Sowing Rate for Seed Crops of Perennial Ryegrass

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Introduction

Observations from perennial ryegrass (*Lolium perenne* L.) variety trials conducted in the Peace River region since 1984 have indicated that seed yield and winter survival varies considerably among varieties and years but that a seed yield of 500-900 kg ha^{-1} in the first production year is quite common. These reports also indicate that the winter hardiness of most varieties of perennial ryegrass is inadequate to ensure perenniality in the Peace River region, although they normally survive their first winter and produce one seed crop. Many grass-seed crops grown are relatively slow to establish and, to ensure a seed crop in the year after establishment, must be sown without a companion crop. Local observations and the published literature indicate that perennial ryegrass establishes very aggressively compared with most other grass species. There is commercial interest in expanding the contract production of seed of perennial ryegrass, so a project was conducted to evaluate the seed yield and quality of perennial ryegrass in the year after its establishment with a companion crop of barley harvested for grain.

Experimental Details

In 1991, each of two sites was sown with 70 kg/ha of 'Heartland' barley, and was then under-sown with diploid perennial ryegrass. Three varieties of ryegrass (All*Star, Barclay and Repell) were sown on 30 cm rows at 6 sowing rates (150, 300, 600, 1200, 2400 and 4800 viable seeds per square metre). In the fall, the barley crop was harvested for grain and 200 kg/ha of 34-0-0 nitrogen fertilizer was applied to support the growth of the grass seed crop in the subsequent year. In 1992, the yield and quality of the perennial ryegrass seed crop was obtained for each site.

