

Clear Reception

Ten years later, the annual *CropLife*/Purdue survey finds precision ag is firmly entrenched in the retail marketplace.

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MY, what a difference a decade makes! Ten years ago, the crop production channel was abuzz with talk about new precision technologies being introduced into agriculture. Some felt precision technologies would revolutionize the industry. Some opined they were going to be a great tool for better fertility diagnostics, while others thought that the cost of the technology would be so high that it would take a long time to catch on.

At the same time, *CropLife* magazine and Purdue University's Center for Food and Agricultural Business decided it would be useful to better understand what dealers thought about precision technology and how they thought it would affect both their businesses and the businesses of their customers.

Each year since 1996, a survey has been sent to 2,500 *CropLife* dealership readers to "take the pulse of the industry" with respect to precision technologies. In every year, the questionnaire has been refined to keep abreast of changes in technology; however, the core questions have remained the same.

This year, we present not only the latest results on dealership adoption and utilization of precision technology, but also take a look back at how the adoption process has unfolded over the last decade.

Precision Ag Service Offerings

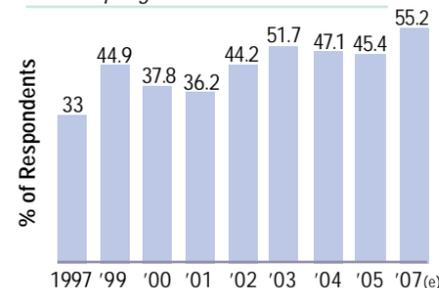
During these intervening years, precision technology has become widespread enough that it is no longer the "black box" it was. Precision technologies have been incorporated into various aspects of the industry, but not always in the ways that were anticipated a decade ago.

The number of dealerships offering precision ag services has continued to slowly increase over the past 10 years, with some ups and downs along the way. The biggest percentage increase among precision services has been in yield monitor sales/support, which grew 60% from 1997 to 2005 (Figure 1); from 15% of respondents offering yield monitors in 1997 to 24% in 2005. (We asked the question in 1996 as well, but did not separate yield monitor sales/support from yield monitor data analysis. That year, 18% of the dealerships responding offered some sort of yield monitor service, broadly defined.)

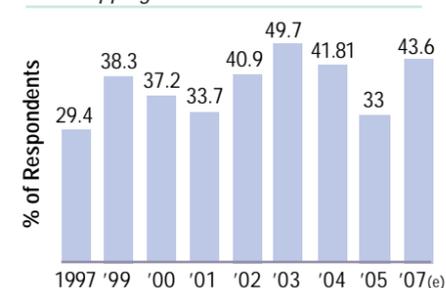
Soil sampling with GPS grew almost 40% over the period, from a third of respondents offering the service in 1997 to 45% in 2005. Agronomic recommendations based on GPS/

FIGURE 1
GAINING STRENGTH
Precision Ag Services Offered Over Time

Soil Sampling With GPS



Field Mapping With GIS



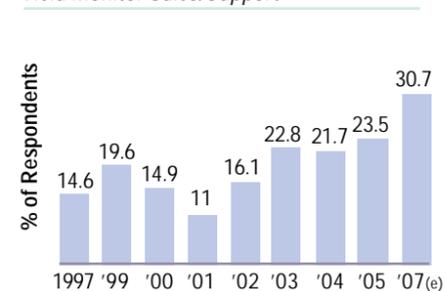
Agronomic Records (GPS Data)



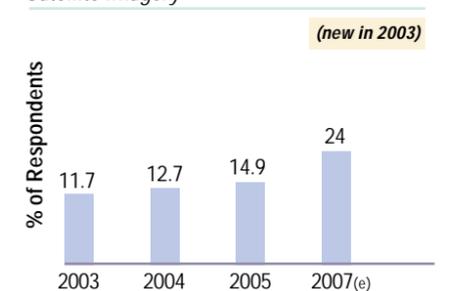
Yield Monitor Data Analysis



Yield Monitor Sales/Support



Satellite Imagery



Note: No data for 1998; 2007 is estimated use
2005 Base = 388

Source: 2005 *CropLife*/Purdue/Trimble Survey

GIS (geographical information systems) data and yield monitor data analysis grew moderately during the nine years.

