12-2006 268/241/42/ 10 DAA	PHLPR TOPGROW VISINJ percent Jun-22-2006 278/251/52/ 20 DAA
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			

4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	0
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							PHLPR	PHLPR	PHLPR
Part Rated							TOPGROW	FORAGE	SEED
Rating Data Type							VISINJ	WEIDRY	YIELD
Rating Unit							percent	KG/HA	KG/HA
Rating Date							Jul-11-2006	Aug-8-2006	Aug-8-2006
Trt-Eval Interval							297/270/71/ 39 DAA	325/298/99 /67 DAA	325/298/99 /67 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	3583 a (100%)	415 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	4125 a (115%)	465 a (112%)
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	3916 a (109%)	460 a (111%)
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	4000 a (112%)	428 a (103%)
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	4042 a (113%)	460 a (111%)
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	3291 a (92%)	352 a (85%)
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	3916 a (109%)	411 a (99%)
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	3666 a (102%)	413 a (100%)
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	3875 a (108%)	432 a (104%)
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	3625 a (101%)	411 a (99%)
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)								750.0	104.1
Standard Deviation								516.9	71.7
CV								13.59	16.9
Bartlett's X2								9.955	5.15
P(Bartlett's X2)								0.354	0.821
Treatment F								0.982	0.868
Treatment Prob(F)								0.4763	0.5639

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

None of the treatment timings of Ally applied to timothy caused visible damage or significantly reduced seed or dry matter yields.

Fall vs. Spring Ally Applications on 3 Year Old Timothy – Ellerslie – 03/04 (Expt. #T5)

Dan Cole, Nicole Kimmel, Calvin Yoder **Experiment ID: FvsS Tim 3E03**

CROP: PHLPR, TIMOTHY (Richmond). Planted: Jun-5-2001, 2.0 KG/HA, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer: Broadcast Oct.31, 2001 80 kg/ha N & Oct.18, 2002 80 kg/ha N Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Ellerslie, Edmonton, Alberta.
Site Description: Soil Texture: Silty Clay Loam. %OM: 11 %Sand: 19 %Silt: 40 %Clay: 41 pH: 5.7

APPLICATION DESCRIPTION				STAGE AT APPLICATION		
Application:	A	B	C	Application:	A	B C
Date :	Oct-6-2003	Apr-30-2004	Jun-8-2004	Crop 1 PHLPR	3 lf	5 lf
Time of Day:	5:00 PM	9:45 AM	3:00 PM	Height :	10 CM	40 CM
Method :	SPRAY	SPRAY	SPRAY			
Timing :	POSTHARV	PREBLOOM	PREBLOOM			
Placement :	SURFACE	SURFACE	SURFACE			
Air Temp. :	26 C	9 C	20 C			
% Humidity :	23	38	32			
Wind Speed :	0 KPH	5 KPH	7 KPH			
Dew Present:	N	N	N			
Soil Moist.:	Dry					
Cloud Cover:	10%	10%	40%			
Equipment :	BAC PAC	BAC PAC	BAC PAC			
Pressure :	138 kPa	138 kPa	138 kPa			
Nozzle Type:	TEEJET	TEEJET	TEEJET			
Nozzle Size:	80015XR	80015XR	80015XR			
Noz.Spacing:	50 CM	50 CM	50 CM			
Boom Length:	1.5 M	1.5 M	1.5 M			
Boom Height:	45 CM	45 CM	45 CM			
Carrier :	WATER	WATER	WATER			
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA			
Propellant :	CO2	CO2	CO2			

Comments: Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury to the crops and % control of weeds. Harvest area 9 m^2.

Crop Code						PHLPR	PHLPR	PHLPR
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						May-31-2004	Jun-21-2004	Jul-21-2004
Trt-Eval Interval						238 DA-A	259 DA-A	289 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	0	0	0
	Agral 90			0.2	% V/V	A			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	8	0	0
	Agral 90			0.2	% V/V	A			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	0	5	4
	Agral 90			0.2	% V/V	B			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	16	3	4
	Agral 90			0.2	% V/V	B			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C		31	34
	Agral 90			0.2	% V/V	C			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C		34	34
	Agral 90			0.2	% V/V	C			
8	clopyralid	50	EC	0.1	KG A/HA	C		4	3

MCPA ester	280 EC	0.56	KG A/HA	C	

Crop Code						PHLPR
Part Rated						SEED
Rating Data Type						YIELD
Rating Unit						kg/ha
Rating Date						Aug-11-2004
Trt-Eval Interval						70 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	
1	Check						395 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	366 a
	Agral 90			0.2	% V/V	A	
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	394 a
	Agral 90			0.2	% V/V	A	
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	367 a
	Agral 90			0.2	% V/V	B	
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	404 a
	Agral 90			0.2	% V/V	B	
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	231 b
	Agral 90			0.2	% V/V	C	
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C	264 ab
	Agral 90			0.2	% V/V	C	
8	clopyralid	50	EC	0.1	KG A/HA	C	357 a
	MCPA ester	280	EC	0.56	KG A/HA	C	
LSD (P=.05)							94.4
Standard Deviation							64.2
CV							18.48
Bartlett's X2							2.569
P(Bartlett's X2)							0.922
Treatment F							4.017
Treatment Prob(F)							0.0061

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The late spring application of Ally caused visible stunting of the established timothy. The late spring application of Ally at the recommended rate caused a significant seed yield reduction.

Fall vs. Spring Ally Applications on 4 Year Old Timothy – Ellerslie – 03/04 (Expt. #T6)

Dan Cole, Nicole Kimmel, Calvin Yoder
Alberta Agriculture and Food
Experiment ID: FvsS Tim 4E03
2003-04 Experiment

CROP: PHLPR, TIMOTHY (Richmond). Planted: Jun-5-2000, 2.0 KG/HA, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer: Broadcast Oct.31, 2001 80 kg/ha N & Oct.18, 2002 80 kg/ha N Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Ellerslie, Edmonton, Alberta.
Site Description: Soil Texture: Silty Clay Loam. %OM: 11 %Sand: 19 %Silt: 40 %Clay: 41 pH: 537

APPLICATION DESCRIPTION				STAGE AT APPLICATION			
Application:	A	B	C	Application:	A	B	C
Date	: Oct-6-2003	Apr-30-2004	Jun-8-2004	Crop 1 PHLPR	3 lf	4 lf	
Time of Day:	5:00 PM	9:45 AM	3:00 PM	Height :	9 CM	34	

CM

Method	: SPRAY	SPRAY	SPRAY
Timing	: POSTHARV	PREBLOOM	PREBLOOM
Placement	: SURFACE	SURFACE	SURFACE
Air Temp.	: 26 C	9 C	20 C
% Humidity	: 23	38	32
Wind Speed	: 0 KPH	5 KPH	7 KPH
Dew Present	: N	N	N
Soil Moist.	: Dry		
Cloud Cover	: 10%	10%	40%
Equipment	: BAC PAC	BAC PAC	BAC PAC
Pressure	: 138 kPa	138 kPa	138 kPa
Nozzle Type	: TEEJET	TEEJET	TEEJET
Nozzle Size	: 80015XR	80015XR	80015XR
Noz.Spacing	: 50 CM	50 CM	50 CM
Boom Length	: 1.5 M	1.5 M	1.5 M
Boom Height	: 45 CM	45 CM	45 CM
Carrier	: WATER	WATER	WATER
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA
Propellant	: CO2	CO2	CO2

Comments: Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury to the crops and % control of weeds. Harvest area 9 m^2.

Crop Code						PHLPR	PHLPR	PHLPR
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						May-31-2004	Jun-21-2004	Jul-21-2004
Trt-Eval Interval						238 DA-A	259 DA-A	289 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	0	0	3
	Agral 90			0.2	% V/V	A			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	5	0	0
	Agral 90			0.2	% V/V	A			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	0	0	0
	Agral 90			0.2	% V/V	B			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	11	0	1
	Agral 90			0.2	% V/V	B			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C		24	18
	Agral 90			0.2	% V/V	C			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C		31	31
	Agral 90			0.2	% V/V	C			
8	clopyralid	50	EC	0.1	KG A/HA	C		0	3
	MCPA ester	280	EC	0.56	KG A/HA	C			

Crop Code						PHLPR
Part Rated						SEED
Rating Data Type						YIELD
Rating Unit						kg/ha
Rating Date						Aug-11-2004
Trt-Eval Interval						310 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	
1	Check						162 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	121 a
	Agral 90			0.2	% V/V	A	
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	159 a
	Agral 90			0.2	% V/V	A	
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	198 a

	Agral 90		0.2	% V/V	B	
5	metsulfuron methyl	60 DF	0.009	KG A/HA	B	183 a
	Agral 90		0.2	% V/V	B	
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	C	127 a
	Agral 90		0.2	% V/V	C	
7	metsulfuron methyl	60 DF	0.009	KG A/HA	C	101 a
	Agral 90		0.2	% V/V	C	
8	clopyralid	50 EC	0.1	KG A/HA	C	104 a
	MCPA ester	280 EC	0.56	KG A/HA	C	

LSD (P=.05)	67.6
Standard Deviation	45.9
CV	31.83
Bartlett's X2	14.121
P(Bartlett's X2)	0.049*
Treatment F	2.514
Treatment Prob(F)	0.0481

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The late spring application of both rates of Ally caused noticeable stunting of established timothy. The seed yields in these two treatments were also the lowest but not significantly lower than the check.

Fall vs. Spring Application of Ally on Established Timothy – Beaverlodge - 04/05 (Expt. #T7)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS Timothy E04-05 Bldg**
Alberta Agriculture and Food, Smokey Applied Research and Demonstration Association and Agriculture and Agri-Food Canada
2004-05 Experiment

CROP: PHLPR, TIMOTHY (Climax). 5.0 kg/ha. Planted: May-23-03, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: November, 2004 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date :	13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005				
Time of Day:	1:30 pm	10:30 am	8:00 am	9:00 am	Crop 1 PHLPR Timothy			
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Stage:	vegetative		shot
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				blade
Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height:	8cm	15cm	15cm 50cm
Air Temp. :	17 C	10 C	11 C	12 C				
% Humidity :	40	75	50					
Wind Speed :	2 MPH	0 MPH	3 MPH	0 MPH				
Dew Present:	n							
Soil Moist.:	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE				
Cloud Cover:	60%	80%	80%	0%				
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa				
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet				
Nozzle Size:	XR80015	XR80015	XR80015	XR80015				
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 cm	45 cm	45 cm	45 cm				

Carrier :	Water	Water	Water	Water
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant :	Propane	Propane	Propane	Propane

Comments: Yields were collected on August 5th, 2005 by harvesting 2.7 m^2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code							PHLPR	PHLPR
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							14/Oct/2004	5/May/2005
Crop Stage							Vegetative	Vegetative
Trt-Eval Interval							31/0/0/0 DAA	234/203/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	10	6
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	14	10
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		9
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		20
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code							PHLPR	PHLPR
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							20/May/2005	6/Jun/2005
Crop Stage							Vegetative	Shot blade
Trt-Eval Interval							249/218/15/0 DAA	266/235/32 /11 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	1
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	3	0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	10	6
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	26	25
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		23

	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	34	
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	0	
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code							PHLPR	PHLPR	PHLPR
Part Rated							TOPGROW	TOPGROW	FORAGE
Rating Data Type							VISINJ	VISINJ	WEIDRY
Rating Unit							percent	percent	kg/ha
Rating Date							20/Jun/2005	4/Aug/2005	5/Aug/2005
Crop Stage									
Trt-Eval Interval							280/249/46/25 DAA	325/294/91/70 DAA	326/295/92/71 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code			
1	Check						0	0	8547 AB
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0	8658 AB
	Agral 90			0.2	% v/v				
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	3	3	8519 AB
	Agral 90			0.2	% v/v				
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0	8427 AB
	Agral 90			0.2	% v/v				
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0	8473 AB
	Agral 90			0.2	% v/v				
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	3	9029 AB
	Agral 90			0.2	% v/v				
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	21	9	7917 AB
	Agral 90			0.2	% v/v				
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	21	14	7671 B
	Agral 90			0.2	% v/v				
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	35	34	6297 C
	Agral 90			0.2	% v/v				
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	0	0	9631 A
	clopyralid	50	EC	0.075	kg ai/ha				
	MCPA ester	280	EC	0.56	kg ai/ha				
LSD (P=.05)									1176.7
Standard Deviation									807.8
CV									9.71
Bartlett's X2									6.661
P(Bartlett's X2)									0.672
Treatment F									4.860
Treatment Prob(F)									0.0008

Crop Code							PHLPR
Part Rated							SEED
Rating Data Type							YIELD
Rating Unit							kg/ha
Rating Date							5/Aug/2005
Crop Stage							
Trt-Eval Interval							326/295/92/71 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	
1	Check						416 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	360 ab
	Agral 90			0.2	% v/v		
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	388 a
	Agral 90			0.2	% v/v		
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	423 a

	Agral 90		0.2	% v/v			
5	metsulfuron methyl	60 DF	0.009	kg ai/ha	LATE FALL	426	a
	Agral 90		0.2	% v/v			
6	metsulfuron methyl	60 DF	0.0045	kg ai/ha	EARLY SPRING	440	a
	Agral 90		0.2	% v/v			
7	metsulfuron methyl	60 DF	0.009	kg ai/ha	EARLY SPRING	408	a
	Agral 90		0.2	% v/v			
8	metsulfuron methyl	60 DF	0.0045	kg ai/ha	LATE SPRING	306	bc
	Agral 90		0.2	% v/v			
9	metsulfuron methyl	60 DF	0.009	kg ai/ha	LATE SPRING	251	c
	Agral 90		0.2	% v/v			
10	florasulam	50 SN	0.005	kg ai/ha	LATE SPRING	404	a
	clopyralid	50 EC	0.075	kg ai/ha			
	MCPA ester	280 EC	0.56	kg ai/ha			

LSD (P=.05)	63.8
Standard Deviation	43.8
CV	11.46
Bartlett's X2	10.617
P(Bartlett's X2)	0.303
Treatment F	7.608
Treatment Prob(F)	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The early fall application of Ally at the 1x and 2x rate caused some visual damage to timothy 31 DAT. The timothy had some discoloration and had less regrowth than the check plots. The visual damage was still evident early the following spring but was not noticable by the end of May. The late fall applications of Ally resulted in visual damage to timothy early the following spring but the timothy had out grown the damage prior to harvest.

All spring applications of Ally, with the excepetion of Ally 1x applied early spring, resulted in severe visual damage to timothy. The visual damage was still present at harvest. The late spring applications of Ally caused more damage to timothy than the early spring applications.

The late spring application of Ally at the 2x rate significantly reduced timothy dry matter yields. Ally at the 1x and 2x rates applied late spring significantly reduced timothy seed yields.

Precipitation in 2005 at this site was well above average.

Fall vs. Spring Application of Ally on Established Timothy – Edmonton – 05/06 (Expt. #T8)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food

Experiment ID: FvsS TimothyE05

2005-06 Experiment

CROP: PHLPR Climax Timothy 2.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 & April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application: A	B	C	D
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2005	May-31-2006				
Time of Day:	9:10 am	9:00 am	9:20 am	11:15 am	Crop 1 PHLPR Timothy			
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage: Cut @ 10 cm in Fall '05			
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				4 lf

6 lf	Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height:
20cm	20cm	9cm	42cm			
Air Temp. :		7 C	7 C	10 C	20 C	
% Humidity :		80	66	46	44	
Wind Speed :		0 KPH	7 KPH	0 KPH	6 KPH	
Dew Present:		y	n	n	n	
Cloud Cover:		100%	10%	20%	0%	
Equipment :		BAC PAC	BAC PAC	BAC PAC	BAC PAC	
Pressure :		138 kPa	138 kPa	138 kPa	138 kPa	
Nozzle Type:		TEEJET	TEEJET	TEEJET	TEEJET	
Nozzle Size:		80015XR	80015XR	80015XR	80015XR	
Noz.Spacing:		50 CM	50 CM	50 CM	50 CM	
Boom Length:		1.5 M	1.5 M	1.5 M	1.5 M	
Boom Height:		45 CM	45 CM	45 CM	45 CM	
Carrier :		WATER	WATER	WATER	WATER	
Appl.Volume:		100 L/HA	100 L/HA	100 L/HA	100 L/HA	
Propellant :		CO2	CO2	CO2	CO2	

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crops.

Crop Code						PHLPR	PHLPR	PHLPR
Part Rated						TOPGROW	TOPGROW	PLANT
Rating Data Type						VISINJ	VISINJ	HEIGHT
Rating Unit						percent	percent	cm
Rating Date						May-24-2006	Jun-19-2006	Jun-19-2006
Trt-Eval Interval						250/225/28/ -7 DAA	276/251/54/ 19 DAA	276/251/54/ 19 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	90 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	92 a
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	3	91 a
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	91 a
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0	92 a
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	91 a
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0	91 a
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		18	86 b
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		31	79 c
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING		13	88 ab
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)									2.6
Standard Deviation									1.8
CV									2.05
Bartlett's X2									28.989
P(Bartlett's X2)									0.001*
Treatment F									20.553
Treatment Prob(F)									0.0001

Crop Code	PHLPR	PHLPR	PHLPR
Part Rated	TOPGROW	FORAGE	SEED
Rating Data Type	VISINJ	WEIDRY	YIELD

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
Rating Unit							percent	KG/HA	KG/HA
Rating Date							Jul-28-2006	Jul-24-2006	Aug-9-2006
Trt-Eval Interval							315/290/93/ 58 DAA	311/286/89/ 54 DAA	327/302/10 5/70 DAA
1	Check						0	2302 a (100%)	336 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	2422 a (105%)	361 a (107%)
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	3005 a (131%)	375 a (111%)
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	2950 a (128%)	365 a (109%)
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	2414 a (105%)	374 a (111%)
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	3131 a (136%)	367 a (109%)
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	2550 a (111%)	392 a (117%)
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	3089 a (134%)	369 a (110%)
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	21	2469 a (107%)	272 a (81%)
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	0	2873 a (125%)	288 a (86%)
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)								773.8	138.5
Standard Deviation								533.3	95.5
CV								19.6	27.29
Bartlett's X2								8.834	7.302
P(Bartlett's X2)								0.453	0.606
Treatment F								1.424	0.686
Treatment Prob(F)								0.2270	0.7152

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
Crop Code							PHLPR	PHLPR
Part Rated							SEED	SEED
Rating Data Type							1000 KWT	GERMIN
Rating Unit							grams	percent
Rating Date								
Trt-Eval Interval								
1	Check						0.40 ab (100%)	97 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0.37 b (93%)	99 a (102%)
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0.41 ab (103%)	98 a (101%)
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0.42 ab (104%)	95 a (98%)
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0.44 a (109%)	98 a (101%)
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0.39 b (96%)	97 a (99%)
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0.40 ab (99%)	97 a (99%)
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0.40 ab (100%)	98 a (101%)
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0.42 ab (104%)	96 a (98%)
	Agral 90			0.2	% V/V			
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	0.41 ab (101%)	96 a (98%)
	clopyralid	50	EC	0.075	KG A/HA			

MCPA ester	280 EC	0.42 KG A/HA		
LSD (P=.05)			0.030	3.6
Standard Deviation			0.021	2.5
CV			5.16	2.59
Bartlett's X2			5.845	8.553
P(Bartlett's X2)			0.665	0.479
Treatment F			2.939	0.929
Treatment Prob(F)			0.0144	0.5161

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Even though Ally caused a significant initial height reduction when applied in late spring, neither Ally rate or time of application caused a significant forage yield, seed yield, 1000 kernel weight or % seed germination reduction to established timothy.

