AgriARM Applied Research Management

Managing Fusarium Head Blight in Durum

Fusarium head blight (FHB) has been a major factor limiting durum (CWAD) wheat yields and quality in recent years. While high disease pressures have resulted in increased fungicide use, significant wheat acres still go unsprayed and in some cases, fungicides alone have been insufficient to prevent downgrading of many CWRS and CWAD acres. The optimum timing of fungicide application for FHB is at early to 50% anthesis; however, fungicides provide suppression only, and significant quality loss can occur even with a well-timed fungicide application. Many growers have experienced this and are questioning the merits of two fungicide applications to control this disease. One reason fungicides sometimes fail to prevent quality loss is likely that actual crop stages are often so variable that it is impossible to cover all the heads at a single optimal time. Additionally, the specific environmental conditions encountered during heading are of utmost importance in determining the extent to which FHB develops and whether the early or later developing heads are most affected. Using higher seeding rates in cereal crops is known to result in fewer tillers, allowing for earlier maturity, less plant variability and therefore a shorter window of infection for FHB. This can theoretically have the dual benefit of both reducing the length of time that the crop is susceptible to infection, while also making it easier to time fungicide applications. Trials were conducted at Indian Head and Swift Current in 2015 to demonstrate combinations of higher seeding rates and foliar fungicide applications to reduce fusarium head blight effects on the yield and quality of CWAD. At Indian Head, three seeding rates (200, 300, and 400 seeds/m^2) and four fungicide treatments (untreated, T1: 100% heads emerged, T2: 50% anthesis, and dual application). Swift Current performed a similar trial combing three seeding rates (200, 300, and 400 seeds/m^2), two seed treatments (untreated and treated), and two fungicide treatments (untreated and treated 75% headed - 50% anthesis).

Increasing the seeding rate reduced FHB infection and fusarium damaged kernels at both sites. There was no yield benefit to higher seeding rates; however, at Indian Head, increasing the seeding rate resulted in similar or greater reductions in fusarium than fungicide applications. Effects of fungicide differed between locations. Swift Current had low disease pressure and saw no benefit to using fungicides. Final results at Swift Current showed higher seeding rates with the use of a seed treatment was the best for reducing fusarium in durum.

Table 1: Effect of seeding rate and fungicide on test weight, infected heads and yield at **Swift Current**.

	Test Weight (g 0.5/L)	Visible FHB (% 50 heads)	Yield (kg/ha)
Seeding Rate			
200 seeds/m^2	379.9	1.75	1,092 a
300 seeds/m^2	386.8	0.25	1,258 a
400 seeds/m^2	385.4	0.25	1,163 a
Fungicide Trt			
Untreated	383.5	0.83	1,157 a
Treated	384.5	0.67	1,184 a

Indian Head had heavy disease pressure and visual FHB ratings were high. Results from this site warrant using high seeding rates (>300 plants/m^2), a well-timed fungicide application, and potentially even dual applications when disease pressure is high to reduce FHB yield and quality loss.

Table 2: Effect of seeding rate and fungicide on test weight, fusarium damaged kernels and yield at **Indian Head**.

	Test Weight (g 0.5/l)	FDK (%)	Yield (kg/ha)
Seeding Rate			
200 seeds/m^2	377.0 a	1.69 a	3,188 a
300 seeds/m^2	377.3 a	1.70 a	3,232 a
400 seeds/m^2	377.1 a	1.28 b	3,226 a
Fungicide Trt			
Untreated	371.4 d	1.72 a	2,922 d
T1	376.2 c	1.70 a	3,127 c
T2	378.7 b	1.41 a	3,308 b
Dual	382.2 a	1.38 a	3,503 a

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