WHAT'S UP WITH WARC?

February 3rd 2014

Optimal Seeding Rate for Spring Wheat

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Farmers are often encouraged to increase their seeding rates in spring wheat to maximize yield potential and reduce weed competition. Recommended target plant densities range from 215-270 plants m^{-2}. To evaluate these guidelines, trials were set up at Scott, Melfort, Prince Albert, Indian Head and Swift Current in 2012 and 2013. Unity VB was seeded in early May at seeding rates of 60, 120, 180, 240, 300, 360, 420 and 480 viable seeds m^{-2}.

As seeding rate increased, plant populations increased and % plant emergence decreased. Grain yields were maximized at 306 seed m^{-2}. Plant emergence, however, varied by site year and ranged from 33 to 107% at a seeding rate of 300 seeds m^{-2}.

Maximum grain yields were achieved with 192 plants m^{-2} on average (Fig. 1) which is lower than the recommended target density. Increases in plant density did not improve yields at sites in the drier part of the province, limited by moisture during grain filling. Locations where moisture was more abundant did not respond more to higher plant densities because lodging became an issue. It is likely that when best management practices and good growing conditions are combined, fewer plants are required to reach yield potential and prevent lodging.

An economic analysis was conducted using grain prices at \$100, \$200 and \$300 $tonne^{-1}$ and seed costs of \$9, \$11 and \$13 bu^{-1} and a thousand kernel weight of 35g to calculate net returns at various seeding rates. Net returns were maximized at seeding rates in a range between 238-292 seeds m^{-2} (1.2-1.5 bu/ac) depending on cost of seed and grain prices.

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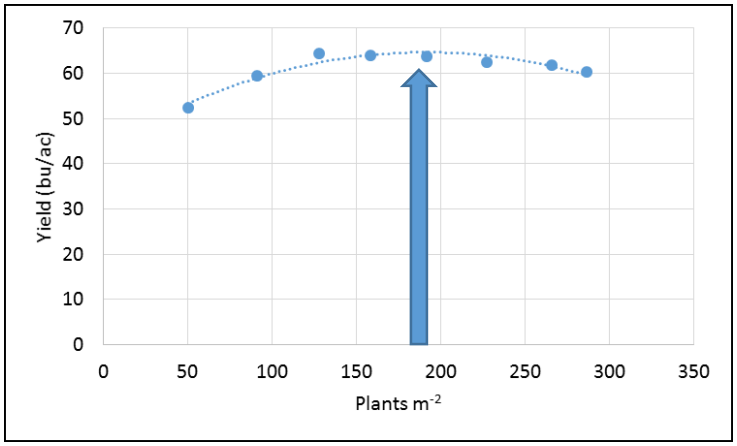

Figure 1: The relationship between plant density and grain yield (combined means of six site years). Maximum grain yield achieved at 192 plants m^{-2}.

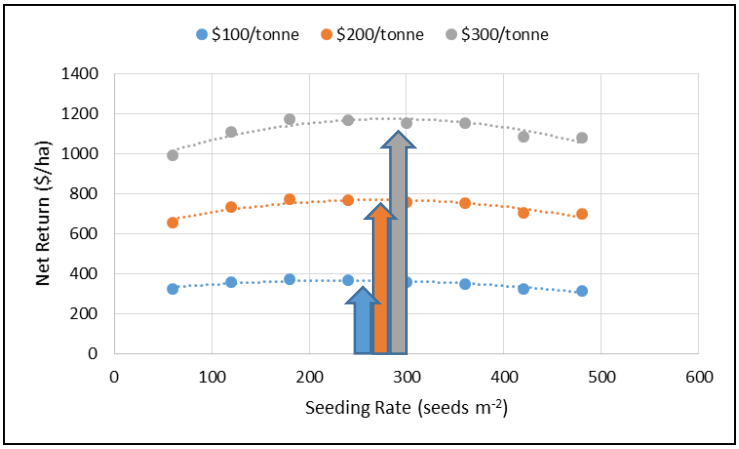

Figure 2: Net return of spring wheat at various seeding rates and grain prices at seed cost of $11/bu. Maximum economic return at 264, 279 and 292 seeds m^{-2} when grain prices are $100, $200 or $300 $tonne^{-1}$, respectively.

WARC Winter Meeting Events

Event	Date	Location	Agenda
Regional Pulse Workshop	February 3rd, 2014	623 Carlton Trail, Dekker Centre, North Battelford	Download
Agri-Visions	February 12th, 2014	Exhibition Grounds, Lloydminster	Download
Crop Opportunity and Scott Research Update	March 6th, 2014	623 Carlton Trail, Dekker Centre, North Battelford	Download
Kindersley Canola Day	March 7th, 2014	Kindersley Inn, Kindersley	Download
Soils and Crops Workshop	March 11th, 2014	Prairie Parkland Complex, Saskatoon	
Manitoba CanoLAB	March 12th & 13th, 2014	Keystone Centre, Brandon, MB	
Meadow Lake Agronomy Update	March 19th, 2014	Meadow Lake	
SeedMaster Agronomy Meeting	March 21st, 2014	Regina	
Crop Talk	March 25th, 2014	Prince Albert Exhibition Centre, Prince Albert	Download
Melfort Canola Day	March 27th, 2014	Kerry Vickar Centre, Melfort	Download

WARC WEATHER STATION

(January 1st – January 31st)

2014 Precipitation (mm) = 7.4 Average Precipitation (mm) = 16

First Frost: September 28th (-3.5°C)

Average First Frost: September 9th – 15th

Growing Degree Days (base temp 5 °C) = 1572

Average Growing Degree Days = 1436