

Intercropping Spring and Winter Cereals to Extend Grazing

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Key Points

- We must have a sufficient forage source to accommodate the increasing number of cattle in Alberta
- Intercropping of spring and winter cereals may help to increase forage production and extend the grazing season for cattle producers
- The objective of this study was to determine the effects of intercropping spring and winter cereals on yield and quality of forage and potential to extend the grazing season
- This project was carried out at 6 locations including: Fort Kent, Westlock, Ryley, Killam, Stettler and Oyen.

Body

Partners: Greencover Canada Technical Assistance Program, Agricultural Research & Extension Council of Alberta Applied Research & Forage Associations including BRRG, CARA, GWFA, GRO and LARA

Objectives:

- 1) To accelerate the adoption of beneficial grazing management practices related to tame forage management.
 - ARECA's definition of *Beneficial Management Practices (BMPs)* are forage and grazing management production practices that move land managers and their production units (farms) toward environmental, production and financial stability.
- 2) To extend the grazing season and release pressure on pasture resources via intercropping of a spring and winter cereal.

Background: Using annuals for grazing is one way that livestock producers can produce pasture in the same year that it is seeded. Having annual pasture available provides a way to relieve the pressure on native and tame pastures; they are also useful in extending the grazing season, in both the spring and the fall. Annual pastures are very flexible as seeded acreage can be changed every spring, depending on need, and excess pasture can be harvested as stored feed.

Intercropping spring and winter cereals has the additional benefits of producing a silage or greenfeed crop, re-growth for fall pasture, and spring pasture in the following year; allowing producers to harvest three crops from one seeding. Spring cereals provide most of the yield for the silage or greenfeed crop, while the winter cereals increase silage quality and provide excellent fall pasture. Intercropping may reduce silage yield but the silage and pasture yields together produce more forage per acre than either one grown separately.

Winter cereals seeded in the spring remain vegetative in the year of seeding. They produce well into the fall, respond best to rest periods rather than continuous grazing, are of high quality and maintain this quality well into the fall. Winter triticale and fall rye are more productive during the fall than winter wheat; they are capable of withstanding frosts and are of high quality and stay green well into the fall.

Growing winter cereals for pasture is generally more expensive than using perennial pasture; however, winter cereals allow for an extended grazing season of high quality forage. Extending the grazing season reduces harvesting, handling, feeding and manure disposal costs.

Methods: Field plots of spring and winter cereals seeded alone, and their intercropping combinations were established at Fort Kent, Westlock, Ryley, Killam, Stettler and Oyen. A randomized complete block design with 3 replications was used. Recommended agronomic practices were followed. Forage from all plots was cut in August. A second cut was taken from the winter cereal and intercropped treatments in October. Forage production from re-growth of winter cereals and intercropped treatments, and newly seeded spring cereals was also evaluated in the following year, where applicable.

Results & discussion: The results varied considerably between sites. In 2005, for example, at Ryley the top ranking treatments were spring cereals and the bottom ranking treatments were winter cereals; the intercropped treatments at Stettler out yielded both the spring and winter cereals seeded alone; and the spring cereals seeded alone were the lowest yielder at Killam. Similarly in 2006, spring cereals yielded maximum at Ryley and minimum at Killam whereas two of the Osprey winter wheat intercropped treatments had maximum yield at Stettler. Prima fall rye and Pika winter triticale performed similarly in winter hardiness and yield and were significantly better than Osprey winter wheat (at the Fort Kent site). Considering the sum of yields for the 2 years, for the most part, the spring and winter cereals seeded alone were out-yielded by the intercropping treatments.

At Oyen, the highest yielding single crop was Prima fall rye, with the Fridge winter triticale not far behind. The single spring crops were not harvested because they were too short and had weed control problems due to late seeding. The highest yielding

combination was Prima + Companion. This site was only clipped once since the rain that was received in June kept prolonging the first cut. Hot, dry weather in July restricted re-growth, so a second cut was not taken. The results of this trial at Oyen do not illustrate the potential of intercropping spring and winter cereals. Timing of seeding, weed management, precipitation and timing of cutting are all important considerations in making practices such as this achieve desired results. Producers in the Special Areas have tried similar combinations in the past, and when moisture is adequate they have achieved considerable fall and early spring grazing from the winter cereal component. Fall rye is typically the hardiest for winter survival, but the winter wheat and winter triticale can reach higher production levels in the year of seeding.

The yield from re-growth at the majority of sites showed that winter cereals could be used to extend the grazing season, even though variability is high. The ability of use of the winter cereals (up to 3 harvests) show that there are additional benefits to intercropping. With little or no further inputs or costs associated with production in year two, the winter cereals provide an additional silage/green-feed/grazing crop. The greatest benefit seen from intercropping was in increase in silage quality and improved yield.

Extension: In addition to the plots themselves, several methods of extending this information to producers were utilized. Plots were toured during the summer and fall of the production year and in the following spring, articles appeared in association newsletters, year-end reports on the project were included in each association's Annual Report and findings were presented at association Annual General Meetings.

Conclusion

Intercropping spring and winter cereals has the benefits of producing a silage or greenfeed crop in the production year, re-growth for fall pasture in the production year, and spring pasture in the following year; allowing producers to harvest three crops from one seeding.

Using annuals for grazing is one way that livestock producers can produce pasture in the same year that it is seeded. Having annual pasture available provides a way to relieve the pressure on native and tame pastures; they are also useful in extending the grazing season, in both the spring and the fall. Annual pastures are very flexible as seeded acreage can be changed every spring, depending on need, and excess pasture can be harvested as stored feed.