

Xiao Hei Lei's Farm

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Xiao Hei Lei lives with his family in Du He. Du He is a small village of 160 inhabitants located in the central Chinese province Henan on the southern fringe of the loess plateau. The landscape is characterized by rolling barren loess hills torn apart by deep erosion gullies. Apart from scattered reforested hillcrests few trees are to be seen and the range vegetation is sparse because of overgrazing. The continental monsoonal climate consists of a dry and cold winter and monsoon-fed humid and warm summers, with a mean annual rainfall of 660 mm. The primary land-use form is rain-fed agriculture, with an

approximate population density of 170 persons per km².

Rural Economic Reform

Prior to 1978, productive activities in China were carried out on a collective basis. At the time Du He constituted a production brigade of the Shangguo commune, today Shangguo township of Luoning county. Between 1979 and 1982 the old system was largely replaced by the 'household responsibility system'. Cropland, tree plantations and cattle were divided among households in order to be managed on a private basis.

Households are obliged by contract to sell a certain amount of their products (wheat in Shangguo) to the State at a price somewhat below the free-market price. The distribution of land has been mainly according to household size. The Chinese State remains owner of the land, while the farmers get the right of utilization.

The agricultural production system is still basically of a subsistence nature, although market integration and production specialization develop fast and socio-economic conditions have improved substantially since 1981. Farmers identify the increase in their cash income and in the material conditions of living as the main change since the introduction of the rural economic reforms. They often illustrate this by pointing at the large increase in cattle population and the boom in the construction of brick houses where in this hilly area people used to build cave houses in the thick layers of loess.

Economic Development and County Policies

With an average annual per capita income of Rmb 114, Luoning county is still considerably below the officially designated poverty level of Rmb 150. Only 80% of the county's households are specialized in an agricultural or non-agricultural activity (50% or more of its income from commodity production or in cattle raising: 5 or more head of cattle).

The county policy for economic development aims at increasing the per capita annual income to at least Rmb 150 within a period of 5 years. Cattle raising is considered by the county government as one of the most important activities to speed up economic development. So far the county Bureau of Animal Husbandry (BAH), which is responsible for the implementation of this programme, has restricted its activities in the main to cattle health and breeding (artificial insemination) aspects, but it is now recognized that nutrition has become a problem. The Beef Cattle Corporation (BCC) in Luoning county became the first project in China to receive financial support from West European non-governmental organizations after it applied for foreign aid to help in achieving county development goals in the field of animal husbandry.

The protection of natural resources is another of the policies stressed in the county government. The severe erosion, among other things resulting from the illegal cultivation of steep slopes, gave rise to the implementation of an erosion control programme executed under responsibility of the Bureau of Water



Xiao Hei lei and one of his children sowing winter-wheat with a wooden sowing machine (see also opposite page. All photo's by Lex Roeleveld).



The manure of the animals is collected, composted and carefully applied. This constitutes the basis for fertilization, together with 30-40 kg N/ha and legumes. Around 30% of the farmers are poorer and have no cows.

Conservation. Integration of the different Bureaux' programme activities does not seem to be very strong.

Agricultural Extension

Agricultural extension in Luoning county is very extensive and still largely based on the former collective approach in which innovations were propagated by short intensive training. In the field of animal husbandry extension is very limited. Recently the BCC started extension services in the field of cattle nutrition and pasture establishment. Apart from that, small veterinary-artificial insemination centres, operated by 2 or 3 technicians, deliver services and may give some technical advice. These centres receive logistical support from the BAH but are financially independent collectives.

The farm of Xiao Hei Lei

A closer look at the characteristics and development of agriculture in this part of China will be illustrated by visiting the household of Xiao Hei Lei and his wife. They started as an independent household just after the introduction of the responsibility system. Their household, today enriched by two children, was allotted 13 mu (15 mu = 1 ha) long time cultivated and rather infertile crop-land. Wheat is the principal crop in this area and is integrated in a mixed cropping system in which early and late winter wheat are followed by either corn, soya beans, black beans or potatoes. An average of 17% of their land is under summer fallow.