Fall vs. Spring Application of Ally on Established Timothy – Beaverlodge - 05/06 (Expt. #T9)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: AllyETimothy 0506 Bldg
2005-06 Experiment

CROP: PHLPR, Timothy (Climax). Planted: Jun-18-2004, 5 KG/HA, 1 cm Deep, 30 cm Row Width. Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M.
Fertilizer: 70 kg/ha of Nitrogen was broadcast on October 13, 2005. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006				
Time of Day:	9:30 am	10:30 am	8:00	7:00 am	Crop 1 PHLPR Timothy			
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Height	: 9 cm	9 cm	8 cm 25 cm
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				
Placement	: Surface	Surface	Surface	Surface				
Air Temp.	: 10 C	1 C	4 C	15 C				
% Humidity	: 20	81	45					
Wind Speed	: 0 KPH	0 KPH	6 KPH	0 KPH				
Soil Moist.	: Poor	Poor	Poor	Fair				
Cloud Cover:		40%	15%					
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa				
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet				
Nozzle Size:	XR80015	XR80015	XR80015	XR80015				
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 cm	45 cm	45 cm	45 cm				
Carrier	: Water	Water	Water	Water				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: Propane	Propane	Propane	Propane				

Comments: Plots were clipped and material removed the 2nd week of September, 2005. There was very little re-growth in the fall. The stand was mostly stubble. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on August 8, 2006 by harvesting a 6 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code	PHLPR	PHLPR	PHLPR
Part Rated	TOPGROW	TOPGROW	TOPGROW

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	VISINJ percent Oct-14-2005 27/0/0/0 DAA	VISINJ percent May-18-2006 243/216/17/ 0 DAA	VISINJ percent Jun-2-2006 258/231/32 /0 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		10	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	PHLPR TOPGROW VISINJ percent Jun-12-2006 268/241/42/ 10 DAA	PHLPR TOPGROW VISINJ percent Jun-22-2006 278/251/52/ 20 DAA	PHLPR FORAGE WEIDRY KG/HA Aug-8-2006 325/298/99 /67 DAA
1	Check						0	0	3376 ab (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	3357 ab (99%)
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	3042 ab (90%)
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	3563 ab (106%)
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0	3313 ab (98%)
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	3167 ab (94%)
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0	3668 a (109%)
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	0	3355 ab (99%)
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	0	2813 ab (83%)
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	0	2751 b (81%)
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)									524.0
Standard Deviation									360.4
CV									11.12
Bartlett's X2									3.593

P(Bartlett's X2)	0.936
Treatment F	2.752
Treatment Prob(F)	0.0210

Crop Code						PHLPR
Part Rated						SEED
Rating Data Type						YIELD
Rating Unit						KG/HA
Rating Date						Aug-8-2006
Trt-Eval Interval						325 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
1	Check						462 a
							(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	408 a
	Agral 90			0.2	% V/V		(88%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	401 a
	Agral 90			0.2	% V/V		(87%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	446 a
	Agral 90			0.2	% V/V		(96%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	461 a
	Agral 90			0.2	% V/V		(100%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	401 a
	Agral 90			0.2	% V/V		(87%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	491 a
	Agral 90			0.2	% V/V		(106%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	475 a
	Agral 90			0.2	% V/V		(103%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	380 a
	Agral 90			0.2	% V/V		(82%)
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	336 a
	clopyralid	50	EC	0.075	KG A/HA		(73%)
	MCPA ester	280	EC	0.42	KG A/HA		
LSD (P=.05)							103.7
Standard Deviation							71.4
CV							16.75
Bartlett's X2							4.892
P(Bartlett's X2)							0.844
Treatment F							1.866
Treatment Prob(F)							0.1034

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

None of the treatments caused visible damage to established timothy or a significant difference in timothy dry matter yields between the check and the treatments. The late spring application of Spectrum had significantly lower dry matter yields than Ally 2x applied in early spring. There were no significant differences in seed yields among the treatments.

Fall vs. Spring Application of Ally on a New Stand of Meadow Bromegrass – Edmonton – 04/05 (Expt. #MB1)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food
Experiment ID: FvsS MBromeS04
2004-05 Experiment

CROP: BROSM Fleet Meadow Bromegrass 4.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date :	Sep-13-2004	Oct-14-2004	Apr-25-2005	May-27-2005				
Time of Day:	11:45 am	9:00 am	11:00 am	9:30 am	Crop 1	BROSM	Meadow Bromegrass	
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Stage:	Cut @ 10 cm in Fall '04		
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING			4lf 35%headed	
Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height:	9cm	42cm	25cm 62cm
Air Temp. :	14 C	10 C	17 C	16 C				
% Humidity :	64	42	34	42				
Wind Speed :	5 KPH	5 KPH	5 KPH	5 KPH				
Dew Present:	y	n	n	y				
Cloud Cover:	0%	100%	0%	0%				
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure :	138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size:	80015XR	80015XR	80015XR	80015XR				
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 CM	45 CM	45 CM	45 CM				
Carrier :	WATER	WATER	WATER	WATER				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant :	CO2	CO2	CO2	CO2				

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crops.

Crop Code						BROSM	BROSM
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						Oct-14-2004	Apr-22-2005
Trt-Eval Interval						31/0/0/0 DAA	221/190/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	10	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	15	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING		
	clopyralid	50	EC	0.075	KG A/HA			

	MCPA ester	280	EC	0.42	KG A/HA		

Crop Code						BROSM	BROSM
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						Jun-15-2005	Jul-21-2005
Trt-Eval Interval						275/244/51/ 19 DAA	311/280/87/ 55 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description	
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	14	5
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	20	20
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	0	0
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code						BROSM	BROSM
Part Rated						PLANT	FORAGE
Rating Data Type						LODGING	WEIDRY
Rating Unit						percent	kg/ha
Rating Date						Jul-21-2005	Jul-21-2005
Trt-Eval Interval						311/280/87/ 55 DAA	311/280/87/ 55 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						88 a	5939 a
								(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	84 a	5081 a
	Agral 90			0.2	% V/V			(86%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	75 a	5018 a
	Agral 90			0.2	% V/V			(84%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	68 a	5377 a
	Agral 90			0.2	% V/V			(91%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	81 a	4047 a
	Agral 90			0.2	% V/V			(68%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	80 a	5793 a
	Agral 90			0.2	% V/V			(98%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	76 a	5815 a
	Agral 90			0.2	% V/V			(98%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	63 a	4523 a
	Agral 90			0.2	% V/V			(76%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	28 b	4732 a
	Agral 90			0.2	% V/V			(80%)
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	74 a	4993 a
	clopyralid	50	EC	0.075	KG A/HA			(84%)

MCPA ester	280 EC	0.42 KG A/HA						
LSD (P=.05)						20.4	1944.79	
Standard Deviation						14.1	1335.12	
CV						19.66	26.02	
Bartlett's X2						21.498	9.933	
P(Bartlett's X2)						0.011*	0.356	
Treatment F						5.952	0.837	
Treatment Prob(F)						0.0001	0.5897	
Crop Code						BROSM	BROSM	BROSM
Part Rated						SEED	SEED	SEED
Rating Data Type						YIELD	1000 kwt	GERMIN
Rating Unit						kg/ha	grams	percent
Rating Date						Jul-29-2005		
Trt-Eval Interval						319/288/95/ 63 DAA		
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description			
1	Check						1987 a (100%)	6.7 a	85 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	1993 a (100%)	6.1 a	82 a
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	1889 a (95%)	6.6 a	90 a
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	2036 a (102%)	6.7 a	88 a
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	1970 a (99%)	7.5 a	87 a
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	1911 a (96%)	6.9 a	89 a
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	1888 a (95%)	6.4 a	90 a
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	1978 a (100%)	6.6 a	92 a
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	2197 a (111%)	6.5 a	91 a
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG/HA	LATE SPRING	1970 a (99%)	6.4 a	85 a
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)							386.20	1.50	7.8
Standard Deviation							266.16	1.03	5.4
CV							13.43	15.62	6.15
Bartlett's X2							17.328	10.448	8.76
P(Bartlett's X2)							0.044*	0.315	0.46
Treatment F							0.451	0.500	1.467
Treatment Prob(F)							0.8939	0.8614	0.2105

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally applied early fall, late fall, early spring or late spring to established meadow bromegrass did not cause a significant forage dry weight yield, seed yield, 1000 kernel weight or % germination reduction. The meadow bromegrass plots that had Ally applied at twice the recommended rate in late spring had significantly less lodging than the check and other treatments.

Fall vs. Spring Application of Ally on a New Stand of Meadow Bromegrass – Beaverlodge - 04/05 (Expt. #MB2)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS MBrome S04-05 Bldg**
Alberta Agriculture and Food, Smokey Applied Research and Demonstration Association and Agriculture and Agri-Food Canada

CROP: BROSM, Meadow Bromegrass (Fleet). 15.0 kg/ha. Planted: Jun-18-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: November 4, 2004 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION

Application:	A	B	C	D
Date	13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005
Time of Day	1:30 pm	10:45 am	9:00 am	10:00 am
Method	SPRAY	SPRAY	SPRAY	SPRAY
Timing	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING
Placement	SURFACE	SURFACE	SURFACE	SURFACE
Height	12cm	15cm	15cm	55cm
Air Temp.	17 C	10 C	11 C	12 C
% Humidity	40	75	50	
Wind Speed	2 MPH	0 MPH	3 MPH	0 MPH
Dew Present	n			
Soil Moist.	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE
Cloud Cover	60%	80%	80%	0%
Equipment	BAC PAC	BAC PAC	BAC PAC	BAC PAC
Pressure	110 kPa	110 kPa	110 kPa	110 kPa
Nozzle Type	TeeJet	TeeJet	TeeJet	TeeJet
Nozzle Size	XR80015	XR80015	XR80015	XR80015
Noz.Spacing	50 cm	50 cm	50 cm	50 cm
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	45 cm	45 cm	45 cm	45 cm
Carrier	Water	Water	Water	Water
Appl.Volume	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant	Propane	Propane	Propane	Propane

STAGE AT APPLICATION

Application:	A	B	C	D
Crop 1 BROSM Meadow Bromegrass Stage	vegetative early head			

Comments: Yields were collected on August 3, 2005 by harvesting 3m2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code							BROSM	BROSM
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							14/Oct/2004	5/May/2005
Trt-Eval Interval							31/0/0/0 DAA	234/203/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		

	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	BROSM TOPGROW VISINJ percent 20/May/2005 249/218/15/0 DAA		BROSM FORAGE YIELD kg/ha 3/Aug/2005 324/293/90/69 DAA	
1	Check						0		9666	a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0		9832	a
	Agral 90			0.2	% v/v					
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0		9083	a
	Agral 90			0.2	% v/v					
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0		10916	a
	Agral 90			0.2	% v/v					
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0		10082	a
	Agral 90			0.2	% v/v					
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0		9583	a
	Agral 90			0.2	% v/v					
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	4		8000	a
	Agral 90			0.2	% v/v					
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING			10582	a
	Agral 90			0.2	% v/v					
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING			11249	a
	Agral 90			0.2	% v/v					
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING			8999	a
	clopyralid	50	EC	0.075	kg ai/ha					
	MCPA ester	280	EC	0.56	kg ai/ha					
LSD (P=.05)									2370.9	
Standard Deviation									1048.2	
CV									10.7	
Bartlett's X2									4.052	
P(Bartlett's X2)									0.908	
Treatment F									1.719	
Treatment Prob(F)									0.2159	

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	BROSM SEED YIELD kg/ha 3/Aug/2005 324/293/90/69 DAA	
1	Check						1744	a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	1861	a
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	1507	a
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	1935	a
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	1754	a
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	1497	a

	Agral 90		0.2 % v/v			
7	metsulfuron methyl	60 DF	0.009 kg ai/ha	EARLY SPRING	1453	a
	Agral 90		0.2 % v/v			
8	metsulfuron methyl	60 DF	0.0045 kg ai/ha	LATE SPRING	2027	a
	Agral 90		0.2 % v/v			
9	metsulfuron methyl	60 DF	0.009 kg ai/ha	LATE SPRING	1877	a
	Agral 90		0.2 % v/v			
10	florasulam	50 SN	0.005 kg ai/ha	LATE SPRING	1552	a
	clopyralid	50 EC	0.075 kg ai/ha			
	MCPA ester	280 EC	0.56 kg ai/ha			

LSD (P=.05)	751.2
Standard Deviation	332.1
CV	19.3
Bartlett's X2	6.972
P(Bartlett's X2)	0.64
Treatment F	0.769
Treatment Prob(F)	0.6493

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

There was no visual damage from the fall applied treatments. Visual crop tolerance ratings could not be conducted later in the summer as the crop was badly lodged. Only the first two replicates were harvested as the plots were badly lodged. Precipitation in 2005 was well above average. The seed and forage data is an average of only the first two replicates and should only be used as a general indication of crop tolerance.

Fall vs. Spring Application of Ally on a New Stand of Meadow Bromegrass – Edmonton – 05/06 (Expt. #MB3)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food

Experiment ID: FvsS MBrome S05

2005-06 Experiment

CROP: BROSM Fleet Meadow Bromegrass 4.0 kg/ha. Planted: May-26-2005, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2006	May-31-2006				
Time of Day	: 9:20 am	9:00 am	9:10 am	11:00 am	Crop 1 BROSM	Meadow Bromegrass		
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage:	Cut @ 10 cm in Fall '05		
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING		31f 90%headed		
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Height:	16cm	25cm	13cm 86cm
Air Temp.	: 7 C	7 C	10 C	20 C				
% Humidity	: 80	66	46	44				
Wind Speed	: 0 KPH	7 KPH	5 KPH	6 KPH				
Dew Present	: y	n	n	n				
Cloud Cover	: 100%	10%	20%	0%				
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type	: TEEJET	TEEJET	TEEJET	TEEJET				

Nozzle Size:	80015XR	80015XR	80015XR	80015XR
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height:	45 CM	45 CM	45 CM	45 CM
Carrier :	WATER	WATER	WATER	WATER
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant :	CO2	CO2	CO2	CO2

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crop.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSSM PLANT VISINJ percent May-24-2006 250/225/28/ -7 DAA	BROSSM PLANT VISINJ percent Jun-19-2006 276/251/54/ 19 DAA	BROSSM PLANT VISINJ percent Jul-28-2006 315/290/93/ 58 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	3	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	3	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	13	0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		14	0
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		20	20
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING		0	0
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSSM FORAGE WEIDRY KG/HA Jul-24-2006 311/286/89/ 54 DAA	BROSSM SEED YIELD KG/HA Aug-1-2006 326/301/10 4/69 DAA	BROSSM SEED 1000 kwt grams
1	Check						5344 a (100%)	1167 b (100%)	4.9 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	5197 a (97%)	1440 ab (123%)	4.6 a (94%)
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	5761 a (108%)	1274 b (109%)	4.4 a (89%)
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	5043 a (94%)	1268 b (109%)	5.0 a (101%)
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	5669 a (106%)	1361 ab (117%)	4.8 a (98%)
	Agral 90			0.2	% V/V				

6	metsulfuron methyl	60 DF	0.0045 KG A/HA	EARLY SPRING	5747 a	1515 ab	4.7 a
	Agral 90		0.2 % V/V		(108%)	(130%)	(96%)
7	metsulfuron methyl	60 DF	0.009 KG A/HA	EARLY SPRING	4766 a	1311 ab	4.8 a
	Agral 90		0.2 % V/V		(89%)	(112%)	(98%)
8	metsulfuron methyl	60 DF	0.0045 KG A/HA	LATE SPRING	6719 a	1655 a	5.0 a
	Agral 90		0.2 % V/V		(126%)	(142%)	(101%)
9	metsulfuron methyl	60 DF	0.009 KG A/HA	LATE SPRING	7085 a	1667 a	4.9 a
	Agral 90		0.2 % V/V		(133%)	(143%)	(100%)
10	florasulam	50 SC	0.005 KG/HA	LATE SPRING	7043 a	1432 ab	4.3 a
	clopyralid	50 EC	0.075 KG A/HA		(132%)	(123%)	(87%)
	MCPA ester	280 EC	0.42 KG A/HA				
LSD (P=.05)					2249.0	234.8	0.50
Standard Deviation					1550.0	161.8	0.34
CV					26.55	11.48	7.27
Bartlett's X2					9.081	8.813	8.936
P(Bartlett's X2)					0.43	0.455	0.443
Treatment F					1.158	4.220	2.100
Treatment Prob(F)					0.3593	0.0017	0.0659

Crop Code					BROSSM	
Part Rated					SEED	
Rating Data Type					GERMIN	
Rating Unit					percent	
Rating Date						
Trt-Eval Interval						
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
1	Check						96 a
							(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	93 a
	Agral 90			0.2	% V/V		(96%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	92 a
	Agral 90			0.2	% V/V		(96%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	91 a
	Agral 90			0.2	% V/V		(95%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	91 a
	Agral 90			0.2	% V/V		(95%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	95 a
	Agral 90			0.2	% V/V		(99%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	95 a
	Agral 90			0.2	% V/V		(98%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	96 a
	Agral 90			0.2	% V/V		(99%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	95 a
	Agral 90			0.2	% V/V		(98%)
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	93 a
	clopyralid	50	EC	0.075	KG A/HA		(96%)
	MCPA ester	280	EC	0.42	KG A/HA		
LSD (P=.05)							5.6
Standard Deviation							3.9
CV							4.12
Bartlett's X2							8.762
P(Bartlett's X2)							0.46
Treatment F							0.934
Treatment Prob(F)							0.5123

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Even though Ally caused a significant height reduction when applied in late spring, neither Ally rate or time of application caused a significant forage yield, seed yield, 1000 kernel weight or seed germination reduction to a new stand of meadow bromegrass.

