Red River Valley Winter Wheat Production and Responses of Management Inputs on Yield, Quality and Economics

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Research Question

Evaluate the need and profitability of crop inputs commonly used in spring wheat in winter wheat production.

Results

No-till planting occurred on September 1, 14, and 28 in Fergus Falls, Casselton, and Crookston. The trial in Lamberton was planted on September 6, 21, and October 11. Nitrogen was top-dressed to treatments 1 and 4 after each planting date. Rain followed each planting date and mild temperatures resulted in rapid emergence and excellent initial stands. Plant population differences are detectable and were captured with stand counts. The mild temperatures in September extended through much of October. Growth and development of three planting dates are well ahead of the long-term average as a lack of cold temperatures through much of October hasn’t forced dormancy yet. Tan spot is prevalent across the sites and worst in the early planting.

Application/Use

Winter wheat can be an important component of the cropping systems in Minnesota and North Dakota. The primary constraint to winter wheat production in both states has been stand loss and winter injury. Newer varieties and production practices have reduced this risk, making winter wheat a more viable option. Winter wheat is very well suited for no-till cropping systems in which standing residue traps snow and reduces winter kill by insulating the crop from lethal temperatures.

Winter wheat can spread out the demands of labor and equipment on the farm as it is planted and harvested when there are few management activities occurring in other crops. As a component of the cropping system, winter wheat can reduce soil losses from wind during the winter months and runoff in the spring. Furthermore, winter wheat can be highly productive and profitable as it has higher yield potential than spring wheat. The evaluation of crop inputs commonly used in spring wheat in winter wheat will help ensure that the full yield potential and profitability of winter wheat can be realized.

Materials and Methods

Seeding date is as whole plot treatment using four replications. Using a so-called 'drop-out' treatment design, other crop inputs combinations are applied as split plots. Jalalene and Jerry are use as the split plots. T. Next to seeding date, inputs that will be considered are the standard versus an increased seeding rate, the use of a seed treatment, application of all N requirements pre-plant versus a split application, and the use of fungicides at the 4-5 leaf stage, flag leaf emergence, and to suppress FHB at flowering.

The 'drop-out' treatment design allows evaluation of the efficacy of individual crop input decisions in a much more efficient manner compared to a full or fractional factorial design. An underlying assumption, however, is that all crop inputs considered are additive in nature. Using two different cultivars as the split-split-plot treatment allows evaluation of the cultivar by treatment interactions.

Economic Benefit to a Typical 500 Acre Wheat Enterprise

None to date
Appendix