The exception to the general trend of moderate growth in precision services is field mapping with GIS, which was not a growth area for dealerships. Some dealerships have outsourced the service to contractors. Some farmers are doing their own field mapping, and in many areas there are independent field mapping services available.

Regardless of the reason, field mapping with GIS was offered by three out of 10 dealers in 1997, peaked in 2003 at 50% and, in 2005, is back down to 33% of the dealerships in the U.S. offering this service.

Overall, precision application services grew at a greater rate than other precision service offerings. In 1996, the first year of the survey, 29% of the dealerships indicated that they offered some sort of controller-driven variable-rate application. This grew 56% over the 10 years and controller-driven application is being offered by

45% of dealerships in 2005. Figure 2 (see p. 14) shows the growth in different types of site-specific application: Manual variable-rate application, controller-driven application for single nutrients, and controller-driven application for multi-nutrients.

Seeing Decade-Long Growth

Little change was seen from 2004 to 2005; however significant growth has occurred since 1997. Controller-driven multi-nutrient application has shown the fastest increase over the nine years — growing from 9% of responding dealerships in 1997 to 22% in 2005. About 5% to 10% of the dealerships have been offering variable-rate seeding, both with and without GPS, over the same period.

Figure 3 (see p. 16) the different types of variable-rate application by nutrient-type for 2005. The numbers are virtually unchanged from 2004 with some services showing a very slight decline. This could be due to a (potentially) different group of dealers filling out the questionnaire in 2004.

One of the potential uses of precision technology that was not discussed much 10 years ago was the use of the technology by dealerships for their own internal business purposes. Back then, the focus was almost entirely on the farmer.

However, currently more dealerships are using precision technologies for internal purposes than are offering precision services (Figure 4, see p. 17). Of the dealers responding to the survey in 2005, 12% of the dealers were using some form of precision technology internally but did not offer any precision services to their growers. Only 24% of the respondents did not use precision technology at all in their dealership.

During the past decade, the use of precision technology in the dealership has changed. Several uses have been added fairly recently as the questionnaire was refined to reflect dealer use of the technology.

The biggest growth has been in using GPS as a guidance system for custom application. Only 24% of the deal-

erships used GPS guidance systems for application in 2000. In 2005, 64% of the dealerships were using a GPS guidance system with manual control (lightbar) and 6% of the dealerships used GPS guidance with auto control/autosteer. Satellite/aerial imagery for internal purposes is being used by 18% of the dealerships, just slightly less than the proportion of dealerships using field mapping with GIS for legal, billing, and insurance purposes. Soil electrical conductivity (Veris) mapping appears to be growing as well, increasing from 6% in 2004 to almost 8% in 2005.

Pricing Precision Services

Since 1997, dealerships have been asked about the prices they were charging for their precision service offerings. Initially, there was a wide range of prices charged from dealership-to-dealership and market-to-market, but each year less variation has been reported. As the actual costs and benefits of precision agriculture have been better established and as competitive activity has become better known, prices have slowly stabilized.

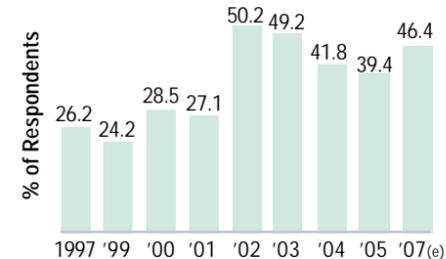
Each year, dealerships were asked to tell us the typical price they charge per acre for their precision services where they could. For those offering only packages or bundled pricing, it often wasn't possible to price out the components individually. Hence, far fewer dealerships typically responded to this question relative to some of the other questions in the survey.

The average prices charged per acre for each of the precision services in 2005 changed very little. The survey looked at what the middle 80% of the dealers were charging (as in previous years, we dropped the top 10% and bottom 10% to make the ranges a bit more consistent). Overall, the average prices charged were similar to or slightly lower than those seen in previous years.

