

# MODIFYING MANAGEMENT METHODS TO PROMOTE THE REFORM AND DEVELOPMENT OF GRASSLAND BASED ANIMAL HUSBANDRY THROUGH BETTER RESOURCE USE

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## ABSTRACT

The development of grassland livestock production cannot rely on the cost of pasture degradation. The stocking rate has to be based on the pasture production and it also has to be under the guidance of law. Changing management methods, development of grassland agriculture and optimization of the utilization of natural resources is the effective way of improving the reformation and development of grassland livestock production.

### Overstocking and pasture degradation

Livestock production has increased since 1949. The number of livestock at the end of year increased from 10,382,200 in 1949 to 37,243,200 in 1995, 3.6 times more than that in 1949. In the meantime, the size of the natural pasture is decreasing gradually: firstly, from 1950s to early 1980s, 3,533,000 ha. natural pasture were used for cropping (1). Furthermore, this trend has not been slowing down; secondly, the development of cropping is based on the increasing area, it also causes the increasing consumption of water resources and affects hydrogeological conditions in the surrounding area. This in turn, reduces the discharge of the water and causes the degradation of meadow in the marsh and lowland area (2, 3, 9); thirdly, defrosting, digging for herb medicine and mining destroy the natural pasture to a great extent (3). The unbalanced development between livestock and pasture and overstocking results in the degradation and desertation of pasture, and causes serious environmental problems in Xin Jiang.

The total area of natural pasture is 55,960,000 ha., the utilizable area is 47,100,000 ha. The stocking capacity is 31,940,000 sheep units theoretically. Among these, the stocking for the summer pasture is 45,210,000, winter pasture is 32,140,000, spring pasture is 24,460,000 and autumn pasture is 25,630,000 sheep units. Fifty-one percent of the total livestock in Xin Jiang is grazing in pasture which, based on that, means 40.2% of livestock in Xin Jiang is grazing the whole year and 62% livestock in cropping areas is grazing pasture for 3-5 months in summer and autumn (9). According to the livestock number which is 37,243,200 at the end of 1995 and 14,831,800 being sold, the stocking capacity is 68,915,400 sheep unit in summer pasture, 23,963,800 in winter pasture, 35,838,700 in spring pasture and 39,876,200 in autumn pasture. The overstocking rate is 52.4%, 46.55% and 55.6% for spring, summer and autumn pasture respectively. This situation would be worse if the condition in which some pasture cannot be utilized due to lack of water is considered. It seemed that the winter had spare capacity for more animals. However, winter pasture is actually in an overstocking condition due to snowing, cold and wind, shortage of water; or reduced size due to cropping, pasture degradation and desertation.

The user-pays contract system is extended in pastoral areas, this will stimulate enthusiasm of the herders to construct the pasture. However, the traditional way of management for pasture has not been changed; herders are low in legal attitude and commercialization. The trend for the increasing livestock numbers will continue to develop due to the government ordered policy and the traditional way of thinking in which the number of livestock is the indication of wealth. The situation of unbalanced development of livestock production and

pasture utilization will worsen and the pasture degradation will continue to develop.

### Traditional way of animal husbandry has to be changed

The economy in pastoral areas has developed since 1949. However, the production conditions have improved slowly due to the harsh conditions of the alpine steppe and inconvenient transportation. The traditional extensive way of management still has not been changed. All these situations limit the further development of grassland based animal husbandry.

Although grassland-based animal production is the most economical system in livestock production, it is unstable and poorly productive without the support of farming systems. The productivity of natural pasture is not stable and pasture yield varies greatly between years. It was reported that the pasture yield of a good year in the winter pasture of Ziniquan stud farm could be 134.9% of the average yield. The yield was only 49.3% of the average yield in a bad year. The yield in a good year was 2.78 times higher than that of a bad year (5). Therefore the stable development of livestock production cannot rely on the natural conditions of the pasture. The monitoring of pasture within the year also indicated that the pasture yield in mid December or January was only 40.3-45.5% of the pasture yield in mid-June; the crude protein content of the pasture in mid-December was only 46.9% of that of mid-June (5). Wind, rainfall and sunshine causes the loss of dry matter and protein content of the pasture up to 50%. Therefore grazing on dry winter pasture is wastage of pasture resource. From the point of seasonal growth of pasture and better resource use, it would be a benefit for the animals to graze on fresh pasture.

The mortality of animals is high due to the long winter and frequent snowstorms. The total number was 88,607,000 from 1949-1994 and it reached 1,926,000 deaths annually. The losses caused by weight loss during winter and spring were 4 times the loss of death (6). The cycle of "strong in summer, fat in autumn, thin in winter and weak in spring" causes severe loss of grassland based animal husbandry. And it induces energy wastage, inefficient feeding and low economic returns.

### Pasture management has to be guided by law

Animals are used both as means of production and products. The number of animals is the basis of animal production. The increase of animal numbers does not mean an increase of animal products; it is not always positively related between these. The increase of animal numbers without consideration could lead to the decrease of animal products. The transformation of pasture to animal products requires feeding efficiently, improving animal breeds, increasing the number of female animals and the turnover of animals. The number of beef cattle in America was increased 39.8% from 1965 to 1975; in the meantime, the beef production was increased 75.6%. The milk yield was maintained at 50,000,000 tones for 20 years, however, the number of cows was reduced more than half. In Xin Jiang Hutubi Stud Farm, the number of cows was only 2/3 of that in 1966, the milk yield was 2.1 times as much as that in 1966 (Xu Peng 1989). The turnover efficiency would be greatly reduced if only the number

of animals was considered or the animal productivity was extremely low or the turnover from animals to animal products. Meat sheep reaches heaviest body weight at 5 years old, about twice the meat production as that of a 10 month old lamb. However, the lamb consumes 11.25 kg hay to produce 1 kg meet compared with the 5 year old sheep which requires 66.75 kg hay to produce the same amount of meat. The energy consumption for adult sheep was 6 times as much as that of young lamb (Li Bo). The turnover rate of sheep in Shan Dong province was above 90%, but it was 44% in Xin Jiang. The turnover rate of cattle in Shan Dong was more than 32% (7), and it was 24% in Xin Jiang. Therefore, it is important for Xin Jiang to improve animal production through improving animal turnover rate rather than through increasing the animal number. In recent years, more and more people realized that it was not appropriate just to increase animal numbers. However, some policy makers still regard the animal number at the end of year as a target for animal production. And this would not only cause the further pasture degradation and overstocking, but also destroy the pasture ecology and environment, with further loss of animal production. Mr. Jiang Ze Ming indicated that we should consider both the development and the environment for our children. Grassland is not only a means of production for animal husbandry, but is also important for environment protection. Xin Jiang is an arid area, the ecological system is weak, therefore it is crucial for us to manage pasture properly under the guidance of law, and reduce the stocking rate. The improvement of animal production by increasing animal numbers should be based on the increase of pasture production or reduce the animal number before the pasture yield were increased. In order not to affect herders' living standard, animal numbers could be maintained, but more efforts are needed to put into improving pasture production. The balance between animal and pasture production is to be reached by end of this century through the ninth 5 year plan.

#### **Development of grassland agriculture, settlement, modifying management methods and better resource use**

Developed countries attach importance to the development of grassland based animal husbandry. One of the characteristics is formulation of criterion for stocking rate; the second is to increase the proportion of artificial pasture; the third is to manage and use pasture properly; the fourth is to improve animal breeds to increase the quantity and quality of animal products. Developed countries which have similar natural conditions as in Xin Jiang take advantage of long term grazing and housed feeding in winter. The traditional way of animal production, such as animals grazing on natural pasture all year round, still carries on in developing countries. Xin Jiang should implement the policy of allocating pasture to herders and manage pasture by law, set stocking rate based on pasture yield, develop grassland agriculture to produce feed crops, and realize herders' settlement to make herders mainly involved in animal production, in the meantime, also involved in feed and food production. Changing the traditional way to graze on pasture in warm season and housed feeding in cold season which is based on the combination of livestock and agricultural production, changing the extensive management to intensive, qualitative and efficient management, developing high output, high quality and high efficiency livestock production system. The settlement of herders is also favorable for improving the cultural, educational, medical and living conditions. It will have a profound effect on increasing the scientific knowledge of herders and developing production system. Besides, it will reduce the grazing intensity by reducing the grazing period from all year round to 7-8 months annually.

Xin Jiang is an arid area; there is no cropping without irrigation. Without irrigated pasture, it cannot escape the prospect of relying

on rain fed pasture and the opportunity of better use of pasture resources. Therefore, the key issue for the settlement and feed production is to set up a water conservancy based pasture production system. The most important thing to improve grassland based animal husbandry and change the traditional production style is let herders own certain areas of irrigated pasture for feed production. The investment for feed production should be increased. Feed production should be in the same important position as food, cotton, vegetable oil and sugar production.

China is a well populated country with limited land resources. The average possession rate of arable in Xin Jiang is 0.03 ha. per person on agricultural population basis. It is only 0.012 ha. per person in Hetian and Kezilesukerkez prefecture (8). The average possession rate of arable land of herders should be more than that of peasants if housed feeding, feed production and rotation between pasture and food crops is carried out. The future for the farming industry should be based on intensive management, it is the same for grassland agriculture. It is not appropriate for feed production on a large scale due to limited resources, efficiency and profitability and funds. The emphasis of feed production should be on an appropriate scale and quality control. Consequently, the economic development of pastoral areas should be based on the setting up herders' settlement with feed production, modifying grassland based animal husbandry and better resource use.

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