

Although CWRS is the dominant class of wheat grown throughout most of Saskatchewan, durum is an ideal test crop due to its increased susceptibility to fusarium head blight (FHB) infection. Integrated approaches to managing FHB are important for minimizing its impact and reducing our reliance on fungicides. This project aimed to demonstrate the feasibility and potential merits of combining higher seeding rates and foliar fungicide to manage FHB, with durum wheat as a test crop. Field trials were conducted near Swift Current, Scott, and Indian Head, SK in 2020 and 2021. The treatments were four seed rates (125, 250, 375, and 500 seeds/m²) and two fungicide treatments (untreated vs fungicide at 50% anthesis). The fungicide product was Prosaro XTR (Bayer CropSciences) applied at a minimum solution volume of 187 l/ha (20 U.S. gallons/ac).

For most sites, disease pressure was lower than normal with the greatest exceptions being Scott and, to a lesser extent, Indian Head in 2020. As expected, higher seed rates increased plant and spike densities, but reduced tillering for individual plants. The expectation was that this would shorten the FHB infection window while making fungicide applications easier to stage. Treatment effects on the visible FHB ratings were somewhat

inconsistent; however, at the sites with the highest pressure, values tended to be lowest with the combination of fungicide and higher seed rates (Table 1). Yield gains with fungicide were never significant. This was a reasonable response for most sites given the lack of disease pressure. Higher seed rates were more beneficial for improving yield at Swift Current and Scott in 2020 than at Indian Head (both years), but these locations also had higher seedling mortality and/or less tillering. In contrast, under severe drought, higher seed rates resulted in substantial yield reductions. Seed rate effects on test weight were similar to those observed for yield. Higher seed rates appeared to have more impact on fusarium damaged kernels (FDK) and deoxynivalenol (DON) than fungicide; however, these values were too low to allow for meaningful conclusions at most sites. Consistent with the in-season assessments, where disease was sufficiently high, FDK and DON were lowest with the combination of higher seed rates and fungicide. Consequently, implementing these practices can be beneficial for managing FHB; however, high seed rates are risky under drought conditions. Producers should consider overall moisture conditions, expected seedling mortality, and actual diseases when choosing seed rates and deciding whether to apply fungicide.

Table 1. Individual fungicide by seed rate treatment means for fusarium head blight (FHB) index in durum at Indian Head (IH), Scott (SC), and Swift Current (SW) in 2020 and 2021. FHB index is the overall average infected spike area, including spikes where no infection was observed. Means within a column followed by the same letter did not significantly differ ($P \leq 0.05$).

Treatment	IH-20	IH-21	SC-20 ^y	SC-21	SW-20	SW-21
	----- FHB Index (%) -----					
Untr – 125 seeds/m ²	4.82 a	0.02 a	10.5 abc	0.00 a	1.88 ab	2.96 ab
Untr – 250 seeds/m ²	3.52 a	0.09 a	15.2 ab	0.06 a	1.69 ab	1.76 abc
Untr – 375 seeds/m ²	5.52 a	0.12 a	16.1 a	0.00 a	2.51 ab	2.20 abc
Untr – 500 seeds/m ²	2.89 a	0.11 a	15.0 ab	0.00 a	3.14 a	3.02 a
Fung – 125 seeds/m ²	3.25 a	0.04 a	10.2 abc	0.00 a	0.98 b	0.70 abc
Fung – 250 seeds/m ²	4.98 a	0.06 a	7.4 c	0.04 a	0.96 b	1.20 abc
Fung – 375 seeds/m ²	3.62 a	0.04 a	8.6 bc	0.00 a	2.79 ab	0.63 bc
Fung – 500 seeds/m ²	2.44 a	0.05 a	6.9 c	0.00 a	3.29 a	0.23 c
S.E.M.	1.16	0.038	1.64	0.026	0.434	0.541

^y Fung x Seed interaction was significant at SC-20 but no other sites

This project was supported by the Agricultural Demonstration of Practices and Technologies (ADOPT) initiative under the Canadian Agricultural Partnership bi-lateral agreement between the federal government and the Saskatchewan Ministry of Agriculture.