AGRI-FACTS
Practical Information for Alberta's Agriculture Industry

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Harvesting Grass Seed

The timing of seed harvest is one of the most important decisions a grass seed grower will make. Grasses need 20-30 days after flowering for seeds to properly mature. This will vary because the period of flowering and seed development lasts from several days to two weeks. As a result, seed heads emerge at different times, which causes uneven ripening.

Hot, dry weather shortens the ripening time. Cool, moist conditions delay seed maturity. Grasses grown under irrigation tend to have a higher ash content, which can result in more shattering than experienced with dryland produced grasses. The ideal time to swath is when seed is at the medium to hard dough stage and still firmly attached. Moisture testing of the entire seed head (35-50%) is also a useful indicator of when to swath. Most grasses will hold their seed for 10-15 days, but the time from medium dough to seed shatter can be as short as three or four days.

Seed shattering will depend on:

- the grass species,
- stage of maturity,
- the variety,
- the degree of lodging, and
- wind, rain or hail.

Check fields often to determine when the crop is ready to harvest. Here are some guidelines that indicate when a seed crop is mature enough to harvest.

- A crop is ready to harvest when seed is at the medium to hard dough stage (moderate to hard pressure with a thumbnail will dent the seed of large-seeded species). Swath when 75 per cent of the seed heads have matured.
- Grass seed heads generally ripen from the top down. When the tips begin to shatter, the crop is ready to harvest. Harvest immediately if seed heads shatter when gently struck against the palm. A crop is ready to swath if seed heads shatter when roughly struck against the palm.

The table at the end of this factsheet gives guidelines for harvesting various grasses. It is for reference only. Growers should use their own judgement and experience, based on their situation, to make harvesting decisions.

Harvest methods

In most cases, a conventional grain combine can be used to harvest either a standing or swathed grass crop. Adjust the combine as recommended by the manufacturer and thoroughly clean the combine before harvest. Air intake should be based on seed weight. Shut off the air intake when harvesting light chaffy seed, such as orchard grass. For heavier seeds, such as smooth bromegrass, air intake can be increased slightly. It is important that an even continuous flow of material is fed into the combine. Be careful to prevent seed being carried through the combine in the straw and chaff. A slow forward speed of 1-2 mph (1.5-3 km/h) can reduce seed losses by 40-70 per cent. A concave setting of about 1/4 inch (6 mm) and a cylinder speed of about 1,100 rpm is a good starting point to make adjustments from. Set the chaffer at 1/2-5/8 inches (13-15 mm) and the cleaning sieve at 1/8-1/4 inch (3-6 mm).

Swathing and combining

Swathing and combining is the most common method of harvesting grass seed. The swather should be set to leave the stubble sturdy to support the windrow and to allow air to circulate and dry the swath. Swath easily shattered grasses in the early morning or in the evening when air humidity is higher. When swathing species and varieties that shatter easily, lay heads into the centre of the swath rather than flaring individual heads to the side. This will help keep shattered seeds on top of the swath if a heavy rain has caused shattering. Under low humidity, drying in the swath from 5 to 10 days will usually allow the seed to dry enough for harvest and safe storage.

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Advantages of swathing and combining:

- Faster combining
- Harvesting is earlier because the seed cures in the swath.
- Seed loss due to shattering is lower.
- Harvested seed is more likely to be dry and safe to store.
- Seed aftermath can be quickly removed.

Disadvantages of swathing and combining:

- Swaths may be scattered or lost due to high winds.
- Rain or hail may delay combining, causing shattering and lowering seed quality.
- There may be more weed seed contamination

Direct combining

This method can be suitable for small fields that have ripened uniformly. It should be done when 5-15 per cent of the seed is still immature and some of the mature seed is just beginning to shatter. Adjust the cutter bar to the highest practical height to take up as little green material as possible and about 90 per cent of the seed heads.