Fall vs. Spring Application of Ally on a New Stand of Meadow Bromegrass – Beaverlodge - 05/06 (Expt. #MB4)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
2005-06 Experiment

Experiment ID: AllySMeadowB 0506 Bldg

CROP: BROSM, Meadow bromegrass (Fleet). Planted: May-30-2005, 15 KG/HA, 1 cm Deep, 30 cm Row Width.
Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Fertilizer: Trial area was fertilized with 70 kg/ha of nitrogen on October 13, 2005.
Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION

Application:	A	B	C	D
Date	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006
Time of Day:	9:30 am	10:30 am	8:00	8:30 am
Method	SPRAY	SPRAY	SPRAY	SPRAY
Timing	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING
Placement	Surface	Surface	Surface	Surface
Air Temp.	10 C	1 C	4 C	15 C
% Humidity	20	81	45	15
Wind Speed	0 KPH	0 KPH	6 KPH	0 KPH
Soil Moist.:	Poor	Poor	Poor	Fair
Cloud Cover:		40%	15%	
Equipment	BAC PAC	BAC PAC	BAC PAC	BAC PAC
Pressure	110 kPa	110 kPa	110 kPa	110 kPa
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet
Nozzle Size:	XR80015	XR80015	XR80015	XR80015
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height:	45 cm	45 cm	45 cm	45 cm
Carrier	Water	Water	Water	Water
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant	Propane	Propane	Propane	Propane

STAGE AT APPLICATION

Application:	A	B	C	D
Crop 1 Meadow bromegrass BROSM				
Height	11cm	15cm	9cm	60cm

Comments: Plots were clipped and material removed the 2nd week of September, 2005. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on July 17, 2006 by harvesting a 3 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSM TOPGROW VISINJ percent Oct-14-2005 27/0/0/0 DAA	BROSM TOPGROW VISINJ percent May-18-2006 243/216/17/ 0 DAA	BROSM TOPGROW VISINJ percent Jun-2-2006 258/231/32 /0 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0

	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING		
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							BROSM	BROSM
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							Jun-12-2006	Jun-22-2006
Trt-Eval Interval							268/241/42/ 10 DAA	278/251/52/ 20 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	4
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	6	0
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	19	15
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	6	3
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							BROSM	BROSM
Part Rated							TOPGROW	FORAGE
Rating Data Type							VISINJ	WEIDRY
Rating Unit							percent	KG/HA
Rating Date							Jul-11-2006	Jul-17-2006
Trt-Eval Interval							297/270/71/ 39 DAA	303/276/77/ 45 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	6723 ab (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	5500 ab (82%)
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	7833 a (116%)
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	6249 ab (93%)
	Agral 90			0.2	% V/V			

5	metsulfuron methyl	60 DF	0.009	KG A/HA	LATE FALL	0	5722	ab
	Agral 90		0.2	% V/V			(85%)	
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY SPRING	0	7055	ab
	Agral 90		0.2	% V/V			(105%)	
7	metsulfuron methyl	60 DF	0.009	KG A/HA	EARLY SPRING	0	6333	ab
	Agral 90		0.2	% V/V			(94%)	
8	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE SPRING	0	5222	b
	Agral 90		0.2	% V/V			(78%)	
9	metsulfuron methyl	60 DF	0.009	KG A/HA	LATE SPRING	0	6666	ab
	Agral 90		0.2	% V/V			(99%)	
10	florasulam	50 SN	0.005	KG A/HA	LATE SPRING	0	5375	ab
	clopyralid	50 EC	0.075	KG A/HA			(80%)	
	MCPA ester	280 EC	0.42	KG A/HA				
LSD (P=.05)							1504.9	
Standard Deviation							1008.6	
CV							16.09	
Bartlett's X2							3.264	
P(Bartlett's X2)							0.953	
Treatment F							2.717	
Treatment Prob(F)							0.0363	

Crop Code							BROSM	
Part Rated							SEED	
Rating Data Type							YIELD	
Rating Unit							KG/HA	
Rating Date							Jul-17-2006	
Trt-Eval Interval							303/276/77/ 45 DAA	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						896	a
							(100%)	
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	831	a
	Agral 90			0.2	% V/V		(93%)	
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	807	a
	Agral 90			0.2	% V/V		(90%)	
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	810	a
	Agral 90			0.2	% V/V		(90%)	
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	766	a
	Agral 90			0.2	% V/V		(86%)	
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	819	a
	Agral 90			0.2	% V/V		(91%)	
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	870	a
	Agral 90			0.2	% V/V		(97%)	
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	872	a
	Agral 90			0.2	% V/V		(97%)	
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	823	a
	Agral 90			0.2	% V/V		(92%)	
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	880	a
	clopyralid	50	EC	0.075	KG A/HA		(98%)	
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							128.2	
Standard Deviation							87.6	
CV							10.47	
Bartlett's X2							8.198	
P(Bartlett's X2)							0.514	
Treatment F							0.862	
Treatment Prob(F)							0.5707	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Late spring applications of Ally applied at 2x the recommended rate caused some stunting to

meadow bromegrass. There were no significant differences in seed or forage yield among the treatments. The forage yields were highly variable.

Fall vs. Spring Ally Applications on 3 Year Old Meadow Bromegrass – Ellerslie – 03/04 (Expt. #MB5)

Dan Cole, Nicole Kimmel, Calvin Yoder
Alberta Agriculture and Food
Experiment ID: FvsS MB 3E03
2003-04 Experiment

CROP: BROSM, MEADOW BROMEGRASS (Fleet). Planted: Jun-1-2001, 4.0 KG/HA, 1 CM Deep, 30 CM Row Width.
Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer: Broadcast Oct.31, 2001 80 kg/ha N & Oct.18, 2002 80 kg/ha N FIELD Site. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Ellerslie, Edmonton, Alberta.
Site Description: Soil Texture: Silty Clay Loam. %OM: 11 %Sand: 19 %Silt: 40 %Clay: 41 pH: 5.7

APPLICATION DESCRIPTION				STAGE AT APPLICATION			
Application:	A	B	C	Application:	A	B	C
Date :	Oct-6-2003	Apr-30-2004	Jun-8-2004	Crop 1 BROSM	4 lf	95% headed	
Time of Day:	5:00 PM	9:45 AM	3:00 PM	Height :	13 CM	66 CM	
Method :	SPRAY	SPRAY	SPRAY				
Timing :	POSTHARVEST	PREBLOOM	PREBLOOM				
Placement :	SURFACE	SURFACE	SURFACE				
Air Temp. :	26 C	9 C	20 C				
% Humidity :	23	38	32				
Wind Speed :	0 KPH	5 KPH	7 KPH				
Dew Present:	N	N	N				
Cloud Cover:	10%	10%	40%				
Equipment :	BAC PAC	BAC PAC	BAC PAC				
Pressure :	138 kPa	138 kPa	138 kPa				
Nozzle Type:	TEEJET	TEEJET	TEEJET				
Nozzle Size:	80015XR	80015XR	80015XR				
Noz.Spacing:	50 CM	50 CM	50 CM				
Boom Length:	1.5 M	1.5 M	1.5 M				
Boom Height:	45 CM	45 CM	45 CM				
Carrier :	WATER	WATER	WATER				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA				
Propellant :	CO2	CO2	CO2				

Comments: Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury to the crops. Harvest area 9 m^2.

Crop Code						BROSSM	BROSSM	BROSSM
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						May-31-2004	Jun-21-2004	Jul-21-2004
Trt-Eval Interval						238 DA-A	259 DA-A	289 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	0	0	0
	Agral 90			0.2	% V/V	A			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	0	0	3
	Agral 90			0.2	% V/V	A			

4	metsulfuron methyl	60 DF	0.0045	KG A/HA	B	0	0	0
	Agral 90		0.2	% V/V	B			
5	metsulfuron methyl	60 DF	0.009	KG A/HA	B	0	0	0
	Agral 90		0.2	% V/V	B			
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	C		23	14
	Agral 90		0.2	% V/V	C			
7	metsulfuron methyl	60 DF	0.009	KG A/HA	C		28	19
	Agral 90		0.2	% V/V	C			
8	clopyralid	50 EC	0.1	KG A/HA	C		0	0
	MCPA ester	280 EC	0.56	KG A/HA	C			

Crop Code						BROSSM
Part Rated						SEED
Rating Data Type						YIELD
Rating Unit						kg/ha
Rating Date						Aug-4-2004
Trt-Eval Interval						303 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
1	Check						425 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	468 a
	Agral 90			0.2	% V/V	A	
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	520 a
	Agral 90			0.2	% V/V	A	
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	443 a
	Agral 90			0.2	% V/V	B	
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	545 a
	Agral 90			0.2	% V/V	B	
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	382 a
	Agral 90			0.2	% V/V	C	
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C	411 a
	Agral 90			0.2	% V/V	C	
8	clopyralid	50	EC	0.1	KG A/HA	C	486 a
	MCPA ester	280	EC	0.56	KG A/HA	C	
LSD (P=.05)							154.5
Standard Deviation							105.0
CV							22.83
Bartlett's X2							0.602
P(Bartlett's X2)							0.999
Treatment F							1.117
Treatment Prob(F)							0.3894

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Although none of the treatments caused a significant seed yield reduction, applying Ally on June 8, 2004 when the meadow bromegrass was 95% headed, appeared to cause stunting compared to applying Ally on Oct.6, 2003 or April 30, 2004. The seed yields of the June 8, 2004 treatments were also the lowest.

Fall vs. Spring Application of Ally on Established Meadow Bromegrass – Beaverlodge - 04/05 (Expt. #MB6)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS MBrome E04-05 Bldg**
Alberta Agriculture and Food, Smokey Applied Research and Demonstration Association and Agriculture and Agri-Food Canada
2004-05 Experiment

CROP: BROSM, Meadow Bromegrass (Fleet). 15.0 kg/ha. Planted: May-23-03, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: Nov. 04,2004 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt.

Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION	
Application:	A	B	C	D	Application:	A
						B
Date	: 13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005		
Time of Day:	1:30 pm	9:30 am	7:30 am	8:30 am	Crop 1 BROSM Meadow	
						Bromegrass
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING	Stage :	vegetative
						shot
Placement	: SURFACE	SURFACE	SURFACE	SURFACE		
						blade
Air Temp.	: 17 C	10 C	11 C	12 C	Height :	8 CM 15 cm 15 cm
						45 cm
% Humidity	: 40	80	75	50		
Wind Speed	: 2 MPH	0 MPH	3 MPH	0 MPH		
Dew Present:	n					
Soil Moist.:	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE		
Cloud Cover:	60%	60%	80%	0%		
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC		
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa		
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet		
Nozzle Size:	XR80015	XR80015	XR80015	XR80015		
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm		
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M		
Boom Height:	45 cm	45 cm	45 cm	45 cm		
Carrier	: Water	Water	Water	Water		
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA		
Propellant	: Propane	Propane	Propane	Propane		

Comments: Yields were collected on July 25th, 2005 by harvesting 5.4 m2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code						BROSM	BROSM
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						14/Oct/2004	5/May/2005
Crop Stage						Vegetative	Vegetative
Trt-Eval Interval						31/0/0/0 DAA	234/203/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
10	Florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		
	Clopyralid	50	EC	0.075	kg ai/ha			

	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code							BROSM	BROSM
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							20/May/2005	6/Jun/2005
Crop Stage							Vegetative	Shot Blade
Trt-Eval Interval							249/218/15/0 DAA	266/235/32/11 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	1
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	11
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	0	11
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		34
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		34
	Agral 90			0.2	% v/v			
10	Florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		9
	Clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code							BROSM	BROSM
Part Rated							TOPGROW	FORAGE
Rating Data Type							VISINJ	WEIDRY
Rating Unit							percent	kg/ha
Rating Date							22/Jul/2005	25/Jul/2005
Crop Stage							Headed	
Trt-Eval Interval							312/28178/57 DAA	315/289/81/60 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	6505 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	6551 a
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	7061 a
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	6491 a
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	6436 a
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	6598 a
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	5	6713 a
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	16	5510 a
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	23	5936 a
	Agral 90			0.2	% v/v			
10	Florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	4	5788 a
	Clopyralid	50	EC	0.075	kg ai/ha			

	MCPA ester	280 EC	0.56	kg ai/ha		
LSD (P=.05)						1277.2
Standard Deviation						876.8
CV						13.79
Bartlett's X2						5.831
P(Bartlett's X2)						0.757
Treatment F						1.147
Treatment Prob(F)						0.3690

Crop Code						BROSM
Part Rated						SEED
Rating Data Type						YIELD
Rating Unit						kg/ha
Rating Date						25/Jul/2005
Crop Stage						
Trt-Eval Interval						315/284/81/60 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	
1	Check						572 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	414 a
	Agral 90			0.2	% v/v		
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	555 a
	Agral 90			0.2	% v/v		
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	368 a
	Agral 90			0.2	% v/v		
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	400 a
	Agral 90			0.2	% v/v		
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	425 a
	Agral 90			0.2	% v/v		
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	493 a
	Agral 90			0.2	% v/v		
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	309 a
	Agral 90			0.2	% v/v		
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	471 a
	Agral 90			0.2	% v/v		
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	422 a
	clopyralid	50	EC	0.075	kg ai/ha		
	MCPA ester	280	EC	0.56	kg ai/ha		
LSD (P=.05)							247.0
Standard Deviation							169.6
CV							38.31
Bartlett's X2							9.212
P(Bartlett's X2)							0.418
Treatment F							0.922
Treatment Prob(F)							0.5228

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally at the 1x and 2x rates applied on the early and late fall application dates did not cause visual injury to meadow bromegrass the following spring. The early spring application of Ally resulted in slight visual damage to meadow bromegrass but it did recover from these treatments prior to harvest. The late spring applications of Ally caused severe visual damage to meadow bromegrass. This damage was still noticeable at harvest. The damage to meadow bromegrass from spring applications of Ally was slight yellowing of the leaves and stunting of the crop.

There were no significant differences in meadow bromegrass forage or dry matter yields among the treatments. It should be noted the variability in seed yield was extremely high so this data should be used with caution.

Fall vs. Spring Application of Ally on Established Meadow Bromegrass – Edmonton – 05/06 (Expt. #MB7)

Dan Cole, Nicole Kimmel, Calvin Yoder
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Experiment ID: FvsS MBrome E05
2005-06 Experiment

CROP: BROSM Fleet Meadow Bromegrass 4.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 80 kg/ha N and April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application: A	B	C	D
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2006	May-31-2006				
Time of Day:	9:10 am	9:00 am	9:25 am	11:45 am	Crop 1 BROSM	Meadow Bromegrass		
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage: Cut @ 10 cm in Fall '05			
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING			3lf 65%headed	
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Height:	18cm	17cm	12cm 52cm
Air Temp.	: 7 C	7 C	10 C	20 C				
% Humidity	: 80	66	46	44				
Wind Speed	: 0 KPH	7 KPH	5 KPH	6 KPH				
Dew Present:	y	n	n	n				
Cloud Cover:	100%	10%	20%	0%				
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size:	80015XR	80015XR	80015XR	80015XR				
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crop.

Crop Code					BROSSM	BROSSM	BROSSM
Part Rated					TOPGROW	TOPGROW	TOPGROW
Rating Data Type					VISINJ	VISINJ	VISINJ
Rating Unit					percent	percent	percent
Rating Date					May-24-2006	Jun-19-2006	Jul-28-2006
Trt-Eval Interval					250/225/28/ -7 DAA	276/251/54/ 19 DAA	315/290/93/ 58 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0

	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	15	0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		20	0
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		28	0
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING		3	0
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Crop Code							BROSSM	BROSSM	BROSSM
Part Rated							PLANT	FORAGE	SEED
Rating Data Type							HEIGHT	WEIDRY	YIELD
Rating Unit							cm	KG/HA	KG/HA
Rating Date							Jun-19-2006	Jul-25-2006	Aug-1-2006
Trt-Eval Interval							276/251/54/ 19 DAA	312/287/90/ 55 DAA	326/301/10 4/69 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						112 a	6384 a (100%)	696 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	111 a	5960 a (93%)	895 a (129%)
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	112 a	6432 a (101%)	708 a (102%)
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	112 a	5243 a (82%)	754 a (108%)
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	112 a	6070 a (95%)	797 a (115%)
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	112 a	6025 a (94%)	654 a (94%)
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	112 a	6563 a (103%)	776 a (111%)
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	97 b	5980 a (94%)	620 a (89%)
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	90 c	6567 a (103%)	686 a (99%)
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG/HA	LATE SPRING	110 a	5895 a (92%)	657 a (94%)
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				
LSD (P=.05)							5.0	1596.6	324.5
Standard Deviation							3.4	1100.3	223.6
CV							3.19	18.0	30.88
Bartlett's X2							18.743	7.697	10.253
P(Bartlett's X2)							0.002*	0.565	0.33
Treatment F							20.669	0.529	0.539
Treatment Prob(F)							0.0001	0.8408	0.8329

Crop Code							BROSSM	BROSSM
Part Rated							SEED	SEED
Rating Data Type							1000 kwt	GERMIN
Rating Unit							grams	percent
Rating Date								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		

1	Check					5.0 a	87 a
						(100%)	(100%)
2	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY FALL	4.9 a	87 a
	Agral 90		0.2	% V/V		(99%)	(100%)
3	metsulfuron methyl	60 DF	0.009	KG A/HA	EARLY FALL	4.8 a	91 a
	Agral 90		0.2	% V/V		(97%)	(104%)
4	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE FALL	5.0 a	87 a
	Agral 90		0.2	% V/V		(100%)	(100%)
5	metsulfuron methyl	60 DF	0.009	KG A/HA	LATE FALL	4.8 a	89 a
	Agral 90		0.2	% V/V		(97%)	(102%)
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY SPRING	4.7 a	88 a
	Agral 90		0.2	% V/V		(95%)	(101%)
7	metsulfuron methyl	60 DF	0.009	KG A/HA	EARLY SPRING	4.8 a	88 a
	Agral 90		0.2	% V/V		(96%)	(101%)
8	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE SPRING	4.7 a	86 a
	Agral 90		0.2	% V/V		(94%)	(99%)
9	metsulfuron methyl	60 DF	0.009	KG A/HA	LATE SPRING	4.8 a	80 a
	Agral 90		0.2	% V/V		(97%)	(92%)
10	florasulam	50 SC	0.005	KG/HA	LATE SPRING	4.5 a	84 a
	clopyralid	50 EC	0.075	KG A/HA		(91%)	(96%)
	MCPA ester	280 EC	0.42	KG A/HA			
LSD (P=.05)						0.42	11.2
Standard Deviation						0.29	7.7
CV						5.99	8.93
Bartlett's X2						5.362	6.876
P(Bartlett's X2)						0.802	0.65
Treatment F						0.953	0.578
Treatment Prob(F)						0.4982	0.8029

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Even though Ally caused a significant height reduction when applied in late spring, neither Ally rate or time of application affected forage yield, seed yield, 1000 kernel weight or seed germination of established meadow bromegrass.

