Young Farmers View Satellite Mapping Technology

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operated on a laptop computer to map, grid, take samples, and use the information to apply variable rates of lime and fertilizer where necessary on fields.

The software, according to Adams, can be programmed to store information from 2½ acres down to 2-foot squares. Some grids can be made into any size, including five, 10, or even one acre in size. However, gridding the information about the soil to 2-foot squares "is not cost effective," and that information from larger blocks can be put to better, less expensive use.

When Adams uses the GPS system to map a field, he first drives around and uses the positioning equipment to locate the boundaries. The system uses satellite signals to coordinate position by latitude and longitude. However, because the government restricts the signal accuracy to only 60 yards, a "triangulation" method — using a Coast Guard FM signal — makes the plotting accurate down to an area measuring 3-foot square.

Using the signals to generate a grid system, soil samples are taken from selected spots. Those samples are analyzed by a private Virginia lab. Information on the samples are keyed into the computer grid. Afterward, an entire "application map" can be plotted and loaded into a variable rate applicator, which adjusts the amount of lime and nutrients on fields.

Maps of phosphorous, potassium, and overall soil pH can be laid in together to provide detail on soil conditions and need for a particular crop. Information about crop history is necessary to get an accurate application picture, according to Adams.

Using this information allows custom applicators to, in Adams' words, "write a prescription" for a field, including the amount of lime, phosphorous, and potash necessary. In the future, as technology improves, nitrogen "prescriptions" as well as micronutrient levels can be plotted and prescribed. Also, the technology could eventually be used to help calibrate the application of different types of manure to soils.

Solanco Young Farmer Association members took turns in the jeep Monday evening, following the parameters of the field, watching the location indicator on a laptop in the jeep. The indicator was made up of a red dot on a laptop computer screen that moved as the jeep moved. The position indicator worked with great accuracy.

Adams is able to key in certain terrain features, including groundhog holes, on the computer map.

The most challenging aspect of collecting and storing data is to "make all the computer equipment work and interface correctly with the data," Adams said.

Adams, who has spoken to other farmer organizations including the Harford County Young Farmers, is enthusiastic about the equipment and what it can do to improve yields for farmers.

Producers have the opportunity to "save money and get better yields by applying product in the right areas," he said. In areas where the fertilizer or insecticide is not necessary, it is not applied.

Many agree this "precision agriculture" technique could go a long way to improving farm profitability.

The kind of work to help improve soil profitability "needs to be done by the farmer on the ground," said Adams. "It can't be done by someone sitting behind a desk."

Many custom GPS maps can be generated for a cost of about $8 an acre, depending on what information the producer is looking for.

What makes the technology interesting is that the grid information can be overlaid with harvest data. The GPS system can be rigged up to a combine or forage cutter to provide a "field history" of soil productivity, according to Adams. The harvest data is accurate to less than 5 percent with combines and to 10 percent with a harvester and haymaker.

As more operators use the technology, "it will become cost effective," Adams said.

The cost of having GPS technol-

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