

Corn Yield Response To Increasing Seeding Rates

Purpose:

The purpose of this trial was to conduct field scale trials that compare yield and profitability under a range of corn seeding rates.

Methods:

Cooperators were asked to plant field scale plots with 3 different target plant densities; 30 000, 35 000, and 40 000 plants per acre. A variety of hybrids were used. Actual populations were recorded (based on plant counts) and placed within a target population category. Most sites were replicated with 2 plots of each population. All other factors were held constant. In total six sites were completed by the Middlesex Soil and Crop Improvement Association in 2012.

Results:

Little yield response was observed for increasing seeding rate at these six sites in 2012 (Table 1). Increasing target populations from 30,000 to 35,000 plants per acre resulted in an average yield loss of 4 bu/ac. Four sites experienced small responses of +/- 2 bu/ac, while field 5 was 5 bu/ac lower. Field 4 was lower by 17 bu/ac which had strong influence on the overall average response.

Table 1. Yield response to three different corn population targets at six sites in Middlesex County, Ontario, 2012

| Site | Hybrid | Target Population (thousand pl/ac) | | | | | |
|---------|-----------|------------------------------------|---------------|------------|---------------|------------|---------------|
| | | 30K | | 35K | | 40K | |
| | | Actual Pop | Yield (bu/ac) | Actual Pop | Yield (bu/ac) | Actual Pop | Yield (bu/ac) |
| 1 | P9910XR | 29.7 | 214 | 31.7 | 214 | 36.3 | 211 |
| 2 | DKC 50-45 | 29.6 | 238 | 34.4 | 237 | 38.8 | 241 |
| 3 | DKC 49-94 | 30.3 | 174 | 31.4 | 175 | 37.6 | 178 |
| 4 | DKC 50-45 | - | 227 | - | 210 | - | 224 |
| 5 | DKC 48-12 | 28.5 | 194 | 30.8 | 189 | 33.5 | 184 |
| 6 | DKC 50-45 | 27.5 | 232 | 32.5 | 230 | 36.5 | 234 |
| Average | | 29.1 | 213 | 32.1 | 209 | 36.5 | 212 |

Table 2. Yield response (bu/ac) required to cover seed cost associated with every 5,000 seed/acre increase in seeding rate

| | | Seed Cost (\$/bag) | | |
|--------------------|--------|--------------------|-------|-------|
| | | \$200 | \$250 | \$300 |
| Corn Price (\$/bu) | \$5.00 | 2.5 | 3.1 | 3.8 |
| | \$6.00 | 2.1 | 2.6 | 3.1 |
| | \$7.00 | 1.8 | 2.2 | 2.7 |

Results from 2012 support those from 2010 and 2011 which demonstrate that, on average, increasing target populations from 30,000 plants per acre to 35,000 or 40,000 plants per acre fails to provide an economic response for these hybrids at these sites (Table 3).

Table 3. Average corn yields for three target populations for three years in Middlesex County, Ontario

| Year | No. of Sites | Target Population (plants/ac) | | |
|------|--------------|-------------------------------|--------|--------|
| | | 30,000 | 35,000 | 40,000 |
| 2010 | 10 | 184.9 | 186.4 | 182.6 |
| 2011 | 8 | 193.8 | 194.4 | 190.1 |
| 2012 | 6 | 213.1 | 209.0 | 212.1 |

Summary:

Field scale trails in 2012 did not result in a positive response to moving populations from 30 to 35 or 40,000 plants per acre. Average yield were quite high across the field sites. Although there is a large amount of interest in increasing seeding rates this data would suggest growers should move in that direction with caution.

Next Steps:

To be determined.

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