Fall vs. Spring Application of Ally on Established Meadow Bromegrass – Beaverlodge - 05/06 (Expt. #MB8)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: AllyEMeadowB 0506 Bldg
2005-06 Experiment

CROP: MBROS, Meadow bromegrass (Fleet). Planted: Jun-18-2004, 15 KG/HA, 1 cm Deep, 30 cm Row Width.
Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M.
Fertilizer: 70 kg/ha of Nitrogen was broadcast on October 13, 2005. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date :	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006				
Time of Day:	9:30 am	10:30 am	8:00	6:30 am	Crop 1 MBROS Meadow Bromegrass			
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Height :	11 cm	11 cm	9 cm 45 cm
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				
Placement :	Surface	Surface	Surface	Surface				
Air Temp. :	10 C	1 C	4 C	14 C				
% Humidity :	20	81	45	30				
Wind Speed :	0 KPH	0 KPH	6 KPH	0 KPH				

Dew Present:		N		
Soil Moist.:	Poor	Poor	Poor	Fair
Cloud Cover:		40%	10%	
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet
Nozzle Size:	XR80015	XR80015	XR80015	XR80015
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height:	45 cm	45 cm	45 cm	45 cm
Carrier :	Water	Water	Water	Water
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant :	Propane	Propane	Propane	Propane

Comments: Plots were clipped and material removed the 2nd week of September, 2005. There was very little re-growth in the fall. The stand was mostly stubble. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on July 17, 2006 by harvesting a 6 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code						BROSM	BROSM	BROSM
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						Oct-14-2005	May-18-2006	Jun-2-2006
Trt-Eval Interval						27/0/0/0 DAA	243/216/17/0 DAA	258/231/32/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Crop Code						BROSM	BROSM
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						Jun-12-2006	Jul-13-2006
Trt-Eval Interval						268/241/42/10 DAA	299/272/73/41 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	0

2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	0
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							BROSM	BROSM
Part Rated							FORAGE	SEED
Rating Data Type							WEIDRY	YIELD
Rating Unit							KG/HA	KG/HA
Rating Date							Jul-17-2006	Jul-17-2006
Trt-Eval Interval							303/276/77/45 DAA	303/276/77/ 45 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						4100 a (100%)	55 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	3230 a (79%)	64 a (117%)
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	3643 a (89%)	65 a (119%)
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	3698 a (90%)	48 a (87%)
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	3433 a (84%)	42 a (77%)
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	3709 a (90%)	50 a (90%)
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	4257 a (104%)	65 a (119%)
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	3698 a (90%)	44 a (81%)
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	3754 a (92%)	48 a (88%)
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	3813 a (93%)	61 a (111%)
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							848.9	19.6
Standard Deviation							573.6	13.2
CV							15.36	24.42
Bartlett's X2							12.792	6.67
P(Bartlett's X2)							0.172	0.671
Treatment F							1.041	1.837
Treatment Prob(F)							0.4449	0.1265

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Seed and forage yield data was very low and variable due to extremely dry conditions during
the fall of 2005 and spring/summer of 2006.

There was no visible damage to meadow bromegrass from the application of Ally on any of the
application dates. There was no significant differences in seed or forage yield among the treatments. The data is highly variable and should only be used with caution.

Fall vs. Spring Application of Ally on a New Stand of Smooth Bromegrass - Beaverlodge – 05/06 (Expt. #SB1)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: AllySSBrome 0506 Bldg
2005-06 Experiment

CROP: SBROS, Smooth bromegrass (Carlton). Planted: May-30-2005, 10 KG/HA, 1 cm Deep, 30 cm Row Width. Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application: A	B	C	D
Date :	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006				
Time of Day:	9:30 am	10:30 am	8:00 am	8:30 am	Crop 1 SBROS Smooth Bromegrass			
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Height :	12 cm	13 cm	10 cm 50 cm
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				
Placement :	Surface	Surface	Surface	Surface				
Air Temp. :	10 C	1 C	4 C	15 C				
% Humidity :	20	81	45	15				
Wind Speed :	0 KPH	0 KPH	6 KPH	0 KPH				
Soil Moist.:	Poor	Poor	Poor	Fair				
Cloud Cover:		40%	15%					
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa				
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet				
Nozzle Size:	XR80015	XR80015	XR80015	XR80015				
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 cm	45 cm	45 cm	45 cm				
Carrier :	Water	Water	Water	Water				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant :	Propane	Propane	Propane	Propane				

Comments: Plots were clipped and material removed the 2nd week of September, 2005. There was very little re-growth in the fall. The stand was mostly stubble. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on July 17, 2006 by harvesting a 6 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code						SBROS	SBROS	SBROS
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ	VISINJ
Rating Unit						percent	percent	percent
Rating Date						Oct-14-2005	May-18-2006	Jun-2-2006
Trt-Eval Interval						27/0/0/0 DAA	243/216/17/ 0 DAA	258/231/32 /0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	4	0

	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	5	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		3	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Crop Code							SBROS	SBROS
Part Rated							TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ
Rating Unit							percent	percent
Rating Date							Jun-12-2006	Jun-22-2006
Trt-Eval Interval							268/241/42/ 10 DAA	278/251/52/ 20 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	5	6
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	8	5
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	20	19
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	20	21
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							SBROS	SBROS
Part Rated							TOPGROW	FORAGE
Rating Data Type							VISINJ	WEIDRY
Rating Unit							percent	KG/HA
Rating Date							Jul-11-2006	Jul-26-2006
Trt-Eval Interval							297/270/71/ 39 DAA	312/285/86/ 54 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	6249 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	7249 a

	Agral 90			0.2	% V/V			(116%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	7000 a
	Agral 90			0.2	% V/V			(112%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	7583 a
	Agral 90			0.2	% V/V			(121%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	8083 a
	Agral 90			0.2	% V/V			(129%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	7462 a
	Agral 90			0.2	% V/V			(119%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	4	6916 a
	Agral 90			0.2	% V/V			(111%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	9	6666 a
	Agral 90			0.2	% V/V			(107%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	15	7041 a
	Agral 90			0.2	% V/V			(113%)
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	13	6208 a
	clopyralid	50	EC	0.075	KG A/HA			(99%)
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)								1336.9
Standard Deviation								919.6
CV								13.05
Bartlett's X2								7.06
P(Bartlett's X2)								0.631
Treatment F								1.617
Treatment Prob(F)								0.1622

Crop Code								SBROS
Part Rated								SEED
Rating Data Type								YIELD
Rating Unit								KG/HA
Rating Date								Jul-26-2006
Trt-Eval Interval								312/285/86/ 54 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check							968 a
								(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL		1005 a
	Agral 90			0.2	% V/V			(104%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL		1000 a
	Agral 90			0.2	% V/V			(103%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		982 a
	Agral 90			0.2	% V/V			(101%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		1149 a
	Agral 90			0.2	% V/V			(119%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		974 a
	Agral 90			0.2	% V/V			(101%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		982 a
	Agral 90			0.2	% V/V			(101%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		1005 a
	Agral 90			0.2	% V/V			(104%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		942 a
	Agral 90			0.2	% V/V			(97%)
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING		831 a
	clopyralid	50	EC	0.075	KG A/HA			(86%)
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)								200.2
Standard Deviation								136.8
CV								13.91
Bartlett's X2								10.685
P(Bartlett's X2)								0.298
Treatment F								1.276
Treatment Prob(F)								0.3017

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Late spring applications of Ally applied at 2x the recommended rate and Spectrum caused some visible damage to smooth bromegrass. There were no significant differences in seed or forage yield among the treatments.

Fall vs. Spring Application of Ally on Established Smooth Bromegrass – Beaverlodge - 04/05 (Expt. #SB2)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS SBrome E04-05 Bldg**
Alberta Agriculture and Food, Smokey Applied Research and Demonstration Association and Agriculture and Agri-Food Canada
2004-05 Experiment

CROP: BROSS, Smooth Bromegrass (Carlton). 8.0 kg/ha. Planted: May-23-03, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: November 4th, 2005 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION				
Application:	A	B	C	D	Application:	A	B	C	D
Date	: 13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005					
Time of Day	: 1:30 pm	9:30	8:00 am	8:45 am	Crop 1 BROSS Smooth Bromegrass				
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage:	vegatative shot			
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING					
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Height:	8cm	10cm	17cm	50cm
Air Temp.	: 17 C	10 C	11 C	12 C					
% Humidity	: 40	75	50						
Wind Speed	: 2 MPH	0 MPH	3 MPH	0 MPH					
Soil Moist.	: EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE					
Cloud Cover	: 60%	80%	80%	0%					
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC					
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa					
Nozzle Type	: TeeJet	TeeJet	TeeJet	TeeJet					
Nozzle Size	: XR80015	XR80015	XR80015	XR80015					
Noz.Spacing	: 50 cm	50 cm	50 cm	50 cm					
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M					
Boom Height	: 45 cm	45 cm	45 cm	45 cm					
Carrier	: Water	Water	Water	Water					
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA					
Propellant	: Propane	Propane	Propane	Propane					

Comments: Yields were collected on August 8, 2005 by harvesting 2.7 m2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code				BROSS	BROSS	BROSS
Part Rated				TOPGROW	TOPGROW	TOPGROW
Rating Data Type				VISINJ	VISINJ	VISINJ
Rating Unit				percent	percent	percent
Rating Date				14/Oct/2004	5/May/2005	20/May/2005
Trt-Eval Interval				31/0/0/0 DAA	234/203/0/0 DAA	249/218/15/0 DAA
Trt	Treatment	Form	Form	Rate	Appl			

No.	Name	Conc	Type	Rate	Unit	Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	3	0	0
	Agral 90			0.2	% v/v				
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	6	0	0
	Agral 90			0.2	% v/v				
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		0	0
	Agral 90			0.2	% v/v				
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		0	0
	Agral 90			0.2	% v/v				
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING			0
	Agral 90			0.2	% v/v				
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING			0
	Agral 90			0.2	% v/v				
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING			
	Agral 90			0.2	% v/v				
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING			
	Agral 90			0.2	% v/v				
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING			
	clopyralid	50	EC	0.075	kg ai/ha				
	MCPA ester	280	EC	0.56	kg ai/ha				

Crop Code							BROSS	BROSS	BROSS
Part Rated							TOPGROW	TOPGROW	TOPGROW
Rating Data Type							VISINJ	VISINJ	VISINJ
Rating Unit							percent	percent	percent
Rating Date							6/Jun/2005	20/Jul/2005	4/Aug/2005
Trt-Eval Interval							266/235/32 /11 DAA	310/279/76/5 5 DAA	325/294/91 /70 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	3	4
	Agral 90			0.2	% v/v				
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	3	5	3
	Agral 90			0.2	% v/v				
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0	0
	Agral 90			0.2	% v/v				
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0	0
	Agral 90			0.2	% v/v				
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	3	0	0
	Agral 90			0.2	% v/v				
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	0	0	0
	Agral 90			0.2	% v/v				
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	3	0	0
	Agral 90			0.2	% v/v				
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	16	10	16
	Agral 90			0.2	% v/v				
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	3	3	9
	clopyralid	50	EC	0.075	kg ai/ha				
	MCPA ester	280	EC	0.56	kg ai/ha				

Crop Code							BROSS	BROSS
Part Rated							FORAGE	SEED
Rating Data Type							WEIDRY	YIELD
Rating Unit							kg/ha	kg/ha
Rating Date							8/Aug/2005	8/Aug/2005
Trt-Eval Interval							329/298/95/ 74 DAA	329/298/95 /74 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						10788 a	1012 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	10510 a	1027 a

	Agral 90		0.2 % v/v				
3	metsulfuron methyl	60 DF	0.009 kg ai/ha	EARLY FALL	10325 a	885 a	
	Agral 90		0.2 % v/v				
4	metsulfuron methyl	60 DF	0.0045 kg ai/ha	LATE FALL	11297 a	1048 a	
	Agral 90		0.2 % v/v				
5	metsulfuron methyl	60 DF	0.009 kg ai/ha	LATE FALL	11020 a	917 a	
	Agral 90		0.2 % v/v				
6	metsulfuron methyl	60 DF	0.0045 kg ai/ha	EARLY SPRING	10556 a	886 a	
	Agral 90		0.2 % v/v				
7	metsulfuron methyl	60 DF	0.009 kg ai/ha	EARLY SPRING	10788 a	765 a	
	Agral 90		0.2 % v/v				
8	metsulfuron methyl	60 DF	0.0045 kg ai/ha	LATE SPRING	11575 a	952 a	
	Agral 90		0.2 % v/v				
9	metsulfuron methyl	60 DF	0.009 kg ai/ha	LATE SPRING	10696 a	1035 a	
	Agral 90		0.2 % v/v				
10	florasulam	50 SN	0.005 kg ai/ha	LATE SPRING	10742 a	763 a	
	clopyralid	50 EC	0.075 kg ai/ha				
	MCPA ester	280 EC	0.56 kg ai/ha				
LSD (P=.05)					1446.2	189.7	
Standard Deviation					996.7	130.8	
CV					9.2	14.08	
Bartlett's X2					6.779	6.94	
P(Bartlett's X2)					0.66	0.643	
Treatment F					0.569	2.623	
Treatment Prob(F)					0.8105	0.0253	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally at the 2x rate applied early fall resulted in slight visual damage to smooth bromegrass
31 DA-A. The damage was not evident early the following the spring. Ally 2x rate applied late spring caused visual damage to smooth bromegrass. The damage was still evident at harvest. There were no significant differences in smooth bromegrass forage or seed yield among the treatments although Spectrum applied late spring and Ally 2x applied early spring seemed to reduce seed yields. Above average precipitation was received during the summer of 2005.

Fall vs. Spring Application of Ally on a New Stand of Hybrid Bromegrass – Edmonton – 04/05 (Expt. #HB1)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food
Experiment ID: FvsS HBromeS04
2004-05 Experiment

CROP: BROSH AC Knowles Hybrid Bromegrass 4.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION		
Application:	A	B	C	D	Application: A	B	C D
Date	: Sep-13-2004	Oct-14-2004	Apr-25-2005	May-27-2005			
Time of Day:	12:00 pm	9:00 am	11:00 am	10:00 am	Crop 1 BROSH Hybrid Bromegrass		
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage: Cut @ 10 cm in Fall '04		
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING			4lf 10%headed

Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height:	11cm	48cm 19cm 60cm
Air Temp. :	14 C	10 C	17 C	16 C			
% Humidity :	64	42	34	42			
Wind Speed :	5 KPH	5 KPH	5 KPH	5 KPH			
Dew Present:	y	n	n	y			
Cloud Cover:	0%	100%	0%	0%			
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC			
Pressure :	138 kPa	138 kPa	138 kPa	138 kPa			
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET			
Nozzle Size:	80015XR	80015XR	80015XR	80015XR			
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM			
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M			
Boom Height:	45 CM	45 CM	45 CM	45 CM			
Carrier :	WATER	WATER	WATER	WATER			
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA			
Propellant :	CO2	CO2	CO2	CO2			

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crops.

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description	BROSH TOPGROW VISINJ percent Oct-14-2004 31/0/0/0 DAA	BROSH TOPGROW VSINJ percent Apr-22-2005 221/190/0/0 DAA
	Crop Code						BROSH	BROSH
	Part Rated						TOPGROW	TOPGROW
	Rating Data Type						VISINJ	VSINJ
	Rating Unit						percent	percent
	Rating Date						Oct-14-2004	Apr-22-2005
	Trt-Eval Interval						31/0/0/0 DAA	221/190/0/0 DAA
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	8	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	19	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING		
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl	BROSH TOPGROW VSINJ percent Jun-15-2005 275/244/51/ 19 DAA	BROSH TOPGROW VSINJ percent Jul-21-2005 311/280/87/ 55 DAA
	Crop Code						BROSH	BROSH
	Part Rated						TOPGROW	TOPGROW
	Rating Data Type						VSINJ	VSINJ
	Rating Unit						percent	percent
	Rating Date						Jun-15-2005	Jul-21-2005
	Trt-Eval Interval						275/244/51/ 19 DAA	311/280/87/ 55 DAA

No.	Name	Conc	Type	Rate	Rate Unit	Description		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	20	10
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	25	20
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	15	9
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Crop Code							BROSH	BROSH
Part Rated							PLANT	FORAGE
Rating Data Type							LODGING	WEIDRY
Rating Unit							percent	kg/ha
Rating Date							Jul-21-2005	Jul-21-2005
Trt-Eval Interval							311/280/87/ 55 DAA	311/280/87/ 55 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description		
1	Check						56 a	6440 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	63 a	5345 a (83%)
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	55 a	7571 a (118%)
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	61 a	5294 a (82%)
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	48 ab	6833 a (106%)
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	63 a	6458 a (100%)
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	58 a	5611 a (87%)
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	38 ab	6016 a (93%)
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	16 b	7419 a (115%)
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	41 ab	6911 a (107%)
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							24.7	2284.9
Standard Deviation							17.0	1574.7
CV							34.22	24.64
Bartlett's X2							5.916	11.515
P(Bartlett's X2)							0.748	0.242
Treatment F							2.969	1.069
Treatment Prob(F)							0.0137	0.4155

Crop Code							BROSH	BROSH	BROSH
Part Rated							SEED	SEED	SEED

Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Description	YIELD KG/HA	1000 kwt grams	GERMIN percent
	Rating Data Type						YIELD	1000 kwt	GERMIN
	Rating Unit						KG/HA	grams	percent
	Rating Date						Aug-5-2005		
	Trt-Eval Interval						326/295/102/ 70 DAA		
1	Check						2061 a (100%)	3.8 a	70 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	1740 a	4.2 a	81 a
	Agral 90			0.2	% V/V		(84%)		
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	1979 a	4.0 a	83 a
	Agral 90			0.2	% V/V		(96%)		
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	1855 a	4.4 a	78 a
	Agral 90			0.2	% V/V		(90%)		
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	1833 a	4.2 a	73 a
	Agral 90			0.2	% V/V		(89%)		
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	2111 a	4.7 a	80 a
	Agral 90			0.2	% V/V		(102%)		
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	1941 a	4.2 a	83 a
	Agral 90			0.2	% V/V		(94%)		
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	1994 a	4.0 a	79 a
	Agral 90			0.2	% V/V		(97%)		
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	1964 a	4.2 a	79 a
	Agral 90			0.2	% V/V		(95%)		
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	2115 a	4.5 a	78 a
	clopyralid	50	EC	0.075	KG A/HA		(103%)		
	MCPA ester	280	EC	0.42	KG A/HA				
	LSD (P=.05)						286.9	0.83	12.2
	Standard Deviation						197.3	0.57	8.4
	CV						10.07	13.53	10.72
	Bartlett's X2						2.964	13.556	15.458
	P(Bartlett's X2)						0.966	0.139	0.079
	Treatment F						1.533	0.839	0.950
	Treatment Prob(F)						0.1886	0.5877	0.5005

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Ally applied early fall, late fall, early spring or late spring to established hybrid bromegrass did not cause a significant forage dry weight yield, seed yield, 1000 kernel weight or % germination reduction. The hybrid bromegrass plots that had Ally applied at twice the recommended rate in late spring had significantly less lodging than the unsprayed check.

