



Wheat stem sawfly control in durum wheat

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Seed at least 40 seeds per square foot (400 seeds per metre square) for optimum yield and wheat stem sawfly management when growing solid- or hollow-stemmed durum wheat varieties.

The foundation for reducing yield loss from wheat stem sawfly (*Cephus cinctus*) in wheat varieties is growing solid-stemmed varieties that have pith development within the stem. These varieties generally incur less damage from larval feeding and have less stem cutting at maturity.

However in CWRS wheat varieties, seeding rate and environmental factors such as sunlight intensity and precipitation influence pith expression. Research has shown that pith expression is best at lower seeding rates of 25 to 35 seeds per square foot (250 to 350 seeds/square metre), but yield is highest at seeding rates of 35 to 45 plants per square foot (350 to 450 seeds/square metre). This

means a compromise between yield potential and pith expression in areas with wheat stem sawfly infestations.

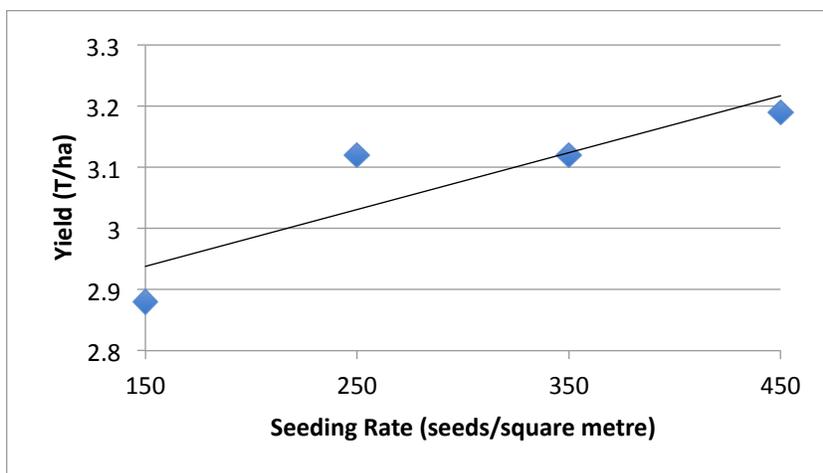
Research at the University of Saskatchewan's Crop Development Centre and Agriculture and Agri-Food Canada Lethbridge looked at whether the same correlation between seeding rate, pith expression and yield also existed in solid-stemmed durum wheat varieties.

Field trials were conducted over three years from 2012 to 2014 at Coalhurst and Lethbridge, Alberta, and near Saskatoon, Saskatchewan. Wheat was seeded on summerfallow at all sites except at Kenaston in 2014 on lentil stubble. Varieties grown were two solid stemmed durum varieties, AAC Raymore and CDC Fortitude, a hollow stemmed durum, Strongfield, and a solid stemmed CNHR wheat variety, Lillian (formerly CWRS).

Seeding rates of 15-, 25-, 35-, and 45-seeds per square foot (150-, 250-, 350-, 450-seeds/square metre) were compared. These seeding rates produced average plant stand populations of 12-, 16-, 20-, and 25-plants per square foot (119-, 160-, 203-, 248-plants per square metre).

CDC Fortitude and AAC Raymore had superior stem solidness at all seeding rates -- above the recommended minimum threshold level to achieve effective sawfly resistance. They also displayed superior stem solidness to Lillian across all seeding rates.

Influence of seeding rate on grain yield



Data were averaged across cultivars and testing environments 2012 to 2014.

Source: Nilsen, K.T. et al. 2015

Higher seeding rates also produced higher yields in all varieties. The lowest seeding rate produced significantly lower average yields of all varieties at approximately 43 bushels per acre (2.88 t/ha). The higher seeding rates produced statistically similar average yields of approximately 46 bushels per acre (3.12 to 3.19 t/ha).

CDC Fortitude and AAC Raymore also yielded similar to Strongfield durum, indicating that there was no yield drag when growing solid stemmed durum varieties.

The research found that durum wheat growers can target seeding rates of at least 40 seeds per square foot (400 seeds/square metre) for optimum yield without sacrificing pith expression or wheat stem sawfly control. Unlike CWRS wheat, altering seeding rate is not required with CDC Fortitude and AAC Raymore to achieve effective sawfly resistance.

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Nilsen, K. T., J. M. Clarke, B. L. Beres, and C. J. Pozniak. 2016. Sowing Density and Cultivar Effects on Pith Expression in Solid-Stemmed Durum Wheat. *Agron. J.* 108:219-228.

<https://dl.sciencesocieties.org/publications/aj/abstracts/108/1/219>