

Top Farmers Apply Innovation to Harvest Sunlight, Maximize Returns

By Bruce Erickson

The Top Farmer Crop Workshop has always focused on farmers, technological innovation, a systems approach of knowing how all of the pieces fit together, and on providing a means to test innovations before actually making the financial commitment to use them. This year's workshop, to be held July 17-20, is no different, and the presentations from growers are usually some of the most popular, educational, and interesting.

Leading Monday morning's session will be Clay Mitchell, an Eastern Iowa farmer who is applying the technologies of auto-guidance and herbicide resistant crops to make strip intercropping a viable system on his farms. Mitchell is alternating 12 rows of corn (30-inch rows) and 23 rows of soybeans (15-inch rows) in a strip intercropping system. Clay was one of the first Midwest growers to utilize auto-guidance, which helps make this system work.

"Profitable farming is about the efficient utilization of resources. Sunlight is a grower's most valuable resource, as it fuels the entire yield production process," said Clay Mitchell, who is converting many of his fields to intercropping this spring.

Another farm innovator who believes in the most efficient capture of sunlight is Illinois farmer Marion Calmer, who will be spearheading Monday evening's session. Marion plants both his soybeans and his corn in 15" rows. He claims a 12 bu/A advantage in corn to his system, besides better weed control due to earlier canopy closure.

"Besides the yield advantage, the narrow rows allow me to get by with \$5.90/A in corn herbicide costs. Compared to the \$20-30/A herbicide programs that I used for corn in years past, this adds significantly to my bottom line," said Calmer.

Narrow row-corn is not a new concept, having been tested since at least the early 1900s. A summary of publicly available information comparing 20-inch vs. 30-inch rows shows about a 3% yield advantage for the narrower rows, but some have seen a greater tendency for lodging, and more expense if needing to use an in-row treatment such as an insecticide. Yield responses vary but often are greater further north, where corn plants have less growing season and aren't as tall.

The agronomic principle behind narrow-row crops is in getting a more uniform distribution of plants to optimize their



Marion Calmer takes a break from spring planting to examine last year's within-row corn plant spacing.

utilization of sunlight. Sunlight is what fuels the entire plant growth and yield process, and maximizing its harvest should maximize yields. As planting populations have increased, this has become a more important consideration. In 30-inch rows at 30,000 plants/A, plants are 7 inches apart; at 45,000 plants/A, the in-row spacing is more crowded with plants roughly 5 inches apart.

Variations of Mitchell's strip intercropping system have been used by farmers over the years, but have never gathered a large following. The idea of rotating a tall crop/short



Field equipment on the Mitchell farm, including anhydrous ammonia nurse tanks, follows a controlled traffic pattern.

crop combination such as corn and soybeans is that the taller crop benefits more than the shorter crop is disadvantaged, resulting in a net gain for the whole system. It has been difficult for growers to achieve this gain, though, due to the inherent difficulty of managing crop borders—where weeds can proliferate, and where under-laps and over-laps of crop inputs can cause more problems than within fields due to the differences in chemicals used for the different crops.

On the Mitchell farm, though, herbicide resistant crops are used with auto-guidance to solve those problems. Rows can be planted exactly where they need to be, and herbicides and fertilizers applied precisely. In addition, Mitchell's field operations are in the same paths, reducing soil compaction and increasing machine efficiency through better traction.

At the Top Farmer Crop Workshop, the presentations from growers are interspersed with complementary topics from university and private researchers, educators, and industry representatives. A uniqueness of the workshop is that attendees not only get to listen to the presentations, but can test to see how integrating these technologies will affect their own farm's ledger sheet in using Purdue's linear programming model.

For more information, and to look at what's in store at this year's Top Farmer program, please visit the Top Farmer web site at: <http://www.agecon.purdue.edu/topfarmer>