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Agriculture In The North China Plain

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In the last column, we shared our impressions of Chinese agriculture from the vantage point of our seats on a high-speed train as we made our way from Beijing to the Chinese Academy of Science (CAS) Yucheng Comprehensive Experimental Station four hours south.

In that article we pointed out the intensive nature of Chinese agriculture and the effective use of the land in large fields as well as small plots of land tucked into every available nook and cranny.

At Yucheng we were able to observe the agriculture of the North China Plain up close and personal thanks to our hosts, Prof. Ouyang Zhu and Prof. Li Yunsheng of the Institute of Geographical Sciences and Natural Resources Research of CAS.

The Yucheng station has been conducting agricultural research for 43 years. The focus of the work has included the issues of soil desalinization and water management in the Yellow River watershed. Because of these problems, crop production levels in the Yucheng area were very poor when they started their work.

Today their work has expanded to include varietal field trials, integrated pest management, fertilizer and crop residue tests, and the use of no-till techniques in the crop rotation between winter wheat and soybeans.

The climatic conditions in the area are such that farmers can harvest the winter wheat crop in June and then plant corn into the wheat stubble. In the fall when the corn is harvested the land is replanted to winter wheat.

With double cropping the total production is significant. We usually evaluate a farming operation in terms of yield crop by crop, but given the situation in the North China Plain it makes more sense to look at the yield per acre not the yield by crop. In one village that we visited, the farmers reported a ten-fold increase in yield since they started working with the experiment station.

As we rode between the city of Yucheng and the experimental station we saw a cropping system that astounded us. We saw poplar saplings intercropped with winter wheat.

Some of the wheat fields contained poplars that were well beyond the sapling stage. In fact, we saw winter wheat planted under poplars with 5 inch or so trunks. The larger the trees the thinner the wheat stand, but there was wheat to be harvested.

We have heard about agroforestry cropping systems, but this is the first time we saw it anywhere but on the pages of books. The poplars were planted and harvested on a regular rotation in conjunction with the production of field crops.

We are unclear about the details, but from what we could see this cropping system provided a sustainable supply of wood and supported many very small, but thriving, wood processing operations in the community.

On one of our tours of local agricultural operations we had the opportunity to look at a cooperative dairy. The organization consists of a system of cooperative buying and marketing with individual family-operated production in the middle.

The dairy has 86 dry lots built right next to each other. Each lot is operated by a different farm family. The family is responsible for their lot and their two dozen or so cows and calves.

The cooperative owns the milking parlor and each farmer is responsible for the twice daily milking of their cows. We were told that there is a waiting list of farmers who would like to become a part of the cooperative.

We were then taken to an area of the greater Yucheng community that had previously had a serious problem with saline soil. The project consisted of digging deep drainage ditches to lower the water table. Next to the ditches a series of fish ponds had been dug into the ground.

The soil that had been removed had been piled up on adjacent fields allowing rain water to leach the salt out of the soil. We saw farmers growing wheat/corn and cotton on the reclaimed land. In addition to providing improved soil for the fields, the fish ponds produce fish for commercial markets.

Most of the corn is harvested in ways that allow collection of the cobs. Interestingly, corn cobs have become the basis of a sizeable chemical industry in Yucheng. Cobs are used to produce xylitol (a low-caloric sweetener), ethanol, and a host of other chemicals. Some of the poplar is converted into both MDF (medium density fiberboard) and HDF (high density fiberboard).

From what we saw, agricultural development in the Yucheng area – which like nearly all of rural China has an abundance of actively engaged labor – provides the basis for much of the region's economic development.

The agricultural development model is based on strengthening the productivity and income of small producers. The emergence of spin-off and support industries then provides off-farm income for farm family members that further strengthens their economic situation.

An important catalyst for this development chain in the Yucheng region is the ongoing public investment in agricultural research and development by both the national government through the CAS research station and the local government. Δ