Advantages of direct combining:

- Seed is more mature when harvested
- Less time and labour needed for harvest

Disadvantages of direct combining:

- Seed moisture content may be high, and seed may need drying before storage, otherwise heating may result in low germination and loss of seedling vigor.
- Crop is more vulnerable to weather, especially wind, because it is out in the field longer.
- Combining is usually slower because more green material is run through the combine
- A second cutting may be required to remove aftermath and straw

Seed stripping

Seed stripping is not generally used for cool-season grasses except for meadow and creeping foxtail. The best use of strippers is with native prairie grasses. There is less chaff in the seed, resulting in higher seed quality and purity. Only mature seed is harvested. The disadvantages may include increased harvest and machinery costs and higher seed moisture contents at harvest.

Seed storage

Grass seed will not all be fully ripe at harvest. If possible, clean seed to remove damp, green material and stems and dry seed to avoid heating. Germination can be greatly reduced by storing at high moisture contents, even for short periods. Seed can be artificially dried by using heated or unheated air moving through the bulk seed. The drying air should not be over 38°C (100°F), otherwise seed viability may be reduced. Grass seed can be stored safely at 8-12 per cent moisture, depending on the species. Storage life varies among crop species and will be affected by initial seed quality, seed moisture and storage conditions. To maintain high germination, store seed under cool dry conditions.

Aftermath removal

To maintain high seed yields, remove harvest residue from swathed fields soon after harvest and before full regrowth starts. Removing residue reduces disease and insect problems and increases light penetration, which stimulates more and larger tiller production.

Aftermath material can be used as hay or pasture. The use of aftermath as hay or pasture can increase seed yields up to 35 per cent than if left unused. Grasses such as Kentucky bluegrass and creeping red fescue make good fall and winter pasture. Because most perennial grasses initiate reproductive tillers in late summer and fall, use moderate stocking rates to avoid damage to plant crowns.

Burning is also an effective way to remove harvest aftermath, but be careful not to damage plant crowns. Spread heavy swaths so they will burn evenly and quickly, without forming hot spots that could damage reproductive tillers. A permit may be required for burning. Check your local burning by-laws.

