Peas complement wheat

Adding field peas to a continuous cropping rotation benefits wheat

By Raylene Nickel

Tom and Cliff Issendorf were among the first farmers to plant field peas in North Dakota in the early 1990s. They hoped the peas, a cool-season legume, would break up disease cycles plaguing their fields of continuously cropped barley and hard red spring wheat. The peas worked so well that the brothers, who farm near Newburg, now grow field peas on a third of the 3,500 acres they farm.

Besides controlling disease, the peas also fix nitrogen, thus reducing costs. "You can expect the nitrogen credit from peas to amount to 1.25 pounds per bushel of yield," says Cliff. "In our experience, if you have a pea yield of 40 bushels per acre, you can expect the soil nitrogen credit to amount to 50 pounds per acre. We've cut our anthrposomal fall nearly in half by including peas in a three-year rotation with cereal grains."

The Issendorfs' plant field peas the year after hard red spring wheat or barley. They follow the peas with durum the next year, and plant hard red spring wheat or barley the following year.

On their farm, barley following peas has yielded 74 bushels to the acre with the application of only 30 pounds per acre of additional nitrogen. "Such a yield would typically require 80 to 90 pounds of nitrogen per acre," says Cliff.

Peas need less nitrogen

During the years when they were still experimenting with peas, the brothers compared yields of durum planted on pea stubble fertilized with 60 pounds of anhydrous ammonia (NH₃) with the yields of durum planted on durum stubble fertilized with 120 pounds of NH₃. The durum grown on the pea stubble yielded 39 bushels per acre while the durum on the durum stubble yielded 33.5 bushels per acre.

Besides fixing nitrogen, peas has evolved into a major pea-producing state, mainly because of the crop's stable yields and benefits it offers a wheat rotation.

"The economics of field peas have definitely been positive for North Dakota's farmers," says Blaine Schatz, director of the Carrington (North Dakota) Research Extension Center (701/652-2951; blaine.schatz@ndsu.nodak.edu).

Schatz offers these reasons field peas complement wheat in a rotation:

- **Field peas cycle water effectively.** As a cool-season crop that can be planted early, peas can be planted early, peas primarily use water early in the season. Soil water stored has time to be recharged before winter.
- **Field peas are effective in breaking disease cycles.** Because they're a broad-leaved legume, they interrupt pest cycles including diseases affecting grass-type crops like hard red spring wheat, barley, and durum.
- **They improve yields and quality of small grains.** In a continuous cropping rotation, wheat yields following peas are better than wheat yields following a small grain crop,” says Schatz. “Grain protein generally improves in wheat following peas.”
- **Field peas fix nitrogen for their needs and a portion for the following crop.** Schatz recommends a four-year rotation including field peas. Ideally, the rotation would alternate between a grass crop and a broad-leaved legume or oilseed. "The rotation sequence, for instance, could be barley, field peas, wheat, and beans."

Rotating hard red spring wheat with field peas could be an option, but one requiring extreme caution, adds Schatz. You'd have to monitor peas carefully for the buildup of disease.

Given field peas' rotational benefits and prices ranging from $3.50 to over $7 per bushel, Cliff believes the crop offers farmers a promising alternative crop. "By growing wheat on field pea stubble, you can grow higher quality wheat at a cheaper cost."