

Crop Management Conference Highlights Farm Technology Improvements

COLUMBIA, MO.

For crop farmers like Clay Mitchell, perfection seems almost within reach. The Iowan explained precision technologies that boost his yields at the University of Missouri Crop Management Conference, Dec. 2-3 in Columbia.

“Controlled traffic helps create soil qualities in which we see yields 30 percent higher than the rest of the county,” Mitchell said.

Mitchell used a real-time kinematic guidance system where tractors, combines, sprayers and planters drive on exactly the same paths from one year to the next. GPS devices allow Mitchell to plant seed, apply fertilizer and spray herbicides with centimeter accuracy.

Driving the same path reduces compaction of topsoil that can dampen yield and lets Mitchell precisely track performance row by row.

Peter Scharf, a University of Missouri associate professor of plant science who spearheaded this year’s conference, said he didn’t know much about Mitchell when he was suggested for the keynote address.

“After a little research online I knew the perspective Mitchell could give farmers could help them learn how to look at and think about new technologies in their operations,” Scharf said.

Mitchell said that after five years, soil tests showed better water flow in his no-till operation than on neighboring farms.

“By using a no-till system with a lot of residue cover, we’re trying to simulate the soil conditions of a forest floor. Soil is protected from direct rainfall, allowing it to maintain its sponginess,” Mitchell said.

“Compared to conventional tilled fields of neighbors, who saw water infiltration rates of about 2/10 of an inch per hour, we saw infiltration rates of 4 inches per hour outside of traffic lanes. This is a huge deal for us because we used to try to make small incremental improve-

ments. It’s not very often we see 10 or 20 times improvement in erosion.”

Mitchell also noted improvements in machinery efficiency. Not only do his GPS-guided tractors travel less ground, they also exert 40 percent less effort while driving on heavily compacted traffic lanes. That results in significant energy savings.

Mitchell takes advantage of intercropping corn and soybeans by alternating 30-foot swaths of each crop in fields. This allows the corn to take advantage of additional sunlight to improve yields without causing too much of a drop in the soybean crop.

Maps showing yield in single rows allow him to correct mistakes and refine delivery of fertilizer and chemicals.

“When everything becomes aligned you reveal errors. Differences as high as 83 bushels can be seen between rows,” Mitchell said.

Even with all the improvements there are still challenges. Mitchell noted that heavy rains in recent years have created problems with rutting in traffic lanes. He also said he’s dealing with topsoil migration and looking at the possibility of using automated GPS to distribute silt from grass waterways on parts of the field that show topsoil deficiencies.

Despite these kinks, Mitchell said his system is paying off.

“For grain farmers the sum of their work is contained in the fullness of their bins at the end of the year,” Mitchell said. “This is really a fantastic story of energy savings and soil improvement on our farm.”

The annual crop management conference presents new technology to farmers and certified crop advisers. Teachers include farmers as well as researchers from the MU College of Agriculture, Food and Natural Resources. Δ



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