

Technology in Your Future

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Farmers have historically been early adopters of new technology. Examples include hybrid seed corn, mechanization, commercial fertilization, and genetically modified crops. This rapid adoption of new technology has greatly increased the efficiency of production. In recent times technology has been changing so rapidly that it is becoming increasingly difficult to keep up. However, keeping up with new technology will continue to be an important component of many successful farms.

The word ‘technology’ means different things to different people. Webster’s dictionary defines technology as *applied science*. This broad definition encompasses everything from advances in tractors and combines to improved plant genetics and agronomic knowledge.

There is a concept frequently associated with technology in agriculture called ‘Precision Agriculture’. The term ‘Precision Agriculture’ also means different things to different people. To some it means variable rate fertility management, while to others it means global positioning systems (GPS) or yield monitors. Precision Agriculture has often been defined as ‘managing variability’, or ‘doing the right thing at the right place at the right time’. However, I like this definition:

- The practical application of all available technology to improve profitability and sustainability of agricultural enterprises.

When we talk about Precision Agriculture we are often referring to a certain set of technologies, including:

- Computers
- Global Positioning Systems (GPS)
- Geographical Information Systems (GIS)
- Remote Sensing
- Guidance Systems
- Yield Monitors
- Lasers
- Sensors
- Controllers

Many of the concepts and technologies of Precision Agriculture have been around for nearly a decade, and yet its adoption has been relatively limited. Why is this? We seem to have focused on the technology instead of its practical application. We need to clearly focus on how Precision Agriculture can improve profitability and sustainability.

In its early years Precision Agriculture was primarily associated with variable rate fertility management. At first yield mapping using GPS and a combine yield monitor seemed to be the best gateway to Precision Agriculture. However, it now appears that guidance systems such as parallel tracking, light bars, and auto steer may provide a new gateway. These guidance systems use GPS to guide and steer sprayers, planters, tillage

implements, and other equipment. When farmers acquire and become comfortable with guidance systems it is a reasonable step to add a yield monitor to the system and begin creating yield maps. Some farmers have had yield monitors for some years without mapping because they didn't have GPS. With a guidance system, they now have the GPS and can begin creating yield maps.

A yield map is like a report card. It accurately tells you the end result, but it doesn't tell you how you obtained that result. To make a yield map valuable you have to do some 'ground truthing'. This involves identifying what happened and where it happened. Where were the drowned out spots, the weed patches, the changes in variety, the change in planting date, etc? Next comes the practical application of this technology. Use the yield map, combined with some ground truthing information to identify the major yield limiting factors present in the field. Once the major yield limiting factors have been identified they can be prioritized and management strategies can be developed that will improve profitability and sustainability.

The adoption of new technologies like those associated with Precision Agriculture will continue to be important in agriculture. However, technology alone will not improve profitability or sustainability. The key is practical application – making sure we adopt technology appropriately and use the technology to make better management decisions.