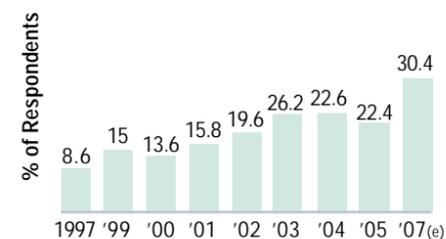
Interestingly, there has been little change in prices from 1997 to 2005. Figure 5 (see p. 17) shows the average price per acre in 1997 compared to the average price in 2005. Most prices have increased 10% to 15% in the nine

FIGURE 2
STRONGER SIGNALS
Variable-Rate Application Offered Over Time

Manuel Variable-Rate



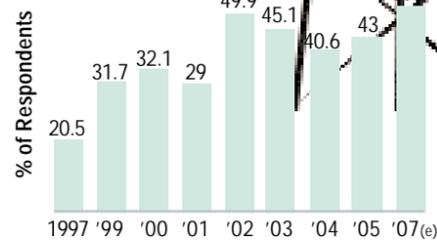
Controller-Drive Multi -Nutrient



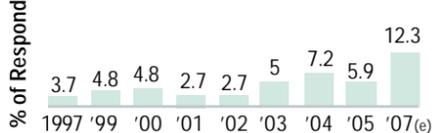
Note: No data for 1998; 2007 is estimated use
2005 Base = 388

Source: 2005 CropLife/Purdue/Trimble Survey

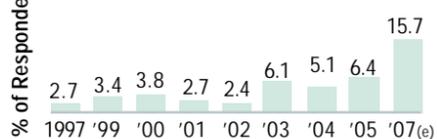
Controller-Driven Single Nutrient



Variable-Rate Seeding, No GPS



Variable-Rate Seeding, GPS



THE RESPONDENTS

This is 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 to 2,500 retail agronomy dealerships across the U.S. earlier this spring.

The 394 survey respondents (16%) came from 41 states, with the highest representation in the Midwest (67% of the respondents). Dealerships from Iowa and Illinois each accounted for 9% of the respondents. Ohio, Nebraska, Minnesota, Indiana, Kansas, Missouri, Wisconsin, Michigan, North Dakota, and South Dakota rounded out the Midwestern states. Almost two-thirds of the surveys (62%) were completed by the owner or manager of the outlet, while 11% were completed by departmental managers, and 12% of the respondents were involved in sales. Technical consultants, agronomists, and "precision managers" accounted for the remaining 15% of the respondents.

The responding dealerships represented a wide range of organizational types and sizes, with four out of 10 being cooperatives (41%), 43% being local independents, and 13% belonging to a regional or national organization. Some 36% of the responding dealerships had only one outlet while 28% had two to five outlets. Only 14% belonged to an organization with more than 25 outlets.

When asked about 2004 annual agronomic sales at their location, 15% said they had under \$1 million in agronomic sales, while 30% were at the other end of the spectrum with over \$5 million in agronomic sales at their location in 2004.



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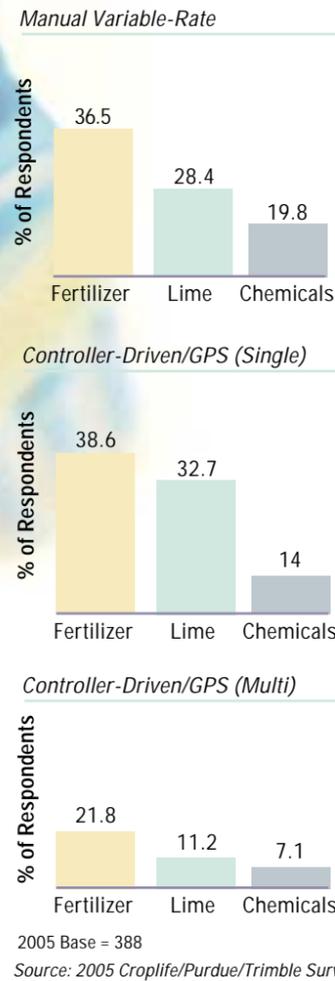


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FIGURE 3
CAN YOU HEAR US NOW?
Variable-Rate Application Offered By Type Of Input In 2005



years, though field mapping with GIS increased 40% from an average of \$2.98 per acre to an average of \$4.18 per acre. In the early years, this service was often offered on a complimentary basis to bring in new precision customers but now is likely being priced closer to the actual cost.

