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The Effect of Cooperativization of Grazing and Sale on Improving Management of Pastoral Farming

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Abstract

Pastoral farming is the leading industry in Qinghai, which is one of the five major pastoral areas in China and is blessed with abundant grassland and pasturage resources. However, the misuse and overgrazing of the natural grassland for many years have led to deterioration of the ecological environment and underproduction of livestock. To address this situation a demonstration project on ecological pastoral farming was implemented by the Qinghai government, which contributed significantly to the preservation of the grassland ecology and the improvement of the pastoral farming economy. This study analyzes the process and the result of policy implementation in Su Jiwan village in particular. The main thrust of this policy is shifting from a traditional individual management style to an intensive management style, mainly through cooperativization of both grazing and sale of livestock.

Keywords: Patoral farming, Grazing, Grassland, cooperativization

1. Introduction

Qinghai is located in the Tibetan plateau known as the "Roof of the World," and while it is blessed with abundant natural grassland resources, it is exposed to very harsh natural conditions due to its low winter temperatures and high altitude. Pastoral farming through grazing over its native grasslands is a

flourishing industry in Qinghai, but in recent years the grassland ecology has deteriorated, and livestock production has decreased.

To address this situation, the Qinghai government implemented measures aimed at developing pastoral farming practices that are compatible with the preservation of the natural grassland. Since 2008, they have been implementing a policy of shifting to a new grazing management style called "ecological pastoral farming." The main thrust of the policy is cooperativization of management of both grazing and sale of livestock. In this report we discuss the components of the policy in view of how cooperativization was achieved and evaluate the status of the change in management style.

2. Research Methods

We used the Su Jiwan Village in Qinghai as the subject of our study. We chose Su Jiwan Village because, among the model areas (seven villages) where the policy was implemented, Su Jiwan is at a relatively advanced stage of implementation and among the first to actualize the cooperativization efforts. First, we conducted interviews with the mayor of the village and gathered information from the village statistics office about the condition of the ecological environment and the extent of grazing and the process and progress of policy implementation. We also interviewed the farmers about the changes in their management style and their awareness and attitude towards the policy before and after its implementation. We then conducted comparative analysis of the data we gathered.

3. Extent of Grassland Use and Components of Policy

(1) Grassland use Conditions

The grassland area of Su Jiwan according to 2008 data covers 39,400 se (2,627 ha), which mostly serves as grazing area. Livestock population is 15,100 heads (equivalent to 25,600 sheep units) (11,700 sheep, 3,400 cattle, 85 horses). There are 117 farmhouses and 462 farmers (working population [age 18-50] – 278) (Footnote 1.)

Before the policy was implemented, farmers grazed their livestock only in the grassland area (natural grassland) that they owned. However, like in other pastoral lands in Qinghai, the number of livestock farmers has continued to increase despite the lack of available grassland areas. (In the early 1980's, when pastoral farming was limited under the pastoral contract system, livestock population was only 8,900 heads, and there were only 79 farmhouses [3].) Because of overgrazing, the grassland ecological environment has deteriorated, and livestock production has decreased [5].

According to previous studies, the grassland area in Su Jiwan had degenerated to 59.5% of the available area in the early 1980's [2], [1]. Reasonable grazing capacity for 2008 was estimated to be 21,000 sheep units 1.9 se/head (1,267 m^2/head), but it is reported that more than 25,600 sheep units of livestock (1.5 se/head [1,000 m^2/animal]) were being grazed. This has clearly shown that the grassland area has deteriorated due to the imbalance between available grassland area for each farmer and livestock population [5]. Also, there has been a reduction in yak feed intake (from 33.4 to 20.5 gDM/day), which reduced reproduction to only one calf every two years, showing clearly that the deterioration of grassland areas has affected yak productivity [4], [5].

(2) Components of Policy

The policy is aimed at achieving a balance between reducing the load so as to preserve the natural grassland ecology and improving pastoral farming and management. These issues were addressed by implementing two components.

