

We know that crops in a rotation with soybeans receive a beneficial effect, but what about soybeans? Is there a rotation effect for soybeans, too?

One study conducted during the 1980s at the Kansas River Valley Experiment Field provides some information to answer this question. In this irrigated study, the crop rotations were corn-soybeans, corn-corn-soybeans, continuous corn, and continuous soybean. There were four nitrogen treatments (0, 75, 150, 225 lb N/a) imposed on the corn in each of the rotations. After corn harvest the ground was disked/chiseled in the fall and field cultivated in the spring and after soybean harvest the ground was chiseled and field cultivated in the spring before planting. Although this was not the main focus of the research, there was a rotation effect for soybeans. The continuous soybeans yielded 60 bu/a, while soybeans in rotation yielded about 65 bu/a. This is about an 8 % increase in yield. The yield increase was attributed to increased weed problems (eastern black nightshade) in continuous soybeans. By the way, the soybeans did not respond to the residual nitrogen from the nitrogen treatments that were applied to the corn.

At the Southeast Agricultural Research Center, results of an ongoing study provide similar results. In this intricate dryland, cropping sequence study the treatments were continuous sorghum, continuous soybeans, sorghum-soybeans in a 2-yr rotation, soybeans grown for 1, 2, 3, 4, and 5 years after five years of sorghum, and sorghum grown for 1, 2, 3, 4, and 5 years after five year of soybeans. There were two nitrogen rates (60 and 120 lb N/a) applied to the grain sorghum. The four-year average yield for continuous soybeans was 24.6 bu/a, while the yield of soybeans in the sorghum-soybean rotation was 28.4 bu/a. This was about a 13 % yield increase. The longer soybeans were continuously planted in the rotation the more yields declined. As a side note, there was a 14 % yield response for the grain sorghum at the 120 N rate in the sorghum-soybean rotation (106 bu/a) compared to the continuous sorghum (91 bu/a) and there was a 23 % yield advantage for grain sorghum at the 60 lb N/a rate in the sorghum-soybean rotation (102 bu/a) compared to the continuous sorghum (78 bu/a).

What's the bottom line?

We may not always acknowledge it, but soybeans in a rotation benefit from the rotation effect, too. It is not unusual to see a 10-15 % yield increase due to the rotation effect. Why does this happen? By rotating crops, the disease, insect, and weed pressures are lessened compared to a monoculture system where one crop is continuously grown. The pests are constantly kept off balance when you're rotating crops.

For more details about these studies see:

Kansas Fertilizer Research-1991. P. 50-51. KAES Report of Progress 647.

2001 Agricultural Research, Southeast Agricultural Research Center. P. 55-56. KAES Report of Progress 875.

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