

David G. Hallauer
District Extension Agent
Crops & Soils/Horticulture

N Fixation in Soybeans

In our corn/soybean rotation budgets, nitrogen rates and the related costs are a big factor in whether the crop is profitable or not. With fertilizer prices where they are today, we should be *very* happy soybeans do such an efficient job of producing their own N.

Soybeans capture atmospheric nitrogen through a symbiotic relationship with soil bacteria in a process called biological N fixation. This fixation process in short means despite the fact nitrogen needs by the soybean crop are fairly high, supplemental N is seldom needed. In fact, a 70 bushel per acre soybean crop has a total N uptake of over 300 pounds per acre (over 50 percent of that coming after the full pod stage) – and no added N is needed. The nitrogen needs are met by a combination of N in the soil reservoir and the aforementioned biological fixation.

A 2016 study across 23 Midwest locations investigated the effect of nitrogen fertilizer applications on the nitrogen fixation process. The results: neither yield nor protein were affected by added N applications, further reinforcing the need for a focus on making sure the biological fixation process is optimized. In fact, the study even showed a decrease in the biological fixation process when nitrogen was added to the system.

Soybean research just like this will be part of the program for the K-State Soybean Production School coming to the Northeast Kansas Heritage Complex south of Holton on Tuesday, January 25th. Fertility, weed control, and insect management will also be discussed. For information, see the flyer (with registration information) at: <https://www.meadowlark.k-state.edu/docs/crops-soils/event-flyers/KSU%20Soybean%20Schools.pdf> or contact the Holton Office of the Meadowlark Extension District at (785) 364-4125 (e-mail dhallaue@ksu.edu). Registrations are requested by January 14th.

K-State Garden Hour Webinar Series

Hosted by K-State Research and Extension horticulture staff across the state, the K-State Garden Hour is one hour a month of great gardening information you won't want to miss. Forty-five-minute training sessions are held the first Wednesday of each month at noon followed by a question and answer period with the presenter and other KSU Horticulture specialists.

The first session on vegetable varieties is in the books. All sessions are recorded for later review, with last year's sessions available as well. Check out what the series has to offer by visiting the KSU Horticulture Information Center at: https://hnr.k-state.edu/extension/info-center/k-state-garden-hour-webinar-series/k_state_garden_hour.html.