AGRI-BRIEFS
AGRONOMIC NEWS ITEMS

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Fall 2005, No. 4

PHOSPHORUS AND POTASSIUM BEST MANAGEMENT PRACTICES FOR SOYBEANS

Many producers have become frustrated with the plateaus experienced in their soybean yields. Often, soybeans don't get the attention to nutrition that they deserve. Here are some points to consider.

Soil test phosphorus and potassium levels. For most Midwest soils, Bray P-1 soil test levels at or above 20 to 25 parts per million are considered adequate. Midwest research results indicate there is little chance of crop response to fresh phosphorus additions at or above these levels. Ammonium acetate-extractable potassium levels around 130 parts per million are considered sufficient in many states. Iowa State University has recent information that increases adequate levels to 175 to 180 parts per million for Iowa.

Phosphorus and potassium placement. In the U.S., when intensive tillage was common, broadcast applications of both phosphorus and potassium were usually superior to other placement methods for soybeans. In many studies, this still seems generally to be the case. There is, however, recent evidence for considering banded applications:

- In ridge-till systems, banded applications 3 to 6 in. below the surface may be a superior placement method when soil tests are low.

- Banded applications are emerging as a viable option in reduced tillage systems where nutrient stratification has become significant. For subsurface band applications of fertilizer, there is mounting evidence that it is important to match band spacing with row spacing. Recent research in no-till systems in Ontario has shown that crop response to subsurface potassium bands occurred when bands were 15 in. apart and soybeans rows were 15 in. apart or when bands were 30 in. apart and soybean rows were 30 in. apart. Other misaligned combinations did not show yield increases to added potassium.

Starter fertilizer applications. Fertilizer should not be placed with the seed. Soybean plants are sensitive to salts and decreased emergence will often result if seed comes in contact with fertilizer. In ridge-till systems, research from Kansas State University has shown that a starter fertilizer containing nitrogen, phosphorus, and potassium and placed 2 in. to the side and 2 in. below the seed can produce good results.

Foliar applications. Foliar applications of potassium have shown benefits at rates up to about 32 pounds of K_2O per acre when applied during early reproductive stages (R2) on soils deficient in K. However, response to these late season foliar K applications has not been as good as broadcast K applied to the soil prior to planting the soybean crop.

Crop nutrition is an important aspect of soybean production management. For a more complete list of soybean nutrient best management practices, visit this website: >**www.ppi-ppic.org/fallfertilization/soybeans**<.

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