



Staff photos by Don Cresswell

Armed with a laptop computer and monitoring devices, Alan Wernsing, with the United States Department of Agriculture, Agriculture Research Service in Pendleton, monitors the protein levels of the grain he is cutting and maps the field using a global positioning system.

State of the art

Farmers look to new technology, such as combine-mounted protein analyzer

By DEAN BRICKEY
of the East Oregonian

HELIX - Scientists at the Columbia Basin Agricultural Research center are testing a new tool for grain growers, a combine-mounted near-infrared protein analyzer.

Research leader Dan Long of the U.S. Agricultural Research Service, is working with three technicians to collect data and monitor results while harvesting wheat grown by Clinton and Paul Reeder a few miles east of Helix.

They're using a Case-International 1470 hillside combine with a 25-foot-wide header. In addition to the global positioning system receiver and accompanying yield monitor found on newer combines sold in the past decade, this production-scale combine has a second GPS receiver attached to two protein monitors.

Using a laptop computer attached to the monitors; the equipment captures and records the grain's moisture and protein content as it enters and exits the hopper, plus yield in bushels per acre as the combine works its way around the

field. The near-infrared optical scanners mounted on the side and top of the combine take six readings every 10 seconds as grain is captured and sampled, then released.

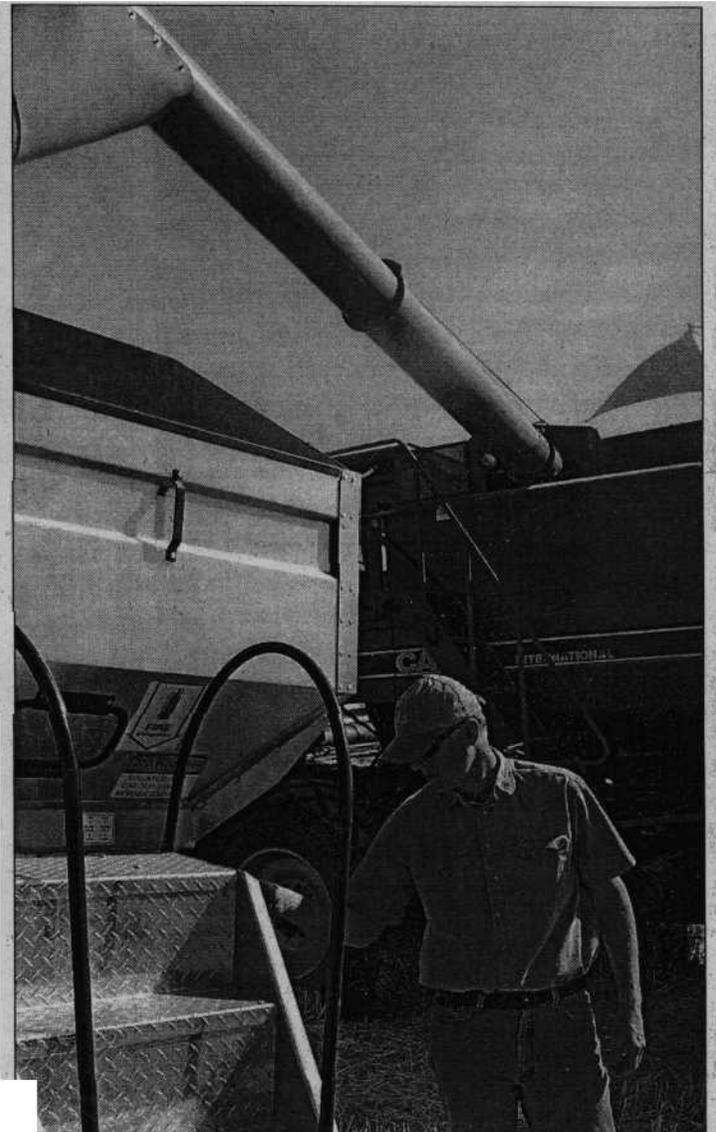
With the accompanying GPS data, researchers can map the field and learn which areas produce the greatest yields and the best protein content, and which areas produce the worst.

"We're using the crop as a bio-assay, as a bioindicator of the conditions within the rooting zone," Long said, adding that low-yielding areas reveal soil differences in relation to high-yielding areas.

The variables in grain yield and protein content relate to soil depth and texture, and the nutrients available, he explained.

"We want to know what is causing the variability and how strong the differences are," Long said. "We also want to know what is the extent and strength of the differences."

Long and his research team hope to determine if that information would be useful to farmers, helping them to improve their management, specifically in nitrogen fertilizer application and seeding.



Staff photo by Don Cresswell

Dan Long, with the U.S. Agriculture Research Service in Pendleton, checks the weights of the grains being unloaded Wednesday.

rates. Long calls it "precision agriculture."

Clinton Reeder watched Wednesday as the combine operator dumped wheat into a weigh-wagon. A self-described "researcher at heart," he and his son, Paul, are eager to learn what the protein analysis will show.

"If we had some protein data, we could look at the markets," he said, explaining that some buyers pay a premium for grain with a specific

protein content. Generally, he said, buyers are looking for hard red wheat with higher proteins and soft white wheat with lower proteins.

Long believes on-combine protein monitors will become standard equipment on production combines. He expects they will add about \$5,000 to the cost, but that's a minimal additional expense in relation to the cost of a new combine.

"I think they'll be selling these things in five years," he said.