Fall vs. Spring Application of Ally on a New Stand of Hybrid Bromegrass – Beaverlodge - 04/05 (Expt. #HB2)

Calvin Yoder, Dan Cole, Jean Beaudoin and Nigel Fairey **Experiment ID: FvsS HBrome S04-05 Bldg**
Alberta Agriculture and Food, Smokey Applied Research and Demonstration Association and Agriculture and Agri-Food Canada
2004-05 Experiment

CROP: BROSH, Hybrid bromegrass (AC Knowels). 10.0 kg/ha. Planted: Jun-18-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: Nov 04 2004 68 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION
Application:	A	B	C	D	Application: A B C D
Date	: 13/Sep/2004	14/Oct/2004	5/May/2005	26/May/2005	
Time of Day:	1:30 pm	10:30 am	8:00 am	9:30 am	Crop 1 BROSH Hybrid Bromegrass

Method :	SPRAY	SPRAY	SPRAY	SPRAY	Stage :A,B,C vegetative D shot
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING	
Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height: 10cm 15cm 15cm 50cm
Air Temp. :	17 C	10 C	11 C	12 C	
% Humidity :	40	80	75	50	
Wind Speed :	2 MPH	0 MPH	3 MPH	0 MPH	
Dew Present:	n				
Soil Moist.:	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	
Cloud Cover:	60%	80%	80%	0%	
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC	
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa	
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet	
Nozzle Size:	XR80015	XR80015	XR80015	XR80015	
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm	
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M	
Boom Height:	45 cm	45 cm	45 cm	45 cm	
Carrier :	Water	Water	Water	Water	
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA	
Propellant :	Propane	Propane	Propane	Propane	

Comments: Yields were collected on August 12, 2005 by harvesting 3.0 m^2. Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth and WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code						BROSH	BROSH
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						14/Oct/2004	5/May/2005
Trt-Eval Interval						31/0/0/0 DAA	234/203/0/0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code	
1	Check					0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL		0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING		
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code	BROSH	BROSH
Part Rated	TOPGROW	TOPGROW
Rating Data Type	VISINJ	VISINJ
Rating Unit	percent	percent
Rating Date	20/May/2005	6/Jun/2005

Trt-Eval Interval						249/218/15/ 0 DAA	266/235/32/11 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	6
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	0
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	0	0
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING		8
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING		19
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING		3
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code						BROSH	BROSH
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISINJ	VISINJ
Rating Unit						percent	percent
Rating Date						20/Jun/2005	4/Aug/2005
Trt-Eval Interval						280/249/46/ 25 DAA	325/294/91 /70 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	0	0
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	0	0
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	0	0
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	0	0
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	3	0
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	27	15
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	0	0
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			

Crop Code						BROSH	BROSH
Part Rated						FORAGE	SEED
Rating Data Type						WEIDRY	YIELD
Rating Unit						kg/ha	kg/ha
Rating Date						12/Aug/2005	12/Aug/2005
Trt-Eval Interval						333/302/99/78 DAA	333/302/99/78 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code		

No.	Name	Conc	Type	Rate	Rate Unit	Code		
1	Check						11832 a	1823 a
2	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY FALL	10666 a	1612 a
	Agral 90			0.2	% v/v			
3	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY FALL	11277 a	1671 a
	Agral 90			0.2	% v/v			
4	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE FALL	12721 a	1880 a
	Agral 90			0.2	% v/v			
5	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE FALL	11777 a	1536 a
	Agral 90			0.2	% v/v			
6	metsulfuron methyl	60	DF	0.0045	kg ai/ha	EARLY SPRING	11221 a	1571 a
	Agral 90			0.2	% v/v			
7	metsulfuron methyl	60	DF	0.009	kg ai/ha	EARLY SPRING	11444 a	1924 a
	Agral 90			0.2	% v/v			
8	metsulfuron methyl	60	DF	0.0045	kg ai/ha	LATE SPRING	11166 a	1600 a
	Agral 90			0.2	% v/v			
9	metsulfuron methyl	60	DF	0.009	kg ai/ha	LATE SPRING	11221 a	1882 a
	Agral 90			0.2	% v/v			
10	florasulam	50	SN	0.005	kg ai/ha	LATE SPRING	11110 a	1736 a
	clopyralid	50	EC	0.075	kg ai/ha			
	MCPA ester	280	EC	0.56	kg ai/ha			
LSD (P=.05)							2403.0	331.3
Standard Deviation							1400.8	193.1
CV							12.24	11.21
Bartlett's X2							4.45	11.208
P(Bartlett's X2)							0.879	0.262
Treatment F							0.478	1.687
Treatment Prob(F)							0.8705	0.1649

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The late spring applications of Ally caused visual damage to hybrid bromegrass. Visual damage from the late spring application of Ally applied at the 2x rate was still evident at harvest. There were no significant differences in forage or seed yields among the treatments. Moisture conditions were well above average in 2005.

Fall vs. Spring Application of Ally on a New Stand of Hybrid Bromegrass – Edmonton – 05/06 (Expt. #HB3)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food

Experiment ID: FvsS HBrome S05

2005-06 Experiment

CROP: BROSH AC Knowles Hybrid Bromegrass 4.0 kg/ha. Planted: May-26-05, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C
D								
Date :	Sep-16-2005	Oct-11-2005	Apr-26-2006	May-31-2006				
Time of Day:	9:00 am	9:00 am	9:00 am	10:45 am	Crop 1	BROSH Hybrid		
Bromegrass								
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Stage:	Cut @ 10 cm in Fall		
'05								
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING			31f	
70%headed								
Placement :	SURFACE	SURFACE	SURFACE	SURFACE	Height:	17cm	21cm	13cm

60cm

Air Temp. :	7 C	7 C	9 C	19 C
% Humidity :	80	66	46	49
Wind Speed :	0 KPH	7 KPH	0 KPH	6 KPH
Dew Present:	y	n	n	n
Cloud Cover:	100%	10%	20%	0%
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC
Pressure :	138 kPa	138 kPa	138 kPa	138 kPa
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET
Nozzle Size:	80015XR	80015XR	80015XR	80015XR
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height:	45 CM	45 CM	45 CM	45 CM
Carrier :	WATER	WATER	WATER	WATER
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant :	CO2	CO2	CO2	CO2

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crops.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSSH TOPGROW VISINJ percent May-24-2006 250/225/28/ -7 DAA	BROSSH TOPGROW VISINJ percent Jun-19-2006 276/251/54/ 19 DAA	BROSSH TOPGROW VISINJ percent Jul-28-2006 315/290/93/ 58 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		3	0
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		16	0
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING		0	0
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSSH FORAGE WEIDRY KG/HA Jul-24-2006 311/286/89/ 54 DAA	BROSSH SEED YIELD KG/HA Aug-8-2006 326/301/10 4/69 DAA	BROSSH SEED 1000 kwt grams
1	Check						8072 a	1476 a	3.5 a

								(100%)		(100%)	(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL		6268 a		1442 a	3.6 a
	Agral 90			0.2	% V/V			(78%)		(98%)	(103%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL		7025 a		1380 a	3.6 a
	Agral 90			0.2	% V/V			(87%)		(93%)	(103%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		6852 a		1498 a	3.6 a
	Agral 90			0.2	% V/V			(85%)		(102%)	(103%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		6045 a		1410 a	3.6 a
	Agral 90			0.2	% V/V			(75%)		(96%)	(104%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		6373 a		1438 a	3.9 a
	Agral 90			0.2	% V/V			(79%)		(97%)	(112%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		6638 a		1420 a	3.7 a
	Agral 90			0.2	% V/V			(82%)		(96%)	(106%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		8146 a		1488 a	3.3 a
	Agral 90			0.2	% V/V			(101%)		(101%)	(96%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		7886 a		1455 a	3.3 a
	Agral 90			0.2	% V/V			(98%)		(99%)	(96%)
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING		6048 a		1447 a	3.7 a
	clopyralid	50	EC	0.075	KG A/HA			(75%)		(98%)	(107%)
	MCPA ester	280	EC	0.42	KG A/HA						
LSD (P=.05)								2197.6		194.0	0.37
Standard Deviation								1514.6		133.7	0.26
CV								21.84		9.25	7.21
Bartlett's X2								14.381		14.864	13.079
P(Bartlett's X2)								0.109		0.095	0.159
Treatment F								1.183		0.296	1.765
Treatment Prob(F)								0.3447		0.9696	0.1223

Crop Code						BROSSH	
Part Rated						SEED	
Rating Data Type						GERMIN	
Rating Unit						percent	
Rating Date							
Trt-Eval Interval							
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
1	Check						81 a
							(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	81 a
	Agral 90			0.2	% V/V		(100%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	73 a
	Agral 90			0.2	% V/V		(90%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	83 a
	Agral 90			0.2	% V/V		(102%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	80 a
	Agral 90			0.2	% V/V		(98%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	82 a
	Agral 90			0.2	% V/V		(101%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	82 a
	Agral 90			0.2	% V/V		(101%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	70 a
	Agral 90			0.2	% V/V		(86%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	79 a
	Agral 90			0.2	% V/V		(97%)
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING	79 a
	clopyralid	50	EC	0.075	KG A/HA		(98%)
	MCPA ester	280	EC	0.42	KG A/HA		
LSD (P=.05)							13.6
Standard Deviation							9.4
CV							11.91
Bartlett's X2							6.977
P(Bartlett's X2)							0.64
Treatment F							0.756

Treatment Prob(F) 0.6560
Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Neither Ally rate or time of application affected forage yield, seed yield, 1000 kernel weight or seed germination when applied to a new stand of hybrid bromegrass.

Fall vs. Spring Application of Ally on a New Stand of Hybrid Bromegrass – Beaverlodge - 05/06 (Expt. #HB4)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: AllySHBrome 0506 Bldg
2005-06 Experiment

CROP: HBROM, Hybrid bromegrass (AC Knowles). Planted: May-30-2005, 10 KG/HA, 1 cm Deep, 30 cm Row Width. Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Fertilizer: 70 kg/ha of nitrogen applied on October 13, 2005. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application: A	B	C	D
Date :	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006				
Time of Day:	9:30 am	10:30 am	8:00	8:15 am	Crop 1 HBROM Hybrid Bromegrass			
Method :	SPRAY	SPRAY	SPRAY	SPRAY	Height :	11 cm	13 cm	10 cm 55 cm
Timing :	EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING				
Placement :	Surface	Surface	Surface	Surface				
Air Temp. :	10 C	1 C	4 C	15 C				
% Humidity :	20	81	45	15				
Wind Speed :	0 KPH	0 KPH	6 KPH	0 KPH				
Soil Moist.:	Poor	Poor	Poor	Fair				
Cloud Cover:		40%	15%					
Equipment :	BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure :	110 kPa	110 kPa	110 kPa	110 kPa				
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet				
Nozzle Size:	XR80015	XR80015	XR80015	XR80015				
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 cm	45 cm	45 cm	45 cm				
Carrier :	Water	Water	Water	Water				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant :	Propane	Propane	Propane	Propane				

Comments: Plots were clipped and material removed the 2nd week of September, 2005. There was very little re-growth in the fall. The stand was mostly stubble. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on July 24, 2006 by harvesting a 3 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Crop Code					BROSH	BROSH	BROSH
Part Rated					TOPGROW	TOPGROW	TOPGROW
Rating Data Type					VISINJ	VISINJ	VISINJ
Rating Unit					percent	percent	percent
Rating Date					Oct-14-2005	May-18-2006	Jun-2-2006
Trt-Eval Interval					27/0/0/0 DAA	243/216/17/ 0 DAA	258/231/32 /0 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		

1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSH TOPGROW VISINJ percent Jun-12-2006 268/241/42/ 10 DAA	BROSH TOPGROW VISINJ percent Jun-22-2006 278/251/52/ 20 DAA
Crop Code								
Part Rated								
Rating Data Type								
Rating Unit								
Rating Date								
Trt-Eval Interval								
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	3
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	16	15
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	8	6
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSH TOPGROW VISINJ percent Jul-11-2006 297/270/71/ 39 DAA	BROSH FORAGE YIELD KG/HA Jul-24-2006 310/283/84/ 52 DAA
Crop Code								
Part Rated								
Rating Data Type								
Rating Unit								
Rating Date								
Trt-Eval Interval								
1	Check						0	7166 a

								(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	6958 a
	Agral 90			0.2	% V/V			(97%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	6874 a
	Agral 90			0.2	% V/V			(96%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	7166 a
	Agral 90			0.2	% V/V			(100%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	6833 a
	Agral 90			0.2	% V/V			(95%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	6958 a
	Agral 90			0.2	% V/V			(97%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	7291 a
	Agral 90			0.2	% V/V			(102%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	7166 a
	Agral 90			0.2	% V/V			(100%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	6416 a
	Agral 90			0.2	% V/V			(90%)
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	6791 a
	clopyralid	50	EC	0.075	KG A/HA			(95%)
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)								847.7
Standard Deviation								584.2
CV								8.39
Bartlett's X2								1.602
P(Bartlett's X2)								0.996
Treatment F								0.762
Treatment Prob(F)								0.6509

Crop Code								BROSH
Part Rated								SEED
Rating Data Type								YIELD
Rating Unit								KG/HA
Rating Date								Jul-24-2006
Trt-Eval Interval								310/283/84/ 52 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check							752 a
								(100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL		658 a
	Agral 90			0.2	% V/V			(88%)
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL		673 a
	Agral 90			0.2	% V/V			(89%)
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		692 a
	Agral 90			0.2	% V/V			(92%)
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		629 a
	Agral 90			0.2	% V/V			(84%)
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		609 a
	Agral 90			0.2	% V/V			(81%)
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		627 a
	Agral 90			0.2	% V/V			(83%)
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		738 a
	Agral 90			0.2	% V/V			(98%)
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		616 a
	Agral 90			0.2	% V/V			(82%)
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING		657 a
	clopyralid	50	EC	0.075	KG A/HA			(87%)
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)								138.9
Standard Deviation								95.0
CV								14.28
Bartlett's X2								3.875
P(Bartlett's X2)								0.919

Treatment F	1.089
Treatment Prob(F)	0.4075

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

The late spring application of Ally at 2x the recommended rate caused some slight damage to Hybrid bromegrass. There were no significant differences in Hybrid bromegrass forage or seed yields among the treatments.

Fall vs. Spring Application of Ally on Established Hybrid Bromegrass – Edmonton – 05/06 (Expt. #HB5)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food

Experiment ID: FvsS HBrome E05

2005-06 Experiment

CROP: BROSH AC Knowles Hybrid Bromegrass 4.0 kg/ha. Planted: Jun-1-04, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer Application: April 21, 2005 80 kg/ha N and April 21, 2006 80 kg/ha N. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2006	May-31-2006				
Time of Day:	9:20 am	9:00 am	9:15 am	11:30 am	Crop 1 BROSH	Hybrid Bromegrass		
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage:	Cut @ 10 cm in Fall '05		
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING		3lf 35%headed		
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Height:	15cm	15cm	11cm 50cm
Air Temp.	: 7 C	7 C	9 C	20 C				
% Humidity	: 80	66	46	44				
Wind Speed	: 0 KPH	7 KPH	0 KPH	6 KPH				
Dew Present	: y	n	n	n				
Cloud Cover	: 100%	10%	20%	0%				
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type	: TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size	: 80015XR	80015XR	80015XR	80015XR				
Noz.Spacing	: 50 CM	50 CM	50 CM	50 CM				
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height	: 45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dry matter yields were collected from a 1.2 m^2 area and seed yields from a 8.1 m^2 area. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight, and GERMIN-Germination. Visual assessments provide % injury of the crop.

Crop Code	BROSSH	BROSSH	BROSSH
Part Rated	TOPGROW	TOPGROW	TOPGROW
Rating Data Type	VISINJ	VISINJ	VISINJ
Rating Unit	percent	percent	percent

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Appl Code	May-24-2006 250/225/28/ -7 DAA	Jun-19-2006 276/251/54/ 19 DAA	Jul-28-2006 315/290/93/ 58 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0	0
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		0	0
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		11	4
	Agral 90			0.2	% V/V				
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING		0	0
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Appl Code	Crop Code	BROSSH	BROSSH	BROSSH
							Part Rated	FORAGE	SEED	SEED
							Rating Data Type	WEIDRY	YIELD	1000 kwt
							Rating Unit	KG/HA	KG/HA	grams
							Rating Date	Jul-24-2006	Aug-8-2006	
							Trt-Eval Interval	311/286/89/ 54 DAA	326/301/104 /69 DAA	
1	Check							7513 a (100%)	581 b (100%)	3.6 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL		7363 a (98%)	740 ab (127%)	3.9 a (108%)
	Agral 90			0.2	% V/V					
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL		7900 a (105%)	730 ab (126%)	3.9 a (108%)
	Agral 90			0.2	% V/V					
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		8475 a (113%)	731 ab (126%)	3.7 a (103%)
	Agral 90			0.2	% V/V					
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		7455 a (99%)	692 ab (119%)	4.0 a (113%)
	Agral 90			0.2	% V/V					
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		7755 a (103%)	678 ab (117%)	3.5 a (99%)
	Agral 90			0.2	% V/V					
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		7523 a (100%)	769 a (132%)	3.8 a (107%)
	Agral 90			0.2	% V/V					
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING		7464 a (99%)	730 ab (126%)	3.7 a (104%)
	Agral 90			0.2	% V/V					
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING		7982 a (106%)	678 ab (117%)	3.7 a (104%)
	Agral 90			0.2	% V/V					
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING		9043 a (120%)	722 ab (124%)	3.8 a (107%)
	clopyralid	50	EC	0.075	KG A/HA					
	MCPA ester	280	EC	0.42	KG A/HA					
LSD (P=.05)								1719.8	103.7	0.36
Standard Deviation								1185.3	71.2	0.25
CV								15.1	10.1	6.69
Bartlett's X2								9.457	13.207	14.693
P(Bartlett's X2)								0.396	0.153	0.10
Treatment F								0.824	2.160	1.450

Treatment Prob(F)						0.5995	0.0622	0.2167
Crop Code						BROSSH		
Part Rated						SEED		
Rating Data Type						GERMIN		
Rating Unit						percent		
Rating Date								
Trt-Eval Interval								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						71 a (100%)	
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	81 a (114%)	
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	80 a (112%)	
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	76 a (106%)	
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	77 a (108%)	
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	71 a (100%)	
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	81 a (113%)	
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	70 a (99%)	
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	70 a (99%)	
	Agral 90			0.2	% V/V			
10	florasulam	50	SC	0.005	KG A/HA	LATE SPRING	75 a (106%)	
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			
LSD (P=.05)							12.8	
Standard Deviation							8.8	
CV							11.77	
Bartlett's X2							16.035	
P(Bartlett's X2)							0.066	
Treatment F							0.975	
Treatment Prob(F)							0.4815	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Neither Ally rate or time of application affected forage yield, seed yield, 1000 kernel weight or seed germination of established hybrid bromegrass.