The only price to have dropped significantly over the nine years that price data have been collected was for variable-seeding with GPS. However, this service is still offered by fewer than 5% of the dealerships. Furthermore, the reported drop in prices may be a result of very few data observations, or it may reflect a lack of demand for the service that is keeping prices down.

We also asked dealerships how prof-

itable they felt their precision service offerings were. Figure 6 (see p. 17) shows the percentage of respondents who said each precision component was generating a profit (and covering both fixed and variable costs). This year, 40% of the respondents felt that their total precision package was profitable, up slightly from 37% in 2004.

The most profitable service continued to be soil sampling with GPS, with 42% of respondents indicating they were generating a profit with that service, similar to last year. Yield monitor data analysis and satellite/aerial imagery was the least profitable, with 17% indicating they were not covering either fixed or variable costs for those services.

Among the precision application services, multi-nutrient controller-driven application was seen to be the most profitable, with 43% of the dealerships saying they were making a profit on that service — slightly more than said they made a profit from traditional custom application. For those choosing to offer a non-technical option for site-specific nutrient application (manual variable-rate application), 31% said they found it to be a profitable service.

In looking at changes in profitability of these services since 2002 when we first asked this question, satellite/aerial imagery, variable-seeding with GPS, and yield monitor data analysis have all dropped in profitability, with fewer than one in five of the dealerships offering the services actually making a profit from them. Controller-driven single nutrient application has shown the least change in profitability, though it is one of the more profitable precision services, with almost 40% of the dealerships saying it was profitable for them in 2005 (compared to 32% three years ago).

A Decade Of Change

Ten years ago, one of the uncertainties surrounding the new precision technology was what opportunities it would bring to the agricultural industry. In 1996, respondents were asked what they perceived to be the biggest opportunities for precision technology.

The top three opportunities (each

mentioned by more than 10% of the respondents) were: Better agronomic understanding, improved dealership profit from being able to charge for new services, and improved crop yields. At that time, 9% thought precision technology would improve grower profits.

At the dealership level, respondents thought there could be increased customer loyalty and a competitive advantage for those dealerships who adopted precision technologies. Environmentally, opportunities were perceived to be improved input efficiency, quality fertility programs, and positive environmental impact.

To see how accurate these predictions were 10 years later, we took the same list and asked dealers to rate each of these opportunities or potential benefits on a scale of one to seven, where seven meant that there was a major impact in the dealership or market area, four meant that there was some change, and one meant there was no change. Of the 10 opportunities, all of the average ratings were between 3.7 and 4.5.

Environmentally Stewards

The biggest impact has been seen in the environmental area: Quality fertility programs, environmental impact, and improved crop yields were all seen to have been impacted positively by precision technology by approximately one-third of the respondents. Profits to the grower were seen to have been impacted strongly by just over one-quarter of the respondents (27%) while at the dealership level, the biggest impacts of precision technology was not in profit (rated at a major impact by 17% of the dealers) but in generating a competitive advantage and increased customer loyalty (both rated as being impacted strongly by 26% of the dealers).

Interestingly, improved input efficiency was the bottom of the list, with fewer than 10% of the respondents feeling that precision technology has had a major impact in that area.

With precision technology being available to the agricultural industry for more than a decade now, some of the results of the "revolution" are be-

FIGURE 4
FINDING THE RIGHT FREQUENCY
Precision Technology Used In The Dealership In 2005



coming clearer. Some precision components have become "status quo" — yield monitors are almost standard equipment on new combines, some dealers offer almost every type of precision service that is available, and many dealers are using the technology for improving internal business efficiencies.