The production system makes intensive use of the available resources and relatively few external inputs are applied. The manure of the household and their three head of cattle, which is more than an average farmer owns, is collected and carefully applied, and constitutes the basis for fertilizing their cropland. The contribution of nitrogen fertilizer, applied at an approximate rate of 30-40 kg N/ha, is nevertheless also important, as is the role of legumes in the mixed cropping system.

Animal husbandry based on chickens and cattle of the local Yellow breed is well integrated in the production system. The sale of eggs is an important source of monetary income.

Both their bull and the two cows are intensively used as draft animals and will finally be sold (Rmb 400/500) on the local market. Milk is not consumed in this

area where soya bean products are very popular. Crop residues are well stored and chopped before fed to the animals. Together with the major part of the black beans, they comprise the winter forage ration.

Fine pieces of traditional technology contribute to the intensive form of agriculture practiced. The wooden sowing machine may be considered the pearl on the crown of local traditional technology. Seeds of different sizes can be sown 3 rows at a time, the density of seed distribution being regulated by moving the machine to and fro, which requires great skills of the farmer.

Crop productivity (kg/ha) on Xiao's fields varied this year from 1200 - 1500 kg for wheat, 1500 - 1750 kg for corn, 500 kg for beans and 11000 kg for potatoes.

According to Xiao, present yields are better than several years ago because cultivation is more intensive and fertilization improved. Expenditure on fertilizer (Rmb 60) was probably one of the largest for his household. To meet his quota of wheat, Xiao sold 125 kg to the State for which he received Rmb 58. The sale of 1 ton of potatoes generated approximately Rmb 220.

Xiao's household is not yet considered to be a 'specialized household', but he wants to become a specialized cattle household. Part of the village's rangeland has been distributed to the farmers (50 years lease contract). Xiao received 15 mu (1 ha) of which 8 have been turned into cultivated grassland, alfalfa and a local forage legume (*Astragalus adsurgens*) last year, in order to improve cattle productivity. Although the establishment of his pastures was satisfactory, the sudden and relatively large extension of their cultivated area posed problems. A main problem is the shortage of labour at the time of the most intensive activities in crop production. This resulted this year in the loss of forage that could not be cut. This set-back does however not harm their faith in the county policy's to get rid of poverty through the development of cattle raising in this part of the county.

Final remarks

The rapid development of crop and animal production (the cattle population in Luoning has increased over the last few years by approximately 12% per year) implies a more intensive rate of exploitation of the natural resources. Erosion and overgrazing are likely to increase, if agricultural development is not accompanied by a further improvement in the use of the natural resources, the creation of renewable resources and an increase in the use of external inputs. Forage legumes integrated in the local cropping system and established on erosion susceptible sites may contribute to a sustainable agricultural development. The necessary integrated approach by the different county bureaux seems one of the bottlenecks in a county where vertical information streams function much better than horizontal ones. Furthermore, extension systems which improve the two-way flow of information between farmers and technicians might well result in the elaboration of development policies which suit the farmers conditions better. As one gets to know Luoning county, one is deeply impressed by the zeal and enthusiasm of the Chinese administration and farmers in their fight against rural poverty.

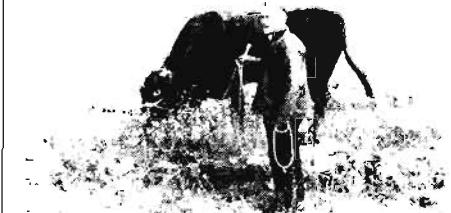
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Central China: agricultural fields, severe erosion and overgrazing.



Wheat-straw for cattle feed is stored and protected by mud against rain.



Proud farmer who obtained a local bred bull from the BCC.



Some farmers hire cows for harrowing their fields.



Farmers bring artificial fertilizers home.



Close-up wooden sowing machine with winter-wheat.