Fall vs. Spring Application of Ally on Established Hybrid Bromegrass – Beaverlodge - 05/06 (Expt. #HB6)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
2005-06 Experiment

Experiment ID: AllyEHBrome 0506 Bldg

CROP: BROSH, Hybrid bromegrass (AC Knowles). Planted: Jun-18-2004, 10 KG/HA, 1 cm Deep, 30 cm Row Width. Planting Method: Drilled. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Fertilizer: Trial area was fertilized with 70 kg/ha of nitrogen on October 13, 2005.Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006				
Time of Day:	9:30 am	10:30 am	8:00 am	6:30 am	Crop 1 Hybrid bromegrass			

BROSH

Method	: SPRAY	SPRAY	SPRAY	SPRAY	Height	: 10cm 9cm 11cm 40 cm
Timing	: EARLY FALL	LATE FALL	EARLY SPRING	LATE SPRING		
Placement	: Surface	Surface	Surface	Surface		
Air Temp.	: 10 C	1 C	4 C	14 C		
% Humidity	: 20	81	45	30		
Wind Speed	: 0 KPH	0 KPH	6 KPH	0 KPH		
Dew Present	: N	N	N	N		
Soil Moist.	: Poor	Poor	Poor	Fair		
Cloud Cover	:	40%	10%			
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC		
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa		
Nozzle Type	: TeeJet	TeeJet	TeeJet	TeeJet		
Nozzle Size	: XR80015	XR80015	XR80015	XR80015		
Noz.Spacing	: 50 cm	50 cm	50 cm	50 cm		
Boom Length	: 1.5 M	1.5 M	1.5 M	1.5 M		
Boom Height	: 45 cm	45 cm	45 cm	45 cm		
Carrier	: Water	Water	Water	Water		
Appl.Volume	: 100 L/HA	100 L/HA	100 L/HA	100 L/HA		
Propellant	: Propane	Propane	Propane	Propane		

Comments: Plots were clipped and material removed the 2nd week of September, 2005. There was very little re-growth in the fall. A heavy frost the night before applying the herbicides on the 2nd fall spraying date. Dry matter and seed yields were collected on July 25, 2006 by harvesting a 3 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	BROSH TOPGROW VISINJ percent Oct-14-2005 27/0/0/0 DAA	BROSH TOPGROW VISINJ percent May-18-2006 243/216/17/ 0 DAA	BROSH TOPGROW VISINJ percent Jun-2-2006 258/231/32 /0 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0	0
	Agral 90			0.2	% V/V				
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	3	0
	Agral 90			0.2	% V/V				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL		0	0
	Agral 90			0.2	% V/V				
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL		0	3
	Agral 90			0.2	% V/V				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING		0	0
	Agral 90			0.2	% V/V				
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING		3	0
	Agral 90			0.2	% V/V				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING			
	Agral 90			0.2	% V/V				
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.42	KG A/HA				

Crop Code	BROSH	BROSH
Part Rated	TOPGROW	TOPGROW
Rating Data Type	VISINJ	VISINJ

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
	Rating Unit						percent	percent
	Rating Date						Jun-12-2006	Jul-11-2006
	Trt-Eval Interval						268/241/42/ 10 DAA	297/270/71/ 39 DAA
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	0	0
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	0	0
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	0	0
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	0	0
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	0	0
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
	Crop Code						BROSH	BROSH
	Part Rated						FORAGE	SEED
	Rating Data Type						WEIDRY	YIELD
	Rating Unit						KG/HA	KG/HA
	Rating Date						Jul-25-2006	Jul-25-2006
	Trt-Eval Interval						311/284/85/ 53 DAA	311/284/85/ 53 DAA
1	Check						5421 a (100%)	227 a (100%)
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	4558 ab (84%)	219 a (97%)
	Agral 90			0.2	% V/V			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY FALL	4538 ab (84%)	247 a (109%)
	Agral 90			0.2	% V/V			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	4641 ab (86%)	206 a (91%)
	Agral 90			0.2	% V/V			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE FALL	4371 b (81%)	210 a (93%)
	Agral 90			0.2	% V/V			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	4392 b (81%)	226 a (99%)
	Agral 90			0.2	% V/V			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	EARLY SPRING	4246 b (78%)	222 a (98%)
	Agral 90			0.2	% V/V			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	3976 b (73%)	236 a (104%)
	Agral 90			0.2	% V/V			
9	metsulfuron methyl	60	DF	0.009	KG A/HA	LATE SPRING	4288 b (79%)	228 a (100%)
	Agral 90			0.2	% V/V			
10	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	4267 b (79%)	198 a (87%)
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.42	KG A/HA			
	LSD (P=.05)						698.5	52.5
	Standard Deviation						480.5	36.2
	CV						10.75	16.31
	Bartlett's X2						5.392	19.406
	P(Bartlett's X2)						0.799	0.022*

Treatment F	2.564	0.624
Treatment Prob(F)	0.0293	0.7663

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

None of the herbicide treatments caused visible damage to established Hybrid bromegrass.
There were no significant differences in Hybrid bromegrass seed yields among the treatments.
The Hybrid bromegrass had significantly lower forage yields when Ally and Spectrum were applied in the spring as compared to the untreated check.

Fall vs. Spring Ally Applications on 3 Year Old Tall Fescue – Ellerslie – 03/04 (Expt. #TF1)

Dan Cole, Nicole Kimmel, Calvin Yoder
Alberta Agriculture and Food
2003-04 Experiment

Experiment ID: FvsS TF 3E03

CROP: FESAR, FESCUE, TALL (Crossfire II). Planted: Jun-1-2001, 3.5 KG/HA, 1 CM Deep, 30 CM Row Width. Planting Method: DOUBLE DISC PRESS DRILL. Fertilizer: Broadcast Oct.31, 2001 80 kg/ha N & Oct.18, 2002 80 kg/ha N Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Ellerslie, Edmonton, Alberta.
Site Description: Soil Texture: Silty Clay Loam. %OM: 11 %Sand: 19 %Silt: 40 %Clay: 41 pH: 5.7

APPLICATION DESCRIPTION				STAGE AT APPLICATION		
Application:	A	B	C	Application:	A	B C
Date	: Oct-6-2003	Apr-30-2004	Jun-8-2004	Crop 1 FESAR	2 lf	3 lf
Time of Day:	5:00 PM	9:45 AM	3:00 PM	Height :	9 CM	14 CM
Method	: SPRAY	SPRAY	SPRAY			
Timing	: POSTHARV	PREBLOOM	PREBLOOM	Weed 1 TAROF Dandelion		
Placement	: SURFACE	SURFACE	SURFACE	Weed 2 NLHB Narrow-leaved hawk’s-beard		
Air Temp.	: 26 C	9 C	20 C			
% Humidity	: 23	38	32			
Wind Speed	: 0 KPH	5 KPH	7 KPH			
Dew Present:	N	N	N			
Cloud Cover:	10%	10%	40%			
Equipment	: BAC PAC	BAC PAC	BAC PAC			
Pressure	: 138 kPa	138 kPa	138 kPa			
Nozzle Type:	TEEJET	TEEJET	TEEJET			
Nozzle Size:	80015XR	80015XR	80015XR			
Noz.Spacing:	50 CM	50 CM	50 CM			
Boom Length:	1.5 M	1.5 M	1.5 M			
Boom Height:	45 CM	45 CM	45 CM			
Carrier	: WATER	WATER	WATER			
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA			
Propellant	: CO2	CO2	CO2			

Comments: Crop codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury to the crops and % control of weeds. Harvest area 9 m^2.

Crop Code					FESAR	FESAR	FESAR
Part Rated					TOPGROW	TOPGROW	TOPGROW
Rating Data Type					VISINJ	VISINJ	VISINJ
Rating Unit					percent	percent	percent
Rating Date					May-31-2004	Jun-21-2004	Jul-21-2004
Trt-Eval Interval					238 DA-A	259 DA-A	289 DA-A
Trt	Treatment	Form	Form	Product	Product	Appl		

No.	Name	Conc	Type	Rate	Rate Unit	Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	0	0	0
	Agral 90			0.2	% V/V	A			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	16	10	0
	Agral 90			0.2	% V/V	A			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	0	0	0
	Agral 90			0.2	% V/V	B			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	15	13	0
	Agral 90			0.2	% V/V	B			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C		14	6
	Agral 90			0.2	% V/V	C			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C		28	24
	Agral 90			0.2	% V/V	C			
8	clopyralid	50	EC	0.1	KG A/HA	C		4	3
	MCPA ester	280	EC	0.56	KG A/HA	C			

Weed Code							TAROF	NLHB	
Crop Code									FESAR
Part Rated							TOPGROW	TOPGROW	SEED
Rating Data Type							VISCON	VISCON	YIELD
Rating Unit							percent	percent	kg/ha
Rating Date							Jul-23-2004	Jul-23-2004	Aug-4-2004
Trt-Eval Interval							291 DA-A	291 DA-A	303 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Product Rate	Product Rate Unit	Appl Code			
1	Check						0	0	150 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	88	100	188 a
	Agral 90			0.2	% V/V	A			
3	metsulfuron methyl	60	DF	0.009	KG A/HA	A	98	100	87 a
	Agral 90			0.2	% V/V	A			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	100	99	133 a
	Agral 90			0.2	% V/V	B			
5	metsulfuron methyl	60	DF	0.009	KG A/HA	B	100	100	101 a
	Agral 90			0.2	% V/V	B			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	90	100	125 a
	Agral 90			0.2	% V/V	C			
7	metsulfuron methyl	60	DF	0.009	KG A/HA	C	93	100	62 a
	Agral 90			0.2	% V/V	C			
8	clopyralid	50	EC	0.1	KG A/HA	C	40	89	147 a
	MCPA ester	280	EC	0.56	KG A/HA	C			
LSD (P=.05)									135.9
Standard Deviation									92.4
CV									74.49
Bartlett's X2									3.125
P(Bartlett's X2)									0.873
Treatment F									0.751
Treatment Prob(F)									0.6326

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Trial Comments

Although the late spring applications of Ally caused stunting of established tall fescue, none of the treatments caused a significant seed yield reduction. There was a lot of variability in this three year old tall fescue stand.

Fall vs. Spring Herbicide Application for Weed Control- Edmonton - 04/05 (Expt. #WC1)

Dan Cole, Nicole Kimmel, Calvin Yoder **Experiment ID: WeedCon FvsS 04**

Ag Research Division, Alberta Agriculture and Food
2004-05 Experiment

CROP: Non-cropland Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M.
Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-13-2004	Oct-14-2004	Apr-25-2005	May-27-2005				
Time of Day:	1:30 pm	10:00 am	2:00 pm	10:30 am	Weed 1 TRFHY Alsike Clover			
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Height: Cut at 8 cm in Fall '04			
Timing	: POST-HARV	POST-HARV	POST-HARV	POST-HARV				
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Weed 2 TAROF Dandelion			
Air Temp.	: 16 C	11 C	21 C	16 C	Stage:	A 1% Flowering		
% Humidity	: 52	42	25	42		B 1% Seed heads		
Wind Speed	: 3 KPH	5 KPH	7 KPH	0 KPH		C New sdlgs 2-3lf		
Dew Present:	n	n	n	y		Old rosettes 7-16lf		
Cloud Cover:	25%	100%	0%	0%		D Vegetative 2-6lf		
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC	Height:	8 cm	8 cm	8 cm 25 cm
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size:	80015XR	80015XR	80015XR	80015XR				
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dandelion dry matter yields were collected on August 19, 2005 by harvesting 1 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % injury of the crops and % control of weeds.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF TOPGROW VISCON percent Oct-14-2004 31/0/-193/- 255 DAA	TRHFY TOPGROW VISCON percent Oct-14-2004 31/0/-193/- 255 DAA	GRASS TOPGROW VISINJ percent Oct-14-2004 31/0/-193/- 255 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	18	26	0
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	68	66	0
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL			
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING			
	Agral 90			0.2	% V/V				

7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING
	clopyralid	50	EC	0.075	KG A/HA	
	MCPA ester	280	EC	0.420	KG A/HA	
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING
	Agral 90			0.2	% V/V	
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING
	clopyralid	50	EC	0.075	KG A/HA	
	MCPA ester	280	EC	0.420	KG A/HA	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF TOPGROW VISCON percent Apr-25-2005 224/193/0/- 32 DAA	TRFHY TOPGROW VISCON percent Apr-25-2005 224/193/0/- 32 DAA	TAROF TOPGROW VISCON percent Jun-15-2005 275/244/51/ 19 DAA
	Weed Code						TAROF	TRFHY	TAROF
	Crop Code								
	Part Rated						TOPGROW	TOPGROW	TOPGROW
	Rating Data Type						VISCON	VISCON	VISCON
	Rating Unit						percent	percent	percent
	Rating Date						Apr-25-2005	Apr-25-2005	Jun-15-2005
	Trt-Eval Interval						224/193/0/- 32 DAA	224/193/0/- 32 DAA	275/244/51/ 19 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	99	100	94
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	100	100	85
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	78	85	99
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	84	96	59
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING			55
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING			30
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			33
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			24
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TRFHY TOPGROW VISCON percent Jun-15-2005 275/244/51/ 19 DAA	TAROF Mature TOPGROW COUNT #/m2 Aug-19-2005 340/309/116/84 DAA	TAROF Seedling PLANT COUNT #/m2 Aug-19-2005 340/309/116/ 84 DAA
	Weed Code						TRFHY	TAROF	TAROF
	Crop Code							Mature	Seedling
	Part Rated						TOPGROW	TOPGROW	PLANT
	Rating Data Type						VISCON	COUNT	COUNT
	Rating Unit						percent	#/m2	#/m2
	Rating Date						Jun-15-2005	Aug-19-2005	Aug-19-2005
	Trt-Eval Interval						275/244/51/ 19 DAA	340/309/116/84 DAA	340/309/116/ 84 DAA
1	Check						0	27 a	46 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	100	2 b	8 c
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	100	6 b	5 c
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	100	7 b	12 bc
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	100	19 ab	19 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	100	10 ab	22 bc
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	100	25 a	37 ab
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	75	1 b	4 c
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	73	5 b	12 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
LSD (P=.05)								12.8	18.0
Standard Deviation								8.8	12.4
CV								79.41	67.43
Bartlett's X2								25.438	23.22
P(Bartlett's X2)								0.001*	0.003*
Replicate F								5.062	4.325
Replicate Prob(F)								0.0074	0.0142
Treatment F								4.971	5.582
Treatment Prob(F)								0.0010	0.0005

							TAROF	TAROF	TAROF
Weed Code									
Crop Code							TOTAL		
Part Rated							PLANT	PLANT	PLANT
Rating Data Type							COUNT	WEIDRY	VISCON
Rating Unit							#/m2	g/m2	percent
Rating Date							Aug-19-2005	Aug-19-2005	Aug-26-2005
Trt-Eval Interval							340/309/116 /84 DAA	340/309/116 /84 DAA	347/316/123 /91 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						73 a	16.7 ab	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	10 c	1.0 c	88
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	10 c	0.7 c	90
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	19 c	1.5 c	83
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	38 bc	12.0 b	64
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	32 bc	4.1 c	59
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	61 ab	20.7 a	31
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	5 c	0.5 c	94
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	17 c	1.8 c	70
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
LSD (P=.05)							27.1	5.91	
Standard Deviation							18.6	4.05	
CV							63.11	61.91	
Bartlett's X2							22.534	37.69	
P(Bartlett's X2)							0.004*	0.001*	
Replicate F							5.575	1.881	
Replicate Prob(F)							0.0048	0.1598	
Treatment F							6.690	14.885	
Treatment Prob(F)							0.0001	0.0001	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TRFHY PLANT VISCON percent Aug-26-2005 347/316/123 /91 DAA	TAROF PLANT VISCON percent Jun-2-2006 627/596/403/ 371 DAA	TRFHY PLANT VISCON percent Jun-2-2006 627/596/403/ 371 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	94	88	80
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	91	89	55
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	99	61	78
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	98	46	93
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	96	56	95
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	86	1	75
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	100	84	94
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	99	43	94
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF Mature PLANT COUNT #/m2 Jul-14-2006 669/638/445 /413 DAA	TAROF Seedling PLANT COUNT #/m2 Jul-14-2006 669/638/445 /413 DAA	TAROF TOTAL PLANT COUNT #/m2 Jul-14-2006 669/638/445 /413 DAA
1	Check						26 ab	32 a	58 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	5 c	19 a	24 a
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	6 c	16 a	21 a
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	10 bc	15 a	25 a
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	13 bc	12 a	24 a
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	20 bc	45 a	64 a
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	37 a	19 a	56 a
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	17 bc	44 a	61 a
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	16 bc	26 a	42 a
	clopyralid	50	EC	0.075	KG A/HA				

MCPA ester	280 EC	0.420	KG A/HA				
LSD (P=.05)					12.3	27.4	32.4
Standard Deviation					8.4	18.7	22.2
CV					50.87	74.65	53.31
Bartlett's X2					8.128	15.66	12.591
P(Bartlett's X2)					0.421	0.048*	0.127
Replicate F					3.270	4.005	3.751
Replicate Prob(F)					0.0386	0.0191	0.0243
Treatment F					5.750	1.741	2.681
Treatment Prob(F)					0.0004	0.1399	0.0293
Weed Code					TRFHY	TRFHY	TRFHY
Crop Code					Mature	Seedling	TOTAL
Part Rated					PLANT	PLANT	PLANT
Rating Data Type					COUNT	COUNT	COUNT
Rating Unit					#/m2	#/m2	#/m2
Rating Date					Jul-14-2006	Jul-14-2006	Jul-14-2006
Trt-Eval Interval					669/638/445 /413 DAA	669/638/445 /413 DAA	669/638/445 /413 DAA
Trt Treatment No. Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1 Check						11 a	18 a	29 a
2 metsulfuron methyl	60	DF			EARLY FALL	4 b	4 a	8 b
Agral 90			0.0045	KG A/HA				
3 florasulam	50	SN	0.2	% V/V	EARLY FALL	3 b	2 a	4 b
clopyralid	50	EC	0.005	KG A/HA				
MCPA ester	280	EC	0.075	KG A/HA				
4 metsulfuron methyl	60	DF	0.420	KG A/HA	LATE FALL	2 b	11 a	13 b
Agral 90			0.0045	KG A/HA				
5 florasulam	50	SN	0.2	% V/V	LATE FALL	1 b	2 a	3 b
clopyralid	50	EC	0.005	KG A/HA				
MCPA ester	280	EC	0.075	KG A/HA				
6 metsulfuron methyl	60	DF	0.420	KG A/HA	EARLY SPRING	0 b	2 a	2 b
Agral 90			0.0045	KG A/HA				
7 florasulam	50	SN	0.2	% V/V	EARLY SPRING	2 b	3 a	5 b
clopyralid	50	EC	0.005	KG A/HA				
MCPA ester	280	EC	0.075	KG A/HA				
8 metsulfuron methyl	60	DF	0.420	KG A/HA	LATE SPRING	1 b	9 a	9 b
Agral 90			0.0045	KG A/HA				
9 florasulam	50	SN	0.2	% V/V	LATE SPRING	0 b	4 a	4 b
clopyralid	50	EC	0.005	KG A/HA				
MCPA ester	280	EC	0.075	KG A/HA				
LSD (P=.05)						2.8	13.5	14.8
Standard Deviation						1.9	9.3	10.1
CV						78.57	151.63	117.9
Bartlett's X2						11.992	40.406	38.17
P(Bartlett's X2)						0.101	0.001*	0.001*
Replicate F						1.166	5.007	4.528
Replicate Prob(F)						0.3434	0.0078	0.0119
Treatment F						11.834	1.367	2.610
Treatment Prob(F)						0.0001	0.2603	0.0329
Weed Code						TAROF	TAROF	TAROF
Crop Code						Mature	Seedling	TOTAL
Part Rated						PLANT	PLANT	PLANT
Rating Data Type						COUNT	COUNT	COUNT
Rating Unit						#/m2	#/m2	#/m2
Rating Date						Aug-25-2006	Aug-25-2006	Aug-25-2006
Trt-Eval Interval						711/680/487 /455 DAA	711/680/487 /455 DAA	711/680/487 /455 DAA
Trt Treatment	Form	Form	Rate		Appl			

No.	Name	Conc	Type	Rate	Unit	Code			
1	Check						78 a	77 a	155 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	10 b	57 a	66 b
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	28 b	61 a	89 ab
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	25 b	43 a	68 b
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	37 b	41 a	78 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	41 ab	59 a	100 ab
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	41 ab	31 a	73 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	29 b	59 a	87 ab
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	41 ab	25 a	66 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
LSD (P=.05)							28.0	37.0	52.7
Standard Deviation							19.2	25.3	36.1
CV							52.54	50.42	41.63
Bartlett's X2							9.964	8.391	16.902
P(Bartlett's X2)							0.268	0.396	0.031*
Replicate F							2.235	6.604	4.885
Replicate Prob(F)							0.1101	0.0021	0.0086
Treatment F							3.746	1.675	2.413
Treatment Prob(F)							0.0056	0.1564	0.0455
Weed Code							TAROF		
Crop Code							FORAGE		
Part Rated							PLANT		
Rating Data Type							WEIDRY		
Rating Unit							g/m2		
Rating Date							Aug-25-2006		
Trt-Eval Interval							711/680/487 /455 DAA		

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	
1	Check						15.5 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	1.2 c
	Agral 90			0.2	% V/V		
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	1.1 c
	clopyralid	50	EC	0.075	KG A/HA		
	MCPA ester	280	EC	0.420	KG A/HA		
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	5.5 abc
	Agral 90			0.2	% V/V		
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	4.8 bc
	clopyralid	50	EC	0.075	KG A/HA		
	MCPA ester	280	EC	0.420	KG A/HA		
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	10.1 abc
	Agral 90			0.2	% V/V		
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	13.0 ab
	clopyralid	50	EC	0.075	KG A/HA		
	MCPA ester	280	EC	0.420	KG A/HA		
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	2.1 c
	Agral 90			0.2	% V/V		
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	10.5 abc
	clopyralid	50	EC	0.075	KG A/HA		

MCPA ester	280 EC	0.420 KG A/HA	
LSD (P=.05)			7.14
Standard Deviation			4.89
CV			69.18
Bartlett's X2			26.633
P(Bartlett's X2)			0.001*
Replicate F			1.953
Replicate Prob(F)			0.1480
Treatment F			4.791
Treatment Prob(F)			0.0013

Trial Comments

Early fall and late spring herbicide applications provided the best dandelion control in the year of spring spraying. Ally controlled the dandelion better than the Spectrum, especially with the late fall and early spring applications. All treatments controlled alsike clover in the year of spring spraying.