Harvesting Guidelines

Grass	When to Harvest*	Harvest Methods	Comments
Bentgrass •Colonial •Creeping •Velvet	Late July or early August. Seed separates from seed head when rubbed in the palm of the hand	- Mower with windrow attachment. - Air should be off as seeds are very small and light	Does not shatter easily.
Bluegrass •Canada •Kentucky	July or early August. Heads will be yellow or brown and seed firm. Seed head moisture content 45-50%.	- Swath or straight combine, may have to be run through combine twice - Carefully adjust air intake. - Some growers have had success with rotary or axial flow combines	Does not shatter easily. Cottony filaments at base of seed may cause problems.
Bromegrass •Meadow •Smooth	Late July or early August. Heads will be brown and upper stems turning brown. Seed head moisture content 50-55%	- Swath (may be an advantage to straight combine light crops). - Can be combined when seed moisture content is about 14%, about 10 days after swathing. - Cylinder speed 100-200 rpm slower than for wheat, concaves closed more than for wheat on rub-bar cylinders and sieves wider than for wheat, air off	Meadow brome is about a week earlier than smooth brome and shatters more easily. 10-20% dockage can be expected.
Canarygrass •Reed	Mid-late July. About 1/2 of the seeds will be brown or grey. Seed head moisture content 50-55%	- Swathing reduces shattering. If straight combining, raise table to avoid basal leaves. - Cylinder speed should be slowed and air intake reduced. - Concaves should be adjusted so seeds are not dehulled.	Shatters very easily. High winds can mean total crop loss. For top grade 55% of the seed must be viable.
Fescue •Creeping Red	Early August. Seed head moisture content 35-40%	- Swath. Can straight combine, but only if there is not much green material. - Cylinder speed slower than for wheat, clearance between cylinder and concaves should be as wide as possible.	Seed shatters easily if harvest is delayed. Swath in evening or early morning if shattering is a problem.
•Meadow •Tall	Early August. Heads will be brown with a slight tinge of green (5-15% of seeds immature). Seed head moisture content 45-50%	- Swath. Start with settings for barley and then adjust. - Concave and rub bars should be in good condition to thresh the slippery strawed crop properly.	Seed shatters easily if harvest is delayed. Swathing too early results in shrunken, light seed.
Foxtail •Creeping •Meadow	Seed ripens over time in early July. Seed head moisture content 55-60%	- Strippers and specialized machinery. - If combining, set cylinder speed to about 900 rpm. Adjust concave spacing to about 1/4 inch (6 mm). Open top sieve 2/3 to 3/4 and bottom sieve about 1/2. Adjust as needed. Remove all screens. Shut off all air.	Growers are urged to investigate production and handling techniques before growing these grasses.
Orchard Grass	Mid-July to early August. Heads will look light brown, some will be greenish, stem turning yellow to brown. Seed head moisture content 35-40%.	- Set swather to cut 12-18 inches (30-35 cm) high to avoid basal leaves - Air intake should be cut down. Set cylinder speed and concave so seed is not dehulled.	Seed shatter. Straight combining is not recommended.
Ryegrass •Italian	Crop will be on greenish side with a seed moisture content of 45%.	- Swath and combine from swath when dried to about 35% seed moisture. - Avoid direct combining as shattering losses can be high.	Shatters very easily. Not usually winter hardy.
•Perennial	1-2 florets will come off the head when pulled between fingers. Crop will be greenish with seed head moisture of 50-55%.	- Swath and combine. - Avoid direct combining, as shattering losses can be high.	Shatters easily when mature - not usually winter hardy.
Timothy	Early to mid-August. Heads will be grey with brownish tinge and are gold colored at the base. Seed head moisture content 40-50%.	- Swath when 50-60% of head is ripe. Can straight combine when tips of the head show slight shattering. - Cylinder speed about 600-800 rpm, adjust concave 3/16 to 3/8 inch (5-10 mm) in front and 1/16 to 1/8 inch (1.5-3 mm) at back.	Easily dehulled. Seed shattering, dehulled seed and maturity can vary with the variety grown.

Grass	When to Harvest*	Harvest Methods	Comments
Wheatgrass •Crested	Late July to early August. Heads will be brown, stems a bit green. Seed head moisture content 35-40%.	- Swath. - Concave clearance closed enough to break up spikelets into single seeds. - Straw breakage should be kept to a minimum. - Reduce cylinder speed of spike-toothed combines to one-half and replace concaves with blanks.	Shatters very easily, especially Fairway and Parkway.
•Intermediate •Pubescent	Late August. Seed head moisture content 50-55% for intermediate, 60-65% for pubescent.	- Swath. - Cylinder speed of 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily. Matures about 3 weeks later than smooth bromegrass.
•Northern •Slender •Streambank	Mid-July. Seed head moisture content 40-45%.	- Swath. - Cylinder speed of 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
•Tall	Late August-September. Heads brown and stems a bit green. Seed head moisture content 50-55%.	- Swath. - Cylinder speed 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
•Western	Mid-August. Heads will be brown and stems a bit green.	- Swath. - Cylinder speed 1200-1400 rpm and concave spacing of 3/8 to 1/2 inch (10-13 mm).	Shatters easily.
Wildrye •Altai •Russian	Mid-late July. Straw will be just turning golden yellow. Seed head moisture content 40-45%.	- Swath. Start with a combine setting for wheat and adjust. Use a rub bar cylinder - slow fan and combine speed, set sieves at 1/3 to 1/2 open.	Shatters very easily. Altai does not shatter as readily as Russian.

* *Moisture content for entire seed heads established by research at Agriculture Canada, Beaverlodge. You can use a commercial moisture tester or a home oven set at 180°F (82°C). Use a scale to determine before-and-after drying weights. Allow about 4 hours for drying to reach a stable weight when using the home oven method.*

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