PRGVSR: 19/06/91 AT BRF - UNDERSOWN IN BARLEY

PRGVSR: 20/07/92 AT BRF - BARLEY COMPANION CROP

25/09/91 AT BRF PRGVSR MAY '92 AT BRF

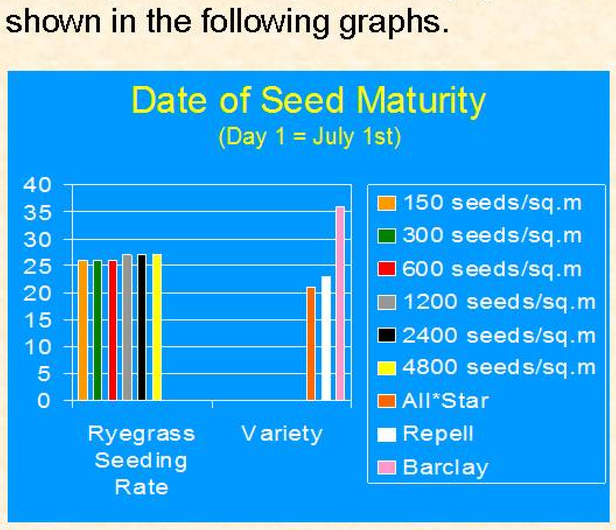
PRGVSR: MAY 1992 AT BRF - NEW SPRING GROWTH

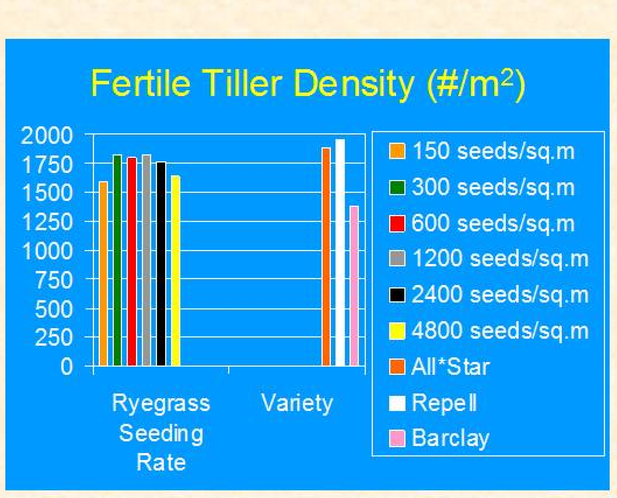
PRGVSR: 20/07/92 AT BRF - RYEGRASS RIPENING

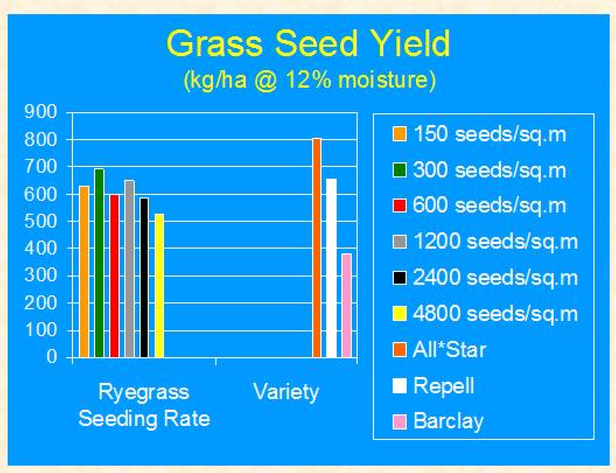
PRGVSR: 20/07/92 AT BRF - MATURITY DIFFERENCES

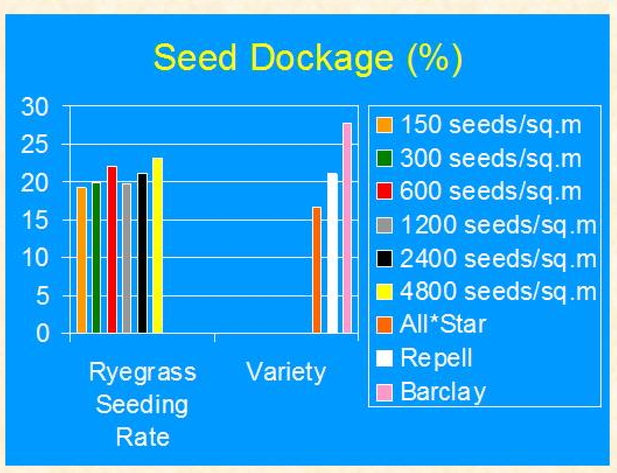
Results

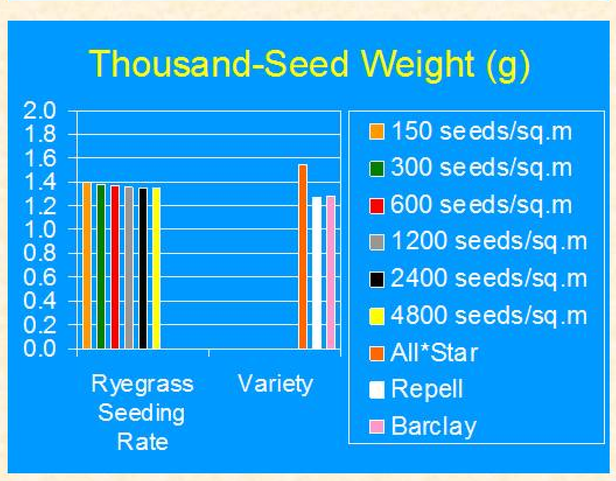
The grain yield of the companion barley crop averaged 3915 kg/ha. It was comparable to commercial yields for the region, and was unaffected by the variety or seeding rate of the perennial ryegrass. The performance of the perennial ryegrass is shown in the following graphs.

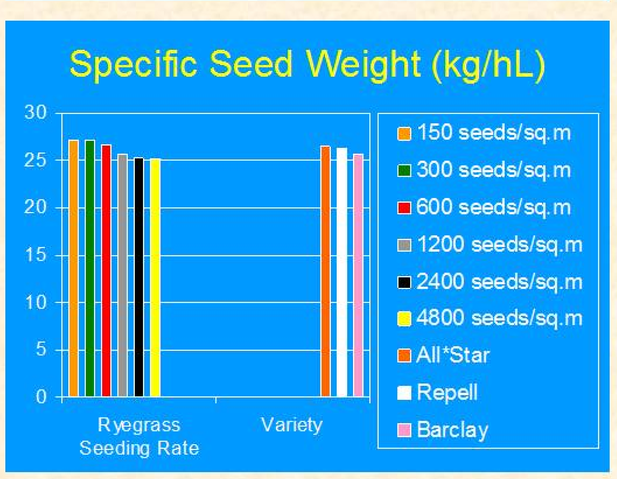












Conclusions

1. There is some potential for under-seeding a spring grain crop with perennial ryegrass for the production of successive harvests of grain and perennial ryegrass seed. Seed production of perennial ryegrass is a fairly risky proposition in the Peace River region. Normally only one seed harvest is possible for most cultivars because of inadequate winter survival.

2. In the year after its establishment with a grain companion crop, the seed yield of perennial ryegrass is affected markedly by variety, and is particularly dependent on the variety's ability to develop and mature a high density of fertile tillers.

3. There is considerable flexibility in the seeding rate required for establishing perennial ryegrass with a companion grain crop. A seeding rate of 150-300 viable seeds per square metre should ensure a satisfactory stand for seed production when grown in rows.

4. Seed yield and quality of perennial ryegrass is influenced more by crop variety than by seeding rate.

5. More research is required to identify crop management practices for the production of economic yields of seed from varieties of perennial ryegrass that already have an established market in foreign countries.

Acknowledgement: The technical assistance of Lois Connelly, Tom Cramer and Marlene Probst is acknowledged gratefully.

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