One is cooperativization of grazing. Grazing was conventionally done individually, and the number of livestock was determined according to the discretion of the individual farmers, which easily

led to overuse of the grasslands. To avert this situation, the farmers were divided into groups composed of a certain number of farmers, and grazing is now done by groups (presently, there are 106 farmers divided into 21 groups.)

By doing this, grazing and grassland use are now being carried out in a systematic manner. In particular, prevention of overuse was attempted by planning grassland use for each group through a combination of grazing and confinement rearing of livestock (reduction in number of grazed livestock by determining the appropriate balance between grazing in the natural grassland and rearing the animals in the barn,) according to the livestock conditions for each farmer (classification into breeding and non-breeding livestock, etc.)

The second component is cooperativization of sale of livestock. Conventionally, selling was done through direct negotiations between the farmer and the livestock dealer. This was changed into a group-based bidding. Previously, the individual farmer sells to Buyer A (Dealer) and Buyer A sells to Buyer B (companies, slaughterhouses, etc.) By doing away with Buyer A (Dealer), livestock for the entire group is now sold at a competitive price in one location.

The most important feature of the policy is that, together with grouping the above activities, private ownership of livestock and grasslands was abolished in favor of cooperative ownership (group ownership.) The problem in doing this was in how to appraise the value of the assets originally owned by each farmer. As shown in Table 1, the farmers in Su Jiwan Village adapted an appraisal method based on monetary value of grassland area and livestock (taking into account condition of the grassland and weight of livestock.) These criteria were based on the opinions of participating farmers but were decided by the whole village. Profit from livestock sales was then distributed according to the assessed value of their assets so that profit-allocation is unbiased.

The above policy describes a shift from individual management to cooperative management. Notably, participation to and composition of the group was voluntary, although essentially the groups were formed on the basis of land relationships such as distance between individual grassland properties and land area (Table 4 shows the number of livestock and grassland per farmer.) The government is also providing economic assistance as loans and livestock infrastructure (e.g., installing of fences around the grasslands, improving confinement rearing facilities, setting up model areas for prevention of pest damage, and implementing nomad settlement projects, grassland restoration and reconstruction projects, and irrigation construction projects) and technical assistance as supply of male breeding stocks and disease prevention assistance.

Table 1: Monetization rate for production elements. (Grassland, Livestock)

	Unit	**Conversion price**			
Land					
Grassland	Yuan/se	8-10			
Fodder farm	Yuan/se	100			
Livestock		1-year old	2-years old	3-years old	4-years old
Sheep	Yuan/head	200 – 300	350 – 400	400 – 460	450 – 600
Cattle	Yuan/head	600 – 800	1300 – 1400	2000 – 2300	2600 – 3800

Source: Qinghai Menyuan Agriculture and Livestock Bureau Statistics Management Center, "Statistics" and Su Jiwan Village Committee documents.

4. Evaluation of the Status of Policy Implementation

(1) Evaluation of Cooperativization of Grazing Activities

Less than two years have passed since the policy was implemented and it may be too early to give an evaluation, but we would like to assess the status of its implementation. The first conceivable effect of cooperative grazing is the technical advantage brought about by the systematic management of livestock and grazing areas. To prevent overuse of natural grasslands, some livestock were sold and others were transferred to confinement rearing. Before the policy was implemented (Footnote 2),

livestock population was 25,600 sheep units, with 1.53 se (1,020 m^2) of grazing area per head. But, after the policy was implemented, livestock population decreased to 23,600 sheep units, with the grazing area per head increasing to 1.65 se (1,100 m^2.) This reduction in livestock population is a result of selling livestock, and although it is less than the previously mentioned reasonable grazing capacity of 1.9 se/head (1,267 m^2/head,) through the above efforts, the village is getting closer to achieving this goal.

Next, we looked at the resulting redistribution of labor after policy implementation. At present there are 21 groups formed from 106 farming households. By resorting to rotational grazing and regulation of the number of grazing livestock according to breeding stage, the number of people needed during grazing was reduