Cattle improvement project in the Kyrgyz Republic[1]

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Introduction

The case study of the Kyrgyz Republic in Central Asia is based on a very recent start to reintroduce systematic breeding in cattle after the transformation from large collective farms to small private farms. Some of the large farms have managed to transform themselves into collectively owned private farms. These farms have also managed to maintain valuable breeding stock which now becomes the basis to start systematic breed improvement in order to produce high quality semen to be used in the large number of small family farms throughout Kyrgyzstan.

Breeds

Alatoo

The Alatoo cattle breed is the main breed in the Republic. It was developed by complex cross-breeding schemes of local Kyrgyz cattle with Brown Swiss (BS) and Kostromskaya. Animals of this type are very similar to Brown Swiss, have a shorter body, deeper chest and lower implantation of the legs. The udder is well developed and the yield is in the range of ten to 15 kg of milk per day. Thanks to their productivity and their adaptation to the hot dry summers and severe winters of Central Asia, the breed is widely used in the Republic as well as in neighbouring countries. During the period of breed perfection, the Kyrgyz Republic exported 59 500 heads of young animals to other Republics of Central Asia, the Caucasus, Mongolia, Korea, China and Afghanistan. The level of improved (American) BS blood has probably decreased during the past seven years, as in this period there has been little use of BS semen. The population of Alatoo cattle in 1997 was estimated at 680 000 heads. The Alatoo breed is kept throughout Kyrgyzstan.

Kyrgyz Black and White Cattle

The Kyrgyz Black and White cattle (KBW) is considered to consist of three sub-populations: the original Aulieatinska breed, "holsteinized" Alatoo and "holsteinized" Aulieatinska. The highest density is in peri-urban areas of Chui oblast and Talas oblast. Kyrgyz Black and White cattle, though

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not yet officially recognised, can be defined as a new breed group of dairy animals. Its genetic improvement can be pursued in a breeding programme similar to the one for Alatoo. The Aulieatinska breed was created in 1974 after cross-breeding of local Kyrgyz cattle with Friesian bulls. At dairy farm "Jergetalsky" (Talas oblast) productivity of cows was 3 900 kg of milk per lactation. From 1980 onwards "holsteinization" of Alatoo started in 26 collective farms with the purpose of increasing milk production. The population of KBW in 1997 was estimated at 170 000 heads.

Input levels

In principle, there are two types of cattle keeping systems in Kyrgyzstan:

- systems where the animals are housed year round. This is the more intensive system with normally large herds (500 to 3 000 animals, former collective farms) and located around larger industrial and urban centres;
- mixed systems with alternate stall-feeding and grazing in summer, or grazing altogether in summer on summer pastures and stall-feeding in winter. This system can be found in the newly established private farms as well as in some former collective farms.

The inputs for milk production vary from low to high. The sharp inflation which started in August 1998 put milk producers into difficulty: fuel prices went up drastically and milk prices remained approximately at the same level. The situation for medium scale farmers was similar. Small farmers do not use a lot of machinery in the production process. Fodder procurement is made manually which makes production costs lower.

Size of population

In 1997 the size of the Kyrgyz cattle population was estimated at 850 000 animals (680 000 Alatoo and 170 000 Black and White). Kyrgyzstan is divided into six oblasts (cantons): Chui, Osh, Jalal-Abad, Naryn, Issyk-Kul and Talas. Eighty-five percent of the territory is covered with mountains. Large cooperative milk farms are located only in Chui oblast, medium and small milk farms established in the process of reforms from 1991 are located in all oblasts. The cattle populations of the large cooperative farms amount to 3 000 heads.

Rationale of Cattle Improvement Project (CIP)

The Cattle Improvement Project was started on 1 January 1999. The Project activity involves six large farms, medium size private farm and 300 small scale farmers, cattle-keepers. The total number of cows is 7 000. Two thousand are involved in the "Animal Performance Recording System". The best breeding animals of the country are kept on the large farms, therefore the project aims at maintaining and improving the quality of the animals in these farms in order to use them afterwards as reproducers of genetic material for other regions of the country. All these farms have operational Artificial Insemination facilities. The project imports progeny tested bull semen for the insemination of the best cows with the purpose

of producing good quality breeding bulls for the production of frozen semen or direct use in natural service. It is planned to initiate the improvement activity in the first stage in two oblasts of the country and to spread it afterwards over the whole country.

Main purpose and breeding goal

The main purpose of cattle-keeping is milk production. Some farms produce up to 18 tons of milk per day and sell it to milk processing units. The majority of small and medium farms sell milk on markets and use it for home consumption. Improvement of milk productivity is the most important aim. Imported Brown Swiss semen is used for the improvement of milk production of the Alatoo breed and imported Holstein semen for improvement of milk production of the Black and White breed. For the time being, real breeding work, performance recording, selection and nominated services, are carried out only on collective farms. These farms will produce the genetic material to be used by the small farmers. The majority of small farms, having 90 percent of the country's cattle population, at present do not improve the quality of their cattle through breeding at all. The breeding aims for milk traits for Alatoo and Kyrgyz Black and White are listed in Table 1.

Table 1. Breeding aims for milk traits for Alatoo and Kyrgyz Black and White cattle.

Trait	Alatoo	Black and White
Lactation yield	4 500 – 5 000 kg	4 500 – 5 000 kg
Fat content	3.8 – 4.0%	3.8 – 4.0%
Live weight	550 – 600 kg	450 – 550 kg
Milking speed	1.6 – 1.8 kg / min	1.6 – 1.8 kg / min
Udder index	42 – 44%	42 – 44%
Age at first calving	27 – 29 months	25 – 27 months

Breeding plans

From the 1950s onwards a large-scale programme for improving the local Kyrgyz cattle breeds has been carried out. Brown Swiss bulls were used for that purpose through artificial insemination. In the late eighties almost the entire cattle population was improved with Brown Swiss genetic material. In the eighties the programme of cross-breeding local Alatoo cows with Holstein bulls was initiated in Kyrgyzstan with the purpose of further increasing milk production. This programme involved 26 large breeding farms.

Today, only two large farms with predominantly Holstein crosses are still functioning effectively. These farms each keep approximately 1 300 milking cows which are Holstein cross-bred of different generations. The production level is approximately 4 000 kg per lactation.

Improvement with the Holstein breeding material was made mainly in the suburbs of the capital Bishkek and the lowlands, whereas cross-breeding with Brown Swiss was made over the whole of Kyrgyzstan.

The Government breeding policy aimed at large collective farms. In 1990 these farms had more than 85 percent of the cattle population. In 1987-1990 the annual average milk yield per animal on the collective farms was 3 100 kg.

The Central State Breeding Station produced frozen bull semen and had branches in all oblasts. In addition to the production of semen, the Station imported and sold high quality progeny tested semen.

The cows in the Government sector were inseminated artificially. Bulls were progeny tested.

Today the Government breeding system no longer exists. The large farms in five oblasts were reorganized into small private holdings where, at present, breed improvement activities in the narrow sense does not take place.

The Cattle Improvement Project being part of the Kyrgyz Swiss Agricultural Projects, combines six large cooperative farms, one private medium size farm and 300 small scale cattle holders. The aim of the project is to maintain the remaining breeding stock of the country and to improve its quality as well as to resume the production of bull semen for small milk producing farms.

New elements in the breeding programme

The Kyrgyz breeding policy for cattle aimed at dual purpose animals with emphasis on milk yield next to good daily gains for meat production. The Kyrgyz winters being long and hard and the summer feeding being based on high mountain pasture grazing, the fitness traits were important, though never explicitly bred for. The small scale cattle keeper will opt for an animal with a good (not maximum) milk production which can produce a reasonable amount of milk with the farm based fodder. Cultivated fodder and supplements (concentrates, minerals) will either not be sufficiently available or too expensive for quite some time to come.

Traits included in the breeding goal

At present the recording system is only geared towards milk yield and fat content. In addition, a body conformation scoring based on the linear description method is being developed for potential bull mothers and potential breeding bulls.

Selection criteria

The selection criteria are milk yield and fat content. At present a simple contemporary comparison method is followed. In addition, body conformation scoring (linear description for bull mothers and breeding bulls).

Dissemination of improved genetic material

Sale of bulls from breeding farms to villages for village herds and small holders. Sale of frozen semen of best bulls to cooperative farms and farmer associations. Sale of surplus good quality heifers from large farms to small holders.

Population structure

Looking at the entire cattle population, its composition can be defined as follows:

a) pure-bred Alatoo cattle;
b) improved Alaltoo x Brown Swiss;
c) Kyrgyz Black and White.

Farmer and Government involvement

Farmers invest mostly to improve milk production. Government support is no longer available. A Government resolution exists on providing breeding farms with subsidies, but in practice the farmers do not get any support from the Government.

Technical support

Milk recording and fat analysis. The Project carries out the milk performance recording of 2 000 cows. In four villages there are four milk recorders. Each of them visits 50 to 70 farmers per month. They measure milk quantity and take samples to determine the milk fat content.

AI services. In three villages AI points have been set up where farmers can bring their cows for insemination in the morning and in the evening. The project supplies semen, liquid nitrogen and other material to these points at cost price. The farmers of the villages have selected a person to work as an AI technician. The project renders support to the AI points in the large farms. For this purpose the project has provided new LN containers.

Training. The Project carries out the training for AI technicians and organizes exposure trips to Russia and Kazakhstan.

Main reasons for introducing the scheme

Cattle breeding is a traditional sector in Kyrgyzstan. More than 60 percent of the human population lives in rural areas. Milk production and sale of milk and milk products are a main source of income for those living in rural areas. Milk and milk products are prominently placed in the diet of the Kyrgyz population even among the poorer people. Meat is the main traditional protein product for the Kyrgyz population.

In agro-climatic conditions (average rainfall 400 mm / year) and topography with very large high altitude pastures (2 500 to 4 500 m), livestock production in Kyrgyzstan has played a major role in the past and will in the future. In livestock production Kyrgyzstan enjoys a comparative advantage in Central Asia, based on agro-climatic conditions, tradition and knowledge.

At present in Kyrgyzstan, there is a large untapped potential for more intensive livestock production.

Peculiarities of the programme

The programme attempts to bundle the still available know-how in breed development of the erstwhile collective and state farms and to assist the remaining cooperative farms to make their good quality genetic material available to a wider public by systematic breeding work. This work has to be based on principles of private enterprise and market economy.

Anticipated changes

In the near future the following changes with regard to breeding will be implemented:

- adoption of the newly developed breeding policy on a national level;
- establishment of farmer organizations to enable farmers to independently deal with breeding issues;
- design breeding plans at local level;
- simultaneously make efforts to improve the feed and fodder base and animal feeding (this issue is acute for farmers as the breed improvement activity undertaken at the moment will not solve the problem of low milk productivity alone);
- establish a breeder service company as a limited liability company based on principles of private enterprise and market economy.

Future outlook

The future of the two existing cattle breeds depends on the farmers themselves. There are regions in the country where milk sale is difficult. This hampers the possibility of breed improvement (for example remote mountainous regions). In contrast, the areas around cities and industrial centres are characterised by a high demand for milk and milk products. In such regions farmers will start to combine their efforts and will organize AI activities using frozen semen of breeding bulls (a demand driven programme). We are convinced that milk production in the coming five to ten years will become profitable not only in the suburbs but also in the rural areas which after all will be the driving force to the overall cattle breed improvement programme in Kyrgyzstan.