All four-application timings provided some long-term dandelion stand reduction into August of the year of the spring spraying, although the early spring application of both herbicides did not provide as good long-term control. Ally and Spectrum provided better long-term control of alsike clover than dandelion.

Measuring dandelion top growth harvested dry weight, the early fall treatments continued to provide significant long-term control into August of the year after the spring spraying. The late spring application of Ally also continued to provide long-term dandelion control.

Fall vs. Spring Herbicide Application for Weed Control – Beaverlodge - 04/05 (Expt. #WC2)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: FallWeedConBldg 0405
2004-05 Experiment

CROP: FESRU, CREEPING RED FESCUE. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION					STAGE AT APPLICATION				
Application:	A	B	C	D	Application:	A	B	C	D
Date	: Sep-13-2004	Oct-14-2004	May-5-2005	May-26-2005					
Time of Day:	1:30 pm	11:00 am	7:30 am	10:00 am	Crop 1 FESRU vegetative				
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Stage : vegetative(all stages)				
Timing	: POST-HARV	POST-HARV	POST-HARV	POST-HARV	Height:	6cm	6cm	5cm	10cm
Placement	: SURFACE	SURFACE	SURFACE	SURFACE					
Air Temp.	: 17 C	10 C	11 C	12 C					
% Humidity	: 40	80	75	50	Weed 1 TAROF				
Wind Speed	: 2MPH	0 MPH	3 MPH	0 MPH	Stage A-C rosette				
Dew Present:	n				Stage D flowering				
Soil Moist.:	EXCESSIVE	ADEQUATE	ADEQUATE	ADEQUATE	Height: 8-15 cm			7-10 cm	
Cloud Cover:	60%	80%	80%	0%					
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC	Weed 2 TRFHY				
Pressure	: 110 kPa	110 kPa	110 kPa	110 kPa	Stage A flowering				
Nozzle Type:	TeeJet	TeeJet	TeeJet	TeeJet	Stage B seed set				
5 cmle Size:	10 cm15	XR80015	XR80015	XR80015	Stage C-D vegetative				
Noz.Spacing:	50 cm	50 cm	50 cm	50 cm	Height A 5-10 cm				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M	Height B 5-10 cm				
Boom Height:	45 cm	45 cm	45 cm	45 cm	Height C 5 cm				
Carrier	: Water	Water	Water	Water	Height D 10 cm				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA					

Propellant : Propane Propane Propane Propane

Comments: Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury of the crops and % control of weeds. Treatments were applied on a grass pathway that had been in creeping red fescue for many years. Dandelions and alsike clover were present.

Weed Code						TAROF	TRFHY	TAROF
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISCON	VISCON	VISCON
Rating Unit						PERCENT	PERCENT	PERCENT
Rating Date						May-5-2005	May-5-2005	May-20-2005
Weed Stage						rossette	vegetative	flowering
Trt-Eval Interval						234/203/0/-21 DAA	234/203/0/-21 DAA	249/218/15/-6 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	100	100	100
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	100	100	99
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	100	100	98
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	100	100	96
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C			64
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	C			65
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D			
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D			
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Weed Code						TRFHY	TAROF	TRFHY
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISCON	VISCON	VISCON
Rating Unit						PERCENT	PERCENT	PERCENT
Rating Date						May-20-2005	Jun-6-2005	Jun-6-2005
Weed Stage						vegetative	fuzz	vegetative
Trt-Eval Interval						249/218/15/0 DAA	266/235/32/11 DAA	266/235/32/11 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	100	100	100
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	100	86	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	94	98	100
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	99	69	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	64	80	74
	Agral 90			0.2	% V/V				

7	florasulam	50	SN	0.005	KG A/HA	C	70	73	80
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D		33	36
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D		48	74
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF TOPGROW VISCON PERCENT Jun-20-2005 280/249/46/25 DAA	TRFHY TOPGROW VISCON PERCENT Jun-20-2005 280/249/46/25 DAA	TAROF TOPGROW VISCON PERCENT Jul-29-2005 319/288/85/64 DAA
	Weed Code								
	Part Rated								
	Rating Data Type								
	Rating Unit								
	Rating Date								
	Trt-Eval Interval								
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	100	98	96
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	78	99	85
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	89	89	68
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	38	98	51
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	81	89	76
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	C	40	98	40
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D	71	76	99
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D	65	81	63
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TRFHY TOPGROW VISCON PERCENT Jul-29-2005 319/288/85/64 DAA	TAROF TOPGROW PLANTCOUNTS PLANT/M2 Jul-29-2005 319/288/85/64 DAA	TRFHY TOPGROW VISCON PERCENT Sep-30-2005 382/351/148/127 DAA
	Weed Code								
	Part Rated								
	Rating Data Type								
	Rating Unit								
	Rating Date								
	Trt-Eval Interval								
1	Check						0	39 a	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	99	5 cd	99
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	94	3 cd	95
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	73	15 bcd	78
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	83	22 bc	94
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	84	16 bcd	69
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	C	70	26 b	90

	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D	94	0 d	93
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D	94	20 bc	98
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

LSD (P=.05)	12.53
Standard Deviation	8.57
CV	52.96
Bartlett's X2	25.612
P(Bartlett's X2)	0.001*
Replicate F	2.378
Replicate Prob(F)	0.0961
Treatment F	8.317
Treatment Prob(F)	0.0001

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF TOPGROW VISCON PERCENT Sep-30-2005 382/351/148/12 7 DAA	TRFHY TOPGROW VISCON PERCENT Jun-2-2006 627/596/393/372 DAA	TAROF TOPGROW VISCON PERCENT Jun-2-2006 627/596/393/372 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	84	99	89
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	73	98	81
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	51	63	58
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	38	91	33
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	58	55	45
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	C	38	86	30
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D	88	95	84
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D	54	81	55
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TRFHY TOPGROW VISCON PERCENT Jun-22-2006 647/616/413/392 DAA	TAROF TOPGROW VISCON PERCENT Jun-22-2006 647/616/413/392 DAA	TRFHY TOPGROW VISCON PERCENT Aug-22-2006 708/677/474/453 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	100	86	100
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	A	98	80	99

	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	59	53	66
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	B	100	43	99
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	43	46	41
	Agral 90			0.2	% V/V				
7	florasulam	50	SN	0.005	KG A/HA	C	94	28	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D	96	78	99
	Agral 90			0.2	% V/V				
9	florasulam	50	SN	0.005	KG A/HA	D	100	48	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Weed Code							TAROF	
Part Rated							TOPGROW	
Rating Data Type							VISCON	
Rating Unit							PERCENT	
Rating Date							Aug-22-2006	
Trt-Eval Interval							708/677/474/453 DAA	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	A	88	
	Agral 90			0.2	% V/V			
3	florasulam	50	SN	0.005	KG A/HA	A	80	
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	B	55	
	Agral 90			0.2	% V/V			
5	florasulam	50	SN	0.005	KG A/HA	B	36	
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	C	46	
	Agral 90			0.2	% V/V			
7	florasulam	50	SN	0.005	KG A/HA	C	28	
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	D	66	
	Agral 90			0.2	% V/V			
9	florasulam	50	SN	0.005	KG A/HA	D	38	
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			

Trial Comments

Applications of Ally and Spectrum in mid-September provided excellent long term control of dandelions. Control of dandelions following mid September applications of both products was much better than the same applications made mid-October, early May or late May. Dandelion control with Ally was higher than Spectrum on all application dates.

Spectrum provided excellent long term control of volunteer alsike clover on all application dates while Ally provided excellent long term control of alsike clover when applied in mid-September or late May.

Fall vs. Spring Herbicide Application for Weed Control – Edmonton – 05/06 (Expt. #WC3)

Dan Cole, Nicole Kimmel, Calvin Yoder
Ag Research Division, Alberta Agriculture and Food
Experiment ID: WeedCon FvsS 05
2005-06 Experiment

CROP: Non-cropland (Canada Bluegrass, Timothy, Quackgrass and Alsike Clover) Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 6 M. Expt. Location: Crop Diversification Centre North, Edmonton, Alberta.

Soil Texture: Clay Loam. %OM: 9.5 %Sand: 32.6 %Silt: 36.3 %Clay: 31.1 pH: 5.7

APPLICATION DESCRIPTION					STAGE AT APPLICATION			
Application:	A	B	C	D	Application:	A	B	C D
Date	: Sep-16-2005	Oct-11-2005	Apr-26-2006	May-31-2006				
Time of Day:	10:30 am	10:45 am	10:10 am	12:00 pm	Weed 1 TRFHY Alsike Clover			
Method	: SPRAY	SPRAY	SPRAY	SPRAY	Height: Cut at 7 cm in Fall '05			
Timing	: POST-HARV	POST-HARV	POST-HARV	POST-HARV				
Placement	: SURFACE	SURFACE	SURFACE	SURFACE	Weed 2 TAROF Dandelion			
Air Temp.	: 7 C	9 C	12 C	21 C	Stage: A Green & Healthy			
% Humidity	: 80	50	40	34	B Leaves turning yellow			
Wind Speed	: 0 KPH	5 KPH	0 KPH	0 KPH	C 2-7lf ave. 4lf			
Dew Present:	y	n	n	n	D 90% Finished flowering			
Cloud Cover:	75%	15%	30%	0%	Height: 10 cm	10 cm	3 cm	25 cm
Equipment	: BAC PAC	BAC PAC	BAC PAC	BAC PAC				
Pressure	: 138 kPa	138 kPa	138 kPa	138 kPa				
Nozzle Type:	TEEJET	TEEJET	TEEJET	TEEJET				
Nozzle Size:	80015XR	80015XR	80015XR	80015XR				
Noz.Spacing:	50 CM	50 CM	50 CM	50 CM				
Boom Length:	1.5 M	1.5 M	1.5 M	1.5 M				
Boom Height:	45 CM	45 CM	45 CM	45 CM				
Carrier	: WATER	WATER	WATER	WATER				
Appl.Volume:	100 L/HA	100 L/HA	100 L/HA	100 L/HA				
Propellant	: CO2	CO2	CO2	CO2				

Comments: Dandelion dry matter yields were collected on August 23, 2006 by harvesting 1 m^2. Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth, WEIDRY-Dry Weight. Visual assessments provide % stand reduction of the crops and % control of weeds.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF PLANT STARED percent May-26-2006 252/227/30/ -5 DAA	TRFHY PLANT STARED percent May-26-2006 252/227/30/ -5 DAA	TAROF Mature PLANT COUNT #/m2 Jul-14-2006 301/276/79/ 44 DAA
1	Check						0	0	53 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	86	100	16 bc
	Agral 90			0.2	% V/V				
3	florasulam	50	SC	0.005	KG A/HA	EARLY FALL	80	100	32 abc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	84	100	17 bc
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	85	100	22 bc
	clopyralid	50	EC	0.075	KG A/HA				

	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	85	91	11 c
	Agral 90			0.2					
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	81	99	39 ab
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			17 bc
	Agral 90			0.2					
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING			19 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Weed Code	TAROF	TRFHY	TAROF
Crop Code			Mature
Part Rated	PLANT	PLANT	PLANT
Rating Data Type	STARED	STARED	COUNT
Rating Unit	percent	percent	#/m2
Rating Date	May-26-2006	May-26-2006	Jul-14-2006
Trt-Eval Interval	252/227/30/ -5 DAA	252/227/30/ -5 DAA	301/276/79/ 44 DAA
# Subsamples, Dec.	0	0	0
LSD (P=.05)			17.6
Standard Deviation			12.1
CV			48.07
Bartlett's X2			5.619
P(Bartlett's X2)			0.69
Replicate F			0.153
Replicate Prob(F)			0.9267
Treatment F			5.161
Treatment Prob(F)			0.0008

Weed Code	TAROF	TAROF	TRFHY
Crop Code	SEEDLING	TOTAL	Mature
Part Rated	PLANT	PLANT	PLANT
Rating Data Type	COUNT	COUNT	COUNT
Rating Unit	#/m2	#/m2	#/m2
Rating Date	Jul-14-2006	Jul-14-2006	Jul-14-2006
Trt-Eval Interval	301/276/79/ 44 DAA	301/276/79/ 44 DAA	301/276/79/ 44 DAA

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						27 a	80 a	10 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	7 b	23 b	2 b
	Agral 90			0.2	% V/V				
3	florasulam	50	SC	0.005	KG A/HA	EARLY FALL	12 b	45 b	1 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	4 b	22 b	0 b
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	7 b	29 b	1 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	10 b	21 b	1 b
	Agral 90			0.2					
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	14 b	53 b	0 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	3 b	20 b	0 b
	Agral 90			0.2					
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	4 b	23 b	0 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

LSD (P=.05)						12.2	20.5	4.0
Standard Deviation						8.3	14.1	2.7
CV						85.88	40.42	155.01
Bartlett's X2						14.253	5.666	16.465
P(Bartlett's X2)						0.075	0.685	0.006*
Replicate F						0.940	0.273	1.886
Replicate Prob(F)						0.4368	0.8443	0.1589
Treatment F						3.191	8.584	5.784
Treatment Prob(F)						0.0130	0.0001	0.0004
Weed Code						TRFHY	TRFHY	TAROF
Crop Code						SEEDLING	TOTAL	Mature
Part Rated						PLANT	PLANT	PLANT
Rating Data Type						COUNT	COUNT	COUNT
Rating Unit						#/m2	#/m2	#/m2
Rating Date						Jul-14-2006	Jul-14-2006	Aug-23-2006
Trt-Eval Interval						301/276/79/ 44 DAA	301/276/79/ 44 DAA	341/316/119 /84 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						8 a	18 a	81 a
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	0 a	2 b	24 bc
	Agral 90			0.2	% V/V				
3	florasulam	50	SC	0.005	KG A/HA	EARLY FALL	0 a	2 b	28 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	3 a	3 b	21 bc
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	0 a	1 b	22 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	2 a	3 b	30 bc
	Agral 90			0.2					
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	0 a	0 b	53 b
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	3 a	3 b	2 c
	Agral 90			0.2					
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	2 a	2 b	15 bc
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
LSD (P=.05)							4.8	5.8	25.9
Standard Deviation							3.3	4.0	17.7
CV							158.73	104.93	58.24
Bartlett's X2							20.36	17.544	24.128
P(Bartlett's X2)							0.002*	0.025*	0.002*
Replicate F							1.597	0.838	2.465
Replicate Prob(F)							0.2163	0.4864	0.0867
Treatment F							2.365	7.376	6.871
Treatment Prob(F)							0.0492	0.0001	0.0001
Weed Code							TAROF	TAROF	TAROF
Crop Code							SEEDLING	TOTAL	FORAGE
Part Rated							PLANT	PLANT	PLANT
Rating Data Type							COUNT	COUNT	WEIDRY
Rating Unit							#/m2	#/m2	g/m2
Rating Date							Aug-23-2006	Aug-23-2006	Aug-23-2006
Trt-Eval Interval							341/316/119 /84 DAA	341/316/119 /84 DAA	341/316/119 /84 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			

1	Check					11 a	92 a	24.7 b
2	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY FALL	7 a	31 bc	6.9 cd
	Agral 90		0.2	% V/V				
3	florasulam	50 SC	0.005	KG A/HA	EARLY FALL	4 a	32 bc	12.6 c
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				
4	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE FALL	5 a	27 bc	5.6 cd
	Agral 90		0.2	% V/V				
5	florasulam	50 SN	0.005	KG A/HA	LATE FALL	4 a	26 bc	10.0 cd
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY SPRING	11 a	40 bc	10.6 cd
	Agral 90		0.2					
7	florasulam	50 SN	0.005	KG A/HA	EARLY SPRING	6 a	59 b	33.4 a
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				
8	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE SPRING	4 a	5 c	0.5 d
	Agral 90		0.2					
9	florasulam	50 SN	0.005	KG A/HA	LATE SPRING	4 a	19 c	3.9 cd
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				
LSD (P=.05)						7.8	25.3	7.51
Standard Deviation						5.4	17.3	5.14
CV						87.64	47.39	42.8
Bartlett's X2						7.219	13.367	19.645
P(Bartlett's X2)						0.513	0.10	0.012*
Replicate F						1.454	2.389	2.023
Replicate Prob(F)						0.2520	0.0938	0.1375
Treatment F						1.072	8.448	16.900
Treatment Prob(F)						0.4142	0.0001	0.0001
Weed Code						TRFHY	TAROF	
Crop Code								
Part Rated						PLANT	PLANT	
Rating Data Type						VISCON	VISCON	
Rating Unit						PERCENT	PERCENT	
Rating Date						Sep-24-2007	Sep-24-2007	
Trt-Eval Interval						738/713/516 /481 DAA	738/713/516 /481 DAA	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	44	71
	Agral 90			0.2	% V/V			
3	florasulam	50	SC	0.005	KG A/HA	EARLY FALL	66	61
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	55	64
	Agral 90			0.2	% V/V			
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	83	51
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	44	65
	Agral 90			0.2				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	95	39
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	85	79
	Agral 90			0.2				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	96	51
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			

Trial Comments

All four-application timings provided significantly fewer dandelion plants and reduced biomass from the untreated check treatment except for Spectrum applied early in the spring. The Ally treatments tended to provide better dandelion control than the Spectrum treatments. All treatments caused a significant reduction in alsike clover plant numbers.

