Attaining the 300 bushel yield goal on high productive soils through climate tolerant hybrids, increased population

2013 - 2014 Research Report

Project Lead:

George Silva – Senior MSU Extension Educator, Eaton, Ingham, Barry and Livingston Counties and

Steve Gower – Dekalb/Asgrow/Monsanto Regional Agronomist

Corn Marketing Program of Michigan
13750 S. Sedona Parkway, Suite 5
Lansing, MI 48906
888.323.6601
corninfo@micorn.org

Hybrid selection, plant population and nitrogen management are among the top factors contributing to corn yield. Michigan State University Extension and Dekalb/Asgrow have collaborated for two seasons in a research project to test two modern hybrids, DKC48-12RIB (flexed ear type) and DKC50-84RIB (fixed ear type), at 20 and 30 inch row spacings, three population rates of 30,000, 36,000 and 42,000 plants per acre, and two nitrogen (N) rates of 120 and 240 N per acre on a highly productive soil at the Mason Technology Center in Michigan's Ingham County. The overall objective is to find out how two hybrids will interact with non-limiting plant densities and nitrogen to produce the highest number of harvestable ears and largest grain yield per acre.

This project started in 2013 with funding from MSU GREEEN and continued in 2014 and 2015 with Corn Marketing Program of Michigan funding.

In 2014 late planting due to wet spring conditions and continued wet conditions may have favored the higher nitrogen rates due to leaching or denitrification.

In summary, the 2014 season did not show significant difference between row spacings. The plant populations were not statistically significant showing that the 30,000 seeds/acre rate yielded as well as the higher rates, while yields began to decline at 42,000 seeds/acre. Both hybrids responded significantly to the higher nitrogen rates, and may be attributed to the higher seasonal rainfall.

The effects of row spacing and population rate on the kernel rows per ear, number of kernels per row and average kernel weight were noted. The effects were more pronounced for the number of kernels per row and average kernel weight (largely late season determinants) rather than kernel rows per ear. Nitrogen rate also showed a similar effect. The number of kernels per row and average kernel weight steadily declined as population density increased and nitrogen rate decreased. The lack of a yield response to the high population rate and the significant yield response to higher nitrogen rate may be partially attributed to this feature.

Click here to access the full research report for this project.