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China develops smart farming tech for soil protection

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Chinese Academy of Sciences has developed intelligent farming technology for soil testing. A smart tractor or a robot can collect data on the soil and crops during the farming process, including planting and harvesting. Pilot testing with smart equipment is in progress in the Dahewan Demonstration Zone in Hulun Buir, China.

The intelligent farming assisted with smart agricultural machinery and equipment linked with satellites, unmanned aerial vehicles, and ground sensors are piloted in the Dahewan Demonstration Zone in Hulun Buir.

The tractor and several soil testing robots patrol the field, examining the soil substances and sending data to operators.

According to Chen Haihua, a senior engineer at the Chinese Academy of Sciences, "Compared with traditional agricultural machinery, the intelligent farming tools are more like a combination of computers, mobile phones, and smart agricultural machinery, adding that the command centre of the intelligent farming system can automatically conduct analysis and modelling based on the collected data, and establish electronic files for the black soil.â?

The pilot zone of 11,200 hectares mainly cultivates soybeans. It is one of the important black soil areas in China.

The black soil, or chernozem soil, found in China's northeastern provinces of Heilongjiang, Jilin, and Liaoning and in some parts of the Inner Mongolia autonomous region, produces about a quarter of the country's total grain output, making it crucial to China's food supply.

According to the ecological monitoring, the black soil in Dahewan is on the verge of wind and water erosion, with decreasing organic matter imperilling the fertility of the fields.

Zhang Yucheng, a senior engineer at the Institute of Computing Technology, Chinese Academy of Sciences, said the institute launched the "Black Soil Granary" program in July 2021 for black soil conservation and modern agricultural development.

"We are developing technology that can protect the soil without reducing the crop yield," he said.

According to the program's objectives, in the next five years, the soil quality in 2,000 hectares of the core area in Dahewan will be improved while the comprehensive economic benefit of the field increases by more than 10 per cent. Human labour will be reduced by more than 50 per cent in a 333-hectare area in the demonstration zone.