



RESEARCH FACTS

RESEARCH & TECHNOLOGY DEVELOPMENT FOR THE CANADIAN BEEF INDUSTRY

IN PROGRESS



Breeding new feed and forage barley and triticale varieties

Project Title:

Evaluating new next-generation strategies to boost breeding efficiency for Feed and Forage Production in Barley and Triticale

Researchers:

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Project Code:

FDE.06.19

Completed:

In Progress. Results expected in February 2024.

Background:

Continued improvements in the yield and nutritional quality of barley grain and annual forages are essential to maintain a competitive cattle feeding sector in Canada. The Field Crop Development Centre (FCDC) in Lacombe is Canada's only crop breeding program dedicated to and making a deliberate effort to improve feed and annual forage crops. Other programs do produce feed and forage annual varieties but they are often just new varieties that have failed to meet requirements for other sources (e.g. beer or bread), FCDC is the only place making a concerted effort to improve the nutritional value for livestock through barley and triticale variety development.

Objectives:

To develop varieties of barley (grain and forage) and triticale (forage) with improved nutritional quality, yields, high fodder quality, fibre digestibility, smooth awn, starch, vitamin, and protein content, and to develop a genetic database for desirable traits to be used in future breeding efforts.

What they will do:

Researchers will start by genotyping current parent lines that are already being used to create a genetic database of desirable traits. This will allow future breeding efforts to choose the most desirable traits to cross. Researchers will then grow new crosses in the field and select for phenotypes such as disease resistance, yield, high fodder quality, fibre digestibility, smooth awn, starch,

vitamin, and protein content.

Researchers then plan to test the ability to use wheat markers to predict traits in triticale. If the markers can successfully be used to predict traits they will be used in future breeding efforts.

They will then breed for selected traits using 200 barley crosses per year, and 75 in triticale. Researchers will use a winter nursery in California to speed up the process and mean the breeding cycle will only be up to 4 years.

Researchers will use KASP markers to select plants with the best traits. And plants with the most promising traits will be grown at field scale and tested for disease resistance.

Implications:

FCDC is Canada's only barley breeding facility that focuses on feed and forage barley variety development. Plant breeding is a long-term process. This project continued to build on past research to produce new varieties as well as new crosses that will go on to form the basis of future varieties.

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