

Six years of adaptive and on-farm spring cereal research in Newfoundland

SUMMARY

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Imported feed is the largest single farm operating expense in Newfoundland, yet the local production of feed grains is negligible. The federally-funded Feed Freight Assistance Program once provided annual subsidies of approximately \$2 million for the transport of grain into the province, but this program was terminated in 1995. Self-sufficiency in grain production is thus a desirable long-term objective for Newfoundland livestock farmers.

Some of the many difficulties facing producers in Newfoundland include acidic, stony and undrained soils. The summer is cooler than in the Maritime provinces. Early spring and summer climates also tend to be highly variable, especially in coastal regions, due to the moderating effect of the annual break-up of the northern ice pack. There is little or no modern information comparing wheat, oats and barley in Newfoundland. Also, there are no up-to-date guidelines for mechanized grain production.

Our research objectives were to develop basic agronomic principles of mechanized spring grain production in Newfoundland. We were interested in determining appropriate seeding dates and soil pH levels for local barley production. We also wished to determine if other spring grain species had potential for mechanical cultivation in Newfoundland. A final goal was to demonstrate mechanized grain production to Newfoundland's livestock farming community.

We conducted barley seeding date trials in five environments in both eastern and western Newfoundland between 1996 and 1998. We also explored the relationship between soil pH and barley grain yield through soil and yield sampling in two large fields in both 1997 and 1998. An additional part of our work was an examination of small grain potential on farms throughout Newfoundland. Between 1993 and 1998 over 20 livestock farmers throughout the island cooperated with the Newfoundland Grain Project, growing and comparing varieties of barley, spring wheat and oats on their farms.

Late seeding of barley in the spring / summer resulted in linear grain yield reductions involving decreased grain weight and smaller plants. These results suggest that seeding as early as possible in May generally results in the highest grain yield. However, early seeding in Newfoundland is riskier than in other provinces of Atlantic Canada, due to extremely variable May and June climatic conditions.

A general recommendation arising from this part of our work is that barley should be planted in Newfoundland before 1 June to attain a reasonable grain yield in most years. If barley cannot be planted prior to this date the farmer may be better off harvesting for silage or fresh-cut forage.

Statistical analysis of our experiment involving soil and yield sampling indicated that Sterling barley reached a yield plateau around a soil pH of 6 in 1998, while Chapais barley reached a yield plateau around a soil pH of 5.4 in 1997. Most of the arable land in Newfoundland is acidic and farmers spend a great deal of time and labour on limestone amelioration. Our results suggest that beyond an approximate pH threshold of 5.4 to 6.0, depending upon variety, soil problems other than pH are more important in determining yield potential. Most agricultural land in the province is not drained. Excess moisture appeared to affect barley yield as much as soil pH at one of the two farm sites we studied here.

Data collected from our on-farm demonstration trials conformed with many results commonly reported for the Atlantic Provinces: 1) six-row barley yielded more than both two-row barley and spring wheat; 2) two-row barley yielded more straw than six-row barley, and; 3) the feeding value of wheat was higher than barley, which was higher than oats.

Barley appears to be well adapted to Newfoundland growing conditions, normally providing a high yielding, mature grain of good feeding quality. Farmers collaborating with the project were generally impressed with the potential of growing barley for grain and some are now regularly doing so. Many other cooperating farmers have indicated a desire to grow spring cereals once they achieve self-sufficiency in forage production.

The scientific article from which this summary was derived begins on page 206 of this issue.

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