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FOOD

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Who will feed China's livestock?

Findings from a multiyear, multidisciplinary research effort into the future for China's agriculture are contributing to the Chinese government's policymaking process

Data portal aims to help unlock food production bottlenecks

Underpinning the model that explored the development of China's agriculture to 2030 (see main article) is the Agro-Ecological Zones (AEZ) methodology, developed by the Food and Agriculture Organization of the United Nations (FAO) and IIASA, which have recently launched a new online data portal that applies AEZ globally and aims to help unlock the planet's potential for feeding a rapidly growing population.

The Global Agro-Ecological Zones (GAEZ) portal is a planning tool designed to help identify areas for increased global food production while maintaining the natural resources base and facing the challenge of climate change. According to FAO estimates, world food production needs to increase 60% by 2050 to feed a world population expected to surpass 9 billion people. ■

www.iiasa.ac.at/Research/LUC/GAEZv3.0

China's agricultural sector is changing. Driving this transformation is rising food demand due to a growing population, that is expected to reach 1,436 million by 2030, increasing urbanization of up to 60% by 2030, and rising incomes as the country's economic growth benefits more and more people. At the same time, industrialization and climate change are expected to lead to a loss of crop land of some 6.5 million ha, and trade liberalization and technical progress will continue to drive further change.

Understanding the impacts of these driving forces on farmers and consumers across the diverse 2,885 counties that make up the countryside of China is not easy. Setting the right agricultural policies is even harder. To help identify the most effective policies and analyze their potential impacts on different parts of China, IIASA's agriculture experts, along with research partners, developed the most detailed model of Chinese agriculture yet available in a series of projects starting in 2001. Known as Chinagro-II, the model helps the researchers analyze consumer and producer behavior, government policies, and markets, 17 major agricultural commodities, and 14 detailed farm types. Uniquely, the model provides detailed analysis down to the county level.

China's accession to the World Trade Organization in 2001 enabled the country to further open up to international food markets. At that time the key policy concern was whether the country could feed itself and how this would impact world food markets. Today, the key question is whether China can feed the animals required to meet the accelerating demand for meat and dairy products.

As incomes grow in China, diets are changing, leading to fast-rising demand for animal proteins. Chinagro-II estimates that by 2030 China will need to produce 200 million more pigs per year, 3 billion more poultry, and several billion more fish. All of this requires much more feed via both domestic production and imports, including the import of dried distillers grain with solubles (DDGs). Indeed by 2030, the Chinagro model projects China will have to import 42.5% of its protein feed—some 58.1 million tons, equivalent to over a third of world trade in protein feed in 2004.

However, as the researcher's policy report "Who will feed China's livestock?" points out, poor quality feed can damage livestock and cause pollution. The report makes the case for regulation and outlines measures to improve the supply and quality control of livestock feed. Interest in the recommendations is growing. "The Vice-Premier commented on our policy report and it has been submitted to the policymaking discussion in the State Council and to relevant ministries," explains IIASA's Laixiang Sun, who was part of the Chinagro-I and II project teams. "The State Council is the chief administrative authority in China and it is chaired by the Premier and includes the heads of each governmental ministry and agency."

Alongside the economic and trade impacts on and from the development of China's agriculture sector, the researchers, which included IIASA's Günther Fischer, Harrij van Velthuizen, Tatiana Ermolieva, Gui-Ying Cao, Sylvia Prieler, and David Wiberg, explored its social and environmental implications. For example, Chinagro-II pinpoints the areas that suffer from excessive fertilizer application and the resulting environmental damage and waste of the precious resources of nitrogen and phosphorous. "The spatial detail of the model allowed us to identify which areas of China would benefit from low-carbon and organic agricultural technologies," comments Sun. "Following comments from two Vice Ministers on our report on this issue, it was submitted to the China Meteorological Administration." ■

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