

STUDY ON PHOSPHORUS AND NITROGEN CONCENTRATION OF CORN ADAPTED IN SOUTH DAKOTA

P. Gautam, Z. Wicks III* and D. Gustafson

Plant Science Department, South Dakota State University, Brookings, SD 57007

* *Corresponding Author: Ph: 605-688-5542, e-mail: Zeno.Wicks@sdstate.edu*

Abstract

Though nitrogen (N) and phosphorus (P) are vital in several physiological and developmental processes in plants and animals, they pose several environmental, nutritional and health problems, if present in excess amounts. Reduction in the excess input of these nutrients into the soil, thereby reducing environmental problem and consequently nutritional and health problem, can be achieved by balancing their concentration in animal feed. Therefore, this research aims to quantify the nitrogen and phosphorus concentration in the commercially adapted corn varieties in South Dakota and to determine if selection can be carried out for these traits to develop useful inbred lines. Ten varieties were planted in completely randomized block design with three replications and two population densities (73390 plants/ha and 93900 plants/ha) at three locations (Brookings, Beresford and Watertown) during 2004. Sampled whole plants at silage harvesting stage were analyzed for nitrogen and phosphorus concentration. Varietal differences based on pooled variance for percent phosphorus and nitrogen were not significant. This indicates that selection can be carried out for using any of these adapted hybrids for the inbred development. While high population density plants contained low phosphorus concentration, there was no difference in nitrogen concentration between two planting populations. Since the data is only from one year, a multi year experiment is recommended for precise result.

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Program Chair:

Brad Joern
Purdue University
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(765) 494-9767

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Our cover: To world food security and agricultural production, the Haber-Bosch process has been the most economical means for fixation of nitrogen for fertilizer. Fritz Haber won the Nobel Prize for Chemistry in 1918 and Carl Bosch shared the prize in 1931.