TEN YEARS OF PRECISION SURVEY FINDS ADOPTION FOLLOWS RETURNS

By Bruce Erickson

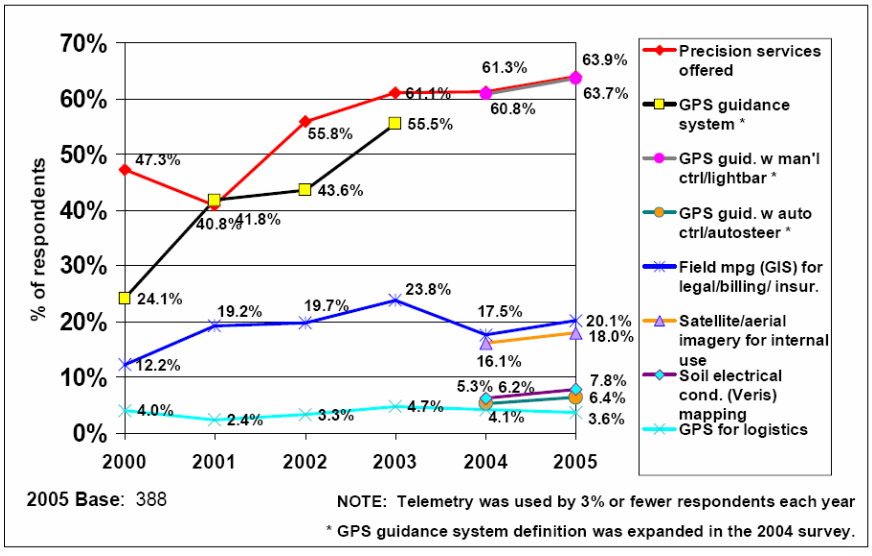
The adoption of precision technologies in agriculture has been as complex as the mix of hardware, software, equipment, and recommendations that go with it. With a myriad of applications that span all crops and regions, it likely boils down to a few simple rules as to whether an agricultural dealer will offer a product or service, or a farmer will buy it—Does it create more value for my operation by increasing my income? Can it reduce my risks or my costs? Does it simplify the complexity of my operation? Will it help me to develop a stronger relationship with my suppliers or customers?

Light bar (manual guidance) display

The agricultural retail sector has lost significant portions of its revenue in the past few years, due in part to herbicide resistant crops and how that has changed weed control, among other factors. Justin Welch, Precision Services Manager at Midland-Impact Coooperative in Tipton, Indiana says it best. "In a mature market, we have to find some way to grow to survive. We need to utilize the latest technologies in our business to ensure that we are efficient as possible. In the same light, we need to show our customers an advantage compared to our competitors, and precision services allows us to do that."

The CropLife/Purdue survey is the most complete gauge of the status of precision technology adoption in U.S. agriculture. The survey results show many technologies, especially some of those most heralded at precision's advent, have bumped along with little change or modest growth. But there have been some remarkable gains in adoption in other areas.

One of the biggest increases in adoption has been the area of guidance. Over 80% of the respondents in the Midwest use lightbars for custom application (over 60% nationally). Some 62% applied over half of the quantity of materials applied with lightbar guidance (foam markers are another option). With proven benefits of decreasing overlap that shaves material costs, fuel, and



Use of precision technology over time.

time, GPS guidance has become the standard in the Corn Belt. An economic analysis by Medlin and Lowenberg-DeBoer in 2000 showed that even for a 1500 acre farmer, investment in a light bar can be a profitable move, let alone a dealer that is using the technology on many times those acres. And, applicators can work the long hours necessary with less fatigue. "Our custom applicators can go home without being exhausted," adds Welch, who has guidance on essentially all of his application equipment.

Grower adoption of guidance is not as easily tracked in this survey as the question was new in 2005, but dealers are projecting big increases in both manual and autoguidance by growers in the next three years. Dealers estimate that currently growers on about 25 percent of the acres in their area are using GPS manual guidance, but expect that to grow to over 40% in the next few years. Autoguidance is the next technological step. Dealers estimate that on about 4% of the acres in their trade areas autoguidance is being used, and they expect that to grow to 15% in the next few years.

Field mapping, remote sensing, and variable rate technologies have not seen the growth that has occurred in guidance. These tools enable the user to quantify field variation, and then adjust inputs accordingly. In theory there is great economic advantage in being able to more precisely apply crop inputs, but in practice the payback has not been realized in many cropping situations. Some notable exceptions to that include the practice of variable rate liming. In the Eastern Corn Belt especially, there appears to be sufficient field variation to justify variable inputs, and with soil pH there is an optimum range, as opposed to many crop nutrients where the penalty for under-application is small but there is little penalty, at least in yields, with overapplication. Another exception is the in-season management of intensely managed crops such as cotton, where the payback comes in the precise management of crop growth across the field.

Adoption of precision technologies has not occurred in many of the ways that were predicted ten years ago. Part of the reason for the complexity in adoption rates is that precision technologies can be complicated to adopt. For the most part, these are not products that you can just purchase and immediately begin using. It has taken a number of years for the precision industry to find ways that technologies can be utilized for individual retailers or growers.

The technology areas that have shown the greatest gains are also the ones that appear to offer the most value to a dealership. Based on the optimistic projections of retailers, it appears that retailers are confident that they will be able to find ways to add value to their operations and those of their customers through those technologies.

To see the complete survey results, go to http://www.purdue.edu/ssmc/ and select "Publications" from the left menu bar.

This was the 10th year for the annual Precision Agriculture Survey sponsored by CropLife magazine and Purdue University's Center for Food and Agricultural Business. The questionnaire was sent this year to 2500 retail agronomy dealerships across the U.S.

The 394 respondents (16% return rate) came from 41 states, with the highest representation in the Midwest. Responding dealerships represented a wide range of organizational types and sizes, with 41% cooperatives, 43% local independents, and 13% belonging to a regional or national organization.