Fall vs. Spring Herbicide Application for Weed Control – Beaverlodge – 05/06 (Expt. #WC4)

Calvin Yoder and Dan Cole
Ag Research Division, Alberta Agriculture and Food
Experiment ID: Fall Spring Weed Con 05/06
2005-2006 Experiment

CROP: FESRU, CREEPING RED FESCUE. Expt. Design: RANDOMIZED COMPLETE BLOCK. Reps: 4. Plot Size: 2 M x 10 M. Expt. Location: Beaverlodge, Alberta.

APPLICATION DESCRIPTION

Application:	A	B	C	D
Date	Sep-17-2005	Oct-14-2005	May-1-2006	Jun-2-2006
Time of Day	9:30 am	10:30 am	8:00	9:00 am
Method	SPRAY	SPRAY	SPRAY	SPRAY
Timing	POST-HARV	POST-HARV	POST-HARV	POST-HARV
Placement	Surface	Surface	Surface	Surface
Air Temp.	10 C	1 C	5 C	15 C
Rosetteity	FlowerFuz	81	44	15
Wind Speed	0 KPH	0 KPH	6 KPH	0 KPH
Soil Moist.	Poor	Poor	Poor	Fair
Cloud Cover		40%	15%	
Veg.-Seed Pressure	4-8 leav 110 kPa	Vegetativ 110 kPa	BAC PAC 110 kPa	BAC PAC 110 kPa
Nozzle Type	TeeJet	TeeJet	TeeJet	TeeJet
Nozzle Size	XR80015	XR80015	XR80015	XR80015
Noz.Spacing	50 cm	50 cm	50 cm	50 cm
Boom Length	1.5 M	1.5 M	1.5 M	1.5 M
Boom Height	45 cm	45 cm	45 cm	45 cm
Carrier	Water	Water	Water	Water
Appl.Volume	100 L/HA	100 L/HA	100 L/HA	100 L/HA
Propellant	Propane	Propane	Propane	Propane

STAGE AT APPLICATION

Application:	A	B	C
Crop 1 FESRU			
Height	:		
Weed 1 TAROF			
Stage A-C	: Rosette		
Stage D	: Flower fuzz		
Density	: 9cm 11cm 6cm 12cm		
Weed 2 TRFHY			
Stage A & B	: Vegetative-Seed		
Stage C	: 4-8 leaves		
Stage D	: Vegetative		

Comments: Crop and weed codes are mentioned above. Codes used in the following table have the following meaning: TOPGROW-Top growth. Visual assessments provide % injury of the crops and % control of weeds. Treatments were applied on a grass pathway that had been in creeping red fescue for many years. Dandelions and alsike clover were present. A heavy frost occurred the night before the 2nd fall application of herbicides. The dandelions had 30-40% green leaves and the clover was still green on the late fall application. The dandelions and clovers were just starting to green up when the early spring applications were made.

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code	TAROF TOPGROW VISCON PERCENT Jun-2-2006 258/231/32 /0 DAA	TRFHY TOPGROW VISCON PERCENT Jun-2-2006 258/231/32/ 0 DAA	TAROF TOPGROW VISCON PERCENT Jun-22-2006 278/251/52/ 20 DAA
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	100	100	100
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	94	100	89
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	85	90	73
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	50	100	40

clopyralid	50	EC	0.075	KG A/HA				
MCPA ester	280	EC	0.420	KG A/HA				
6 metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	81	66	84
Agral 90			0.2					
7 florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	74	88	54
clopyralid	50	EC	0.075	KG A/HA				
MCPA ester	280	EC	0.420	KG A/HA				
8 metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING			58
Agral 90			0.2					
9 florasulam	50	SN	0.005	KG A/HA	LATE SPRING			68
clopyralid	50	EC	0.075	KG A/HA				
MCPA ester	280	EC	0.420	KG A/HA				

Weed Code						TRFHY	TAROF
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISCON	VISCON
Rating Unit						PERCENT	PERCENT
Rating Date						Jun-22-2006	Jul-11-2006
Trt-Eval Interval						278/251/52/ 20 DAA	297/270/71/ 39 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	100	100
	Agral 90			0.2	% V/V			
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	100	88
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	96	58
	Agral 90			0.2	% V/V			
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	100	45
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	71	91
	Agral 90			0.2				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	100	44
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	58	80
	Agral 90			0.2				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	71	81
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			

Weed Code						TRFHY	TAROF
Part Rated						TOPGROW	TOPGROW
Rating Data Type						VISCON	COUNTS
Rating Unit						PERCENT	PLANT/M2
Rating Date						Jul-11-2006	Jul-25-2006
Trt-Eval Interval						297/270/71/ 39 DAA	311/284/85/ 53 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		
1	Check						0	23 ab
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	100	0 e
	Agral 90			0.2	% V/V			
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	100	4 de
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	86	13 cd
	Agral 90			0.2	% V/V			
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	100	25 a
	clopyralid	50	EC	0.075	KG A/HA			

	MCPA ester	280 EC	0.420	KG A/HA				
6	metsulfuron methyl	60 DF	0.0045	KG A/HA	EARLY SPRING	78	4	de
	Agral 90		0.2					
7	florasulam	50 SN	0.005	KG A/HA	EARLY SPRING	88	16	bc
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				
8	metsulfuron methyl	60 DF	0.0045	KG A/HA	LATE SPRING	81	6	de
	Agral 90		0.2					
9	florasulam	50 SN	0.005	KG A/HA	LATE SPRING	88	5	de
	clopyralid	50 EC	0.075	KG A/HA				
	MCPA ester	280 EC	0.420	KG A/HA				

LSD (P=.05)	7.62
Standard Deviation	5.22
CV	49.34
Bartlett's X2	11.505
P(Bartlett's X2)	0.118
Replicate F	2.889
Replicate Prob(F)	0.0564
Treatment F	11.744
Treatment Prob(F)	0.0001

Weed Code						TRFHY	TAROF	TRFHY
Part Rated						TOPGROW	TOPGROW	TOPGROW
Rating Data Type						VISCON	VISCON	VISCON
Rating Unit						PERCENT	PERCENT	PERCENT
Rating Date						Aug-15-2006	Aug-15-2006	Oct-2-2006
Trt-Eval Interval						332/305/106 /74 DAA	332/305/106 /74 DAA	380/353/154 /122 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	99	94	99
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	100	76	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	70	43	70
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	99	34	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	54	55	53
	Agral 90			0.2					
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	90	38	93
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	81	83	83
	Agral 90			0.2					
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	98	59	100
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Weed Code						TAROF	TRFHY	
Part Rated						TOPGRO	TOPGRO	
Rating Data Type						VISCON	VISCON	
Rating Unit						PERCENT	PERCENT	
Rating Date						Oct-2-2006	Jun-25-2007	
Trt-Eval Interval						380/353/154 /122 DAA	646/619/420 /388 DAA	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code		

1	Check					0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	79	100
	Agral 90			0.2	% V/V			
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	70	100
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	58	60
	Agral 90			0.2	% V/V			
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	39	100
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	48	28
	Agral 90			0.2				
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	53	60
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	79	75
	Agral 90			0.2				
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	65	94
	clopyralid	50	EC	0.075	KG A/HA			
	MCPA ester	280	EC	0.420	KG A/HA			

Weed Code						TAROF	TRFHY	TAROF
Part Rated						TOPGRO	TOPGRO	TOPGRO
Rating Data Type						VISCON	VISCON	VISCON
Rating Unit						PERCENT	PERCENT	PERCENT
Rating Date						Jun-25-2007	Oct-9-2007	Oct-9-2007
Trt-Eval Interval						646/619/420 /388 DAA	752/725/526 /494 DAA	752/725/526/ 494 DAA
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Appl Code			
1	Check						0	0	0
2	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY FALL	74	95	63
	Agral 90			0.2	% V/V				
3	florasulam	50	SN	0.005	KG A/HA	EARLY FALL	78	100	65
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
4	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE FALL	50	53	28
	Agral 90			0.2	% V/V				
5	florasulam	50	SN	0.005	KG A/HA	LATE FALL	30	98	23
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
6	metsulfuron methyl	60	DF	0.0045	KG A/HA	EARLY SPRING	48	25	15
	Agral 90			0.2					
7	florasulam	50	SN	0.005	KG A/HA	EARLY SPRING	10	79	23
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				
8	metsulfuron methyl	60	DF	0.0045	KG A/HA	LATE SPRING	5	48	15
	Agral 90			0.2					
9	florasulam	50	SN	0.005	KG A/HA	LATE SPRING	20	96	28
	clopyralid	50	EC	0.075	KG A/HA				
	MCPA ester	280	EC	0.420	KG A/HA				

Trial Comments

Early fall applications of Ally and Spectrum provided excellent control of dandelions, better control than applications made late fall, early spring or late spring. Late fall or early spring applications of Ally and Spectrum resulted in poorer dandelion control.

Spectrum provided excellent control of clover on all application dates. Early fall (mid-September) applications provided the best clover control with Ally. Spectrum controlled clover better than Ally on all application dates.

BIOGRAPHICAL DATA OF PRIMARY RESEARCHERS

Title: Mr. **First Name:** Dan **Last Name:** Cole
Position: Weed Agronomist **Organization/Institution:** Pest Management Branch/Ag Research Division
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Past experience relevant to project: (Point form, concise.)

- Weed agronomist with AAFRD from 1988 to the present.
- Weed research assistant with AAFRD from 1979 to 1988.
- Conducted numerous herbicide tolerance trials and published information on seedling and established timothy, chewings fescue, hard fescue, creeping red fescue, tall fescue, meadow bromegrass and perennial ryegrass for seed production.
- Applied for and received over 60 Minor Use Registrations since 1988.

Degrees /Certificates /Diplomas:	**Institution Received From:**
B.Sc. in Plant Science	University of Alberta 1972
M.Sc. in Plant Science	University of Alberta 1998

Publications and Patents:

# of Refereed papers: 8 Conference proceedings: 9
Relevant Patents obtained: Other relevant citations:

Other evidence of productivity during past 6 years: (Point form, concise)

Grekul, C.W., D. E. Cole and E. W. Bork. 2005. Canada thistle (Cirsium arvense) and pasture forage responses to wiping with various herbicides. Weed Tech. 19: 298-306.

Tansey, J. A., A. S. McClay, D. E. Cole and B. A. Keddie. 2005. Evidence for the influence of conspecific chemical cues on *Aphthona nigriscutis* (Coleoptera: Chrysomelidae) behaviour and distribution. BioControl 50: 343-358.

Yoder, C., B. Gossen, D. Cole, D. Wong, G. Ropchan, G. Huebner, H. Najda, J. Otani, J. Lickacz, J. Soroka, M. Tremblay, M. Watts, N. Fairey and S. Burton. 2004. Timothy seed production in western Canada. Alberta Agriculture, Food and Rural Development Agdex 127/15-2. 21 p.

Najda, H., D. Cole, D. Wong, C. Yoder, N. Fairey, B. Coulman, B. Gossen, J. Soroka, G. Huebner, M. Watts, M. Tremblay. 2004. Perennial ryegrass seed production in western Canada. Alberta Agric., Food and Rural Development Agdex 127/20-1. 15 p.

Cole, D. and N. Olstad. 2004. Tolerance of Forage Crops to Herbicides. Alberta Agriculture, Food and Rural Development. 143 p.

Clements, D. R., D. E. Cole, S. Darbyshire, J. King and A. McClay. 2004. The biology of Canadian weeds. 128. Leucanthemum vulgare Lam. Can. J. Plant Sci. 84: 343-363.

Zhang, W. M., M. Sulz, K. L. Bailey and D. E. Cole. 2002. Effect of epidemiological factors on the impact of the fungus Plectosporium tabacinum on false cleavers (Galium spurium). Biocontrol Sci. Tech. 12: 183-194.

Cole, D. E., C. Yoder and J. Lickacz. 2002. Tolerance of fine fescues for seed production to graminicides and tank mixes. Submitted to AARI Project #98M288 Final Report. 65 pp.

Cole, D. E. and N. Olstad. 2001. Weed control in forages: April 2001 update. Ox-eye daisy and dandelion. Alberta Agriculture, Food and Rural Development. 35 p.

Title: Mr. **First Name:** Calvin **Last Name:** Yoder
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Past experience relevant to project: (Point form, concise.)

Tolerance of established red and alsike clover to herbicides	2000 - present
Fall herbicide application for perennial weed control in grass seed crops	2000 - present
Tolerance of creeping red fescue to cleaver controlling herbicides	1997 - present
Tolerance of timothy to broad-leaved weed herbicides	1998 –present

Degrees /Certificates /Diplomas: B.Sc. Agriculture/Forages **Institution Received From:** University of Alberta

Publications and Patents:

# of Refereed papers: 1 Conference proceedings: 18
Relevant Patents obtained: Other relevant citations:

Other evidence of productivity during past 6 years: (Point form, concise)

-Yoder, C. and D. Cole. 2002. Tolerance of Established Creeping Red Fescue to Herbicides.
-Yoder, C. and D. Cole. 2002. Tolerance of Established Timothy to Herbicides.
-Yoder, C., D. Stevenson and L. Darwent. 2001. Effects of Herbicides on Creeping Red Fescue Seed Yields Applied at Two Different Stages of Application"- AARI Interim Report Project#99PR17.
-Yoder, C., J. Beaudoin, and D. Cole. 2000. Tolerance of 3 Year old Established Timothy (2000) to Curtail M and Prestige With Seed and Hay Yields. Expert Committee on Weeds Research Report, Experiment ID: Timothy E00 Guy.
-Yoder, C., D. Stevenson and L. Darwent. 2000. Tolerance of Established Creeping Red Fescue to Prestige and Attain with Seed Yields - Debolt. Expert Committee on Weeds Research Report, Experiment ID: Cr Red E00 Debolt
-Yoder, C., D. Stevenson and L. Darwent. 1998. Tolerance of Established Creeping Red Fescue to Cleaver Controlling Products For Seed Production Purposes - Spirit River. Expert Committee on Weeds Research Report, Western Section. p. A5.
-Yoder, C., D. Cole and G. Heinz. 1998. Tolerance of Established Hard Fescue to Graminicides - Tangent. Expert Committee on Weeds Research Report, Western Section. p. A18.

Title: Mr. **First Name:** Henry **Last Name:** Najda
Position: Grass Seed & Forage Scientist **Organization/Institution:** Crop Diversification Centre South
Department: AAFRD **Mailing Address:** SS 4
City: Brooks **Prov/State:** AB **Postal Code/Zip:** T1R 1E6
E-mail Address: henry.najda@gov.ab.ca **Phone Number:** (403) 362-1346 **Fax Number:** (403) 362-1306

Past experience relevant to project: (Point form, concise.)

Agronomic studies on grass seed production (Kentucky bluegrass, tall fescue, perennial ryegrass, orchardgrass, fine fescues) – 1987- present

Yield potential and forage quality of annual forage legumes in Southern Alberta – 1993-1995

Degrees /Certificates /Diplomas:	**Institution Received From:**
B.A.	University of Alberta
MPM	Simon Fraser University

Publications and Patents:

# of Refereed papers: 14 Conference proceedings: 13
Relevant Patents obtained: Other relevant citations: 116

Other evidence of productivity during past 6 years: (Point form, concise)

Baron, V.S., **Najda, H.G**., McCartney, D.H., Bjorge, M. and Lastiwka, G.W. 2003. Winter weathering effects on corn grown for grazing in a short-season area. Can. J. Plant Sci. 83:333-341.

Hwang, S.F., Gaudet, D.A., Turnbull, G.D., Chang, K.F., Howard, R.J. and **Najda, H**. 2002.Effect of plant age and cottony snow mold on winter survival of forage grasses. Can. J. Plant. Sci. (in press)

Gossen, B.D., Soroka, J.J. and **Najda, H.G**. 2002. Residue management increases seed yield of three turfgrass species on the Canadian prairies. Can. J. Plant Sci. 82:687-692.

Najda, H.G. and R.C. McKenzie. 1996. The agronomy and management of grass seed production under irrigation. Farming for the Future Project 92-0049F. 56 pp.

Gossen, B.D., Soroka, J.J. and **Najda, H.G**. 1997. Narrow rows and residue management increase seed yield of three turf grasses. *In* Proceedings XVIII International Grassland Congress. Winnipeg and Saskatoon, Canada. June.

Acharya, S.N., Kozub, G.C., **Najda, H**. and Aasen, A. 1997. Study of genotypic x environment interaction in alfalfa forage yield. *In* Proceedings XVIII International Grasslands Congress. Winnipeg and Saskatoon, Canada. June.

Title: Mr. **First Name:** Trent **Last Name:** Whiting
Position: Senior Production Coordinator, Forage Seed **Organization/Institution:** Agricore United
Department: Forage Seed **Mailing Address:** 260, 2833 Broadmoor Blvd.
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Past experience relevant to project: (Point form, concise.)

- 8+ years experience in field scale production and buying of grass/legume seeds in western Canada (Meadow bromegrass, smooth bromegrass, hybrid bromegrass, timothy, tall fescue, perennial ryegrass, creeping red fescue, alfalfa, red clover)
- 5 years experience in wholesaling/retailing grass/legume seeds domestically and internationally

Degrees /Certificates /Diplomas:	**Institution Received From:**
Diploma – Crop Production	Fairview College
B.Sc. Agriculture	University of Alberta

Publications and Patents:

# of Refereed papers:	Conference proceedings:
Relevant Patents obtained:	Other relevant citations:

Other evidence of productivity during past 6 years: (Point form, concise)

Title: Mr. **First Name:** David **Last Name:** Wong
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City: Grande Prairie **Prov/State:** AB **Postal Code/Zip:** T8V 6J4
E-mail Address: david.k.wong@gov.ab.ca **Phone Number:** (780) 538-5285 **Fax Number:** (780) 538-5288

Past experience relevant to project: (Point form, concise.)

Degrees /Certificates /Diplomas:	**Institution Received From:** University of Alberta
Bachelor of Science in Agriculture	
Certificate in Adult and Continuing Education	University of Alberta
Bachelor of Education	Concordia University of Alberta

Publications and Patents:

# of Refereed papers:	Conference proceedings:
Relevant Patents obtained:	Other relevant citations:

Other evidence of productivity during past 6 years: (Point form, concise)
Forage Seed Outlooks – posted on Alberta Agriculture's internet web site and on Forage Seed News Publication (Manitoba Forage Seed Association newsletter) – 11 issues posted
Published: CD on "Forage Seed Production in the Peace River Region of Canada"
Published: "Forage Seed Processors Active in the Peace Region"

- presenter – Peace River Forage Seed Association Annual Meetings – 2001
- presenter – Warburg Seed Cleaning Association annual meeting: Forage Seed Markets
- presenter - forage seed market outlooks (Numerous)