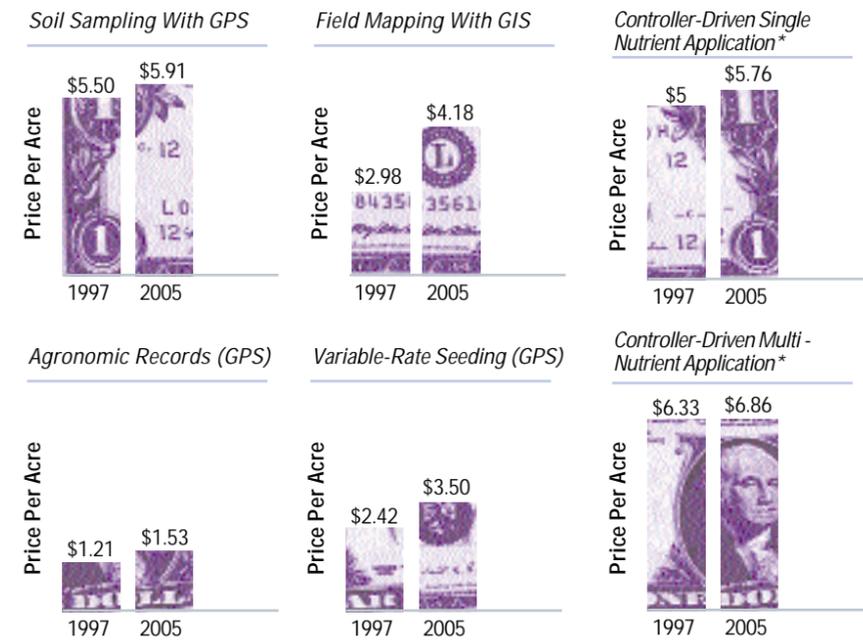
There are obviously still areas where precision technology has been adopted — either because of the geography or the economics or the crops involved. As technology, dealers, and growers continue to evolve, it will certainly be interesting to see how the next 10 years unfold.

Dr. Linda Whipker is a marketing consultant in Raleigh, NC. Dr. Jay Akridge is director of the Center for Food and Agricultural Business at Purdue University and a professor in the Purdue Department of Agricultural Economics.

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The complete survey after
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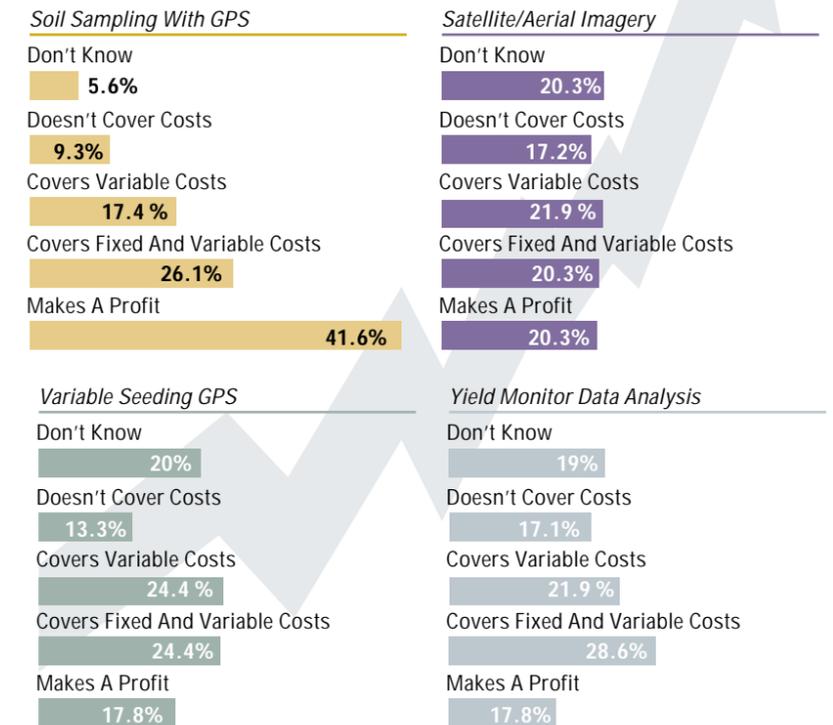
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FIGURE 5
DOLLARS AND SENSE
Average Prices For Precision Ag Services In 1997 And 2005



*1997 combined prices compared to application of fertilizer, not lime or pesticides
2005 Base = 28 to 128
Source: 2005 Croplife/Purdue/Trimble Survey

FIGURE 6
THE PROFIT VIEW
Profitability Of Precision Service Offerings In 2005



2005 Base = 45 to 161
Source: 2005 Croplife/Purdue/Trimble Survey