

Dry Pea, Sunflower and Spring Wheat Excel in Northern Plains Cropping Systems

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The dry pea is a "must" in the Northern Plains. Used in rotations, it has a good effect on many subsequent crop yields and is a consistent efficient user of precipitation, regardless of how dry or wet the growing season is.

An Agricultural Research Service ([ARS](#)) interdisciplinary team that includes soil scientist [Donald L. Tanaka](#) and colleagues at the [Northern Great Plains Research Laboratory](#) in Mandan, N.D., found that certain crops and their residues from no-till farming have a beneficial effect on subsequent crops, such as corn or spring wheat. In a three-year field experiment on a research farm near Mandan, the team tested 10 crops each year, for a total of 100 different crop sequence treatment combinations.



Aerial view of crop sequencing experiment near ARS Northern Great Plains Research Laboratory, Mandan, N. Dak. *Cover photo by Justin Hartel/Marv Hatzenbuehler, July-August 2007 [Agronomy Journal](#), used by permission.*

In addition to dry pea, other "must" crops for sustainable no-till cropping systems in the Northern Plains should include sunflower and spring wheat. Not only do they have a good effect on yields of subsequent crops, they also consistently use precipitation efficiently. Precipitation use efficiency, or PUE, is a measurement of pounds of grain or seed harvested per acre, per inch of precipitation received in a year. Dry pea was a standout in the study, with the best combination of yield, synergy with succeeding crops and PUE.

Corn, sorghum and millet generally produced the most crop residue, offering the best chance of protecting soil and conserving soil water. But too much residue can interfere with seed planting and reduce yields. Yields were generally lowest when a crop was planted in its own residue, or if the previous crop was a late-harvested crop such as corn or sorghum.

This may have been not only because of the heavy residue, but also because corn and sorghum are thirsty plants that can deplete soil water. The correct sequence of crops used for successive plantings proved to be important to sustainable crop production in the Northern Plains.

These and other findings from this experiment are discussed in six papers in the July-August 2007 issue of the [Agronomy Journal](#).

ARS is the [U.S. Department of Agriculture's](#) chief scientific research agency.

For further reading

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- [More soil benefits from no-till planting](#)
- [Drought makes farmers mind their peas and sunflowers](#)

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