Driverless tractors till German high-tech farm

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As the harvest nears, the employees of German farmer Klaus Muenchhoff are busy making the final checks on imposing tractors ready to roll into the golden fields.

But these tractors are steel monsters with a difference—driverless and satellite-guided, they can operate on the fields with an accuracy of a few centimetres (inches).

Impervious to fatigue and indifferent to poor visibility, they reduce distances travelled by each vehicle, saving their owner fuel costs and improving crop yields.

Muenchhoff converted his farm in Derenburg, in the eastern state of Saxony-Anhalt, a decade ago following a high-tech trend that is drawing growing interest.

"My job now is management," he says.

With a grey beard and thin glasses, the robust 60-year-old reigns over a 1,000 hectare (2,500 acre) farm that grows wheat and rapeseed, continuing a long family tradition.

The Muenchhoffs have tilled this land for nearly 200 years.

However, his work has changed radically since he turned to "precision agriculture", which started in the United States in the 1980s and employs

cutting-edge technologies to separately manage each plot rather than uniformly treat an entire field.

Besides the GPS guided tractors, Muenchhoff has set up optical sensors that can measure the nutritional status of plots and scanners that assess a plot's soil composition, thus reducing fertiliser consumption.

There is an ecological aspect, but the main focus is economic.

In six years, the farmer says he has saved nearly 150,000 euros ($200,000) by reducing the use of phosphorus and potassium—a significant advantage amid wild swings in commodity prices.

"Twenty years ago, for a field of 100 hectares, we needed 10 tonnes of phosphorus. Today, we need two to five tonnes," said Muenchhoff.

On his computer, he scrolls through charts, tables, digital maps and satellite photos, which are now essential tools.

For now, he is still a pioneer.

"Of 280,000 farms in Germany, between 800 and 1,000 use optical sensors," he says.

However, precision agriculture may have bumper times ahead.

"It offers enormous productivity gains and allows for a reduction of resource use at a time of growing environmental regulatory demands," said Oliver Neumann, spokesman for agricultural equipment giant John Deere.

A problem is that the equipment still doesn't come cheap. Some high-tech combine harvesters can cost up to half a million euros.

But "with increasing use, prices should come down for small-scale users," said Neumann.

Muenchhoff said that "even small operations are already using these technologies. They can get together with neighbours and become as profitable as large farms."

These innovations are feeding hopes of overcoming the challenge of exploding global food needs expected in future.

They also offer new opportunities for the agricultural sector, including a demand for more skilled workers, and promise new avenues for business development, especially in software, smartphones or even drones.

Will the machines take over the farm one day?

"I don't see that happening," said Muenchhoff, who employs six staff. "They facilitate the work, that's all. They don't make decisions. I make the decisions."