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Seed Treatment and Foliar Fungicide Options for Flax (Project #20170449)

The objective of this project was to demonstrate the response of flax to various seed-applied and foliar fungicide options with a focus on establishment, maturity, and yield. Trials were established at multiple Saskatchewan locations in 2018 to demonstrate flax response to selected seed treatment and foliar fungicide options. The locations were Indian Head, Redvers, Swift Current, Scott, and Prince Albert. Growing season precipitation amounts and subsequent disease pressure was well below normal at all sites. Treatments were a combination of three seed-applied fungicide treatments (untreated, Vitaflo-280, and Insure Pulse) and three foliar fungicides (untreated, Headline EC, and Priaxor). Focusing on seed treatments, past results have been variable with a fairly large percentage of trials showing no measurable benefit but increases in plant populations and to lesser extent higher yields, occasionally occurring.

In the current project, a response (both plant populations and yield) occurred 20% of the time, or at 1/5 locations. While the response at Prince Albert was stronger with Insure Pulse, substantially more evidence would be required to say that this advantage is repeatable and applicable under a wide variety of conditions. In drier regions, such as Swift Current, flax yield responses to fungicide are unlikely but may occur in wet years; therefore, careful monitoring is still recommended. With no significant fungicide responses in the current project, no comment can be made on the relative performance of the two products evaluated (Headline EC versus Priaxor); however, utilizing products with multiple modes can help prevent the development of resistance to certain active ingredients and may also provide more complete disease control. Under the dry conditions, yields were modest ranging from 1102 kg/ha at Swift Current to 2053 kg/ha at Indian Head when averaged across treatments. At Indian Head, Redvers, Swift Current, and Scott there was no effect of either seed treatment or foliar fungicide on flax yield. At Prince Albert, the seed treatment effect was significant and due to higher yields with Insure Pulse compared to both the control and Vitaflo-280. The observed yield advantage was 224 kg/ha (12%), and was only observed with Insure Pulse which, as previously discussed, also resulted in the highest plant populations. Furthermore, emergence numbers at this location were low enough to potentially be limiting; therefore, an increase in plant populations may have led to higher yield.

Means for treatment effects on flax seed yield. Data analysed separately for each location. Means within each column followed by the same letter do not significantly differ (Fisher's protected LSD test, $P \leq 0.05$).

Although the dry conditions were not conducive for demonstrating the relative performance and potential benefits of seed-applied and foliar fungicide options, these results reinforce the importance of crop scouting and illustrate that benefits to crop protection products are unlikely in the absence of the pests that they are registered to control. Previous field trials with seed treatments have produced results ranging from no benefit to higher plant populations with a tendency for higher yields. The current results reinforce the recommendation that benefits to seed treatments under field conditions are variable and presumably less likely when using high quality seed and good seeding practices. While past field trials have shown potentially strong yield responses and effects on maturity with foliar fungicide applications under higher disease pressure, the current results are consistent with other previous cases where disease pressure was low.

Main Effect	Indian Head	Redvers	S.C.	Scott	Prince Albert
----- Seed Yield (kg/ha) -----					
<u>Seed Treatment</u>					
Control	2056 a	1481 a	1097 a	1449 a	1830 b
Vitaflo-280	2075 a	1608 a	1054 a	1434 a	1848 b
Insure Pulse	2027 a	1629 a	1156 a	1453 a	2063 a
S.E.M.	48.3	216.8	86.0	26.1	121.8
<u>Fungicide</u>					
Control	2047 a	1480 a	1063 a	1452 a	1834 a
Headline EC	2081 a	1496 a	1156 a	1438 a	1936 a
Priaxor	2031 a	1741 a	1033 a	1445 a	1973 a
S.E.M.	48.3	216.8	86.0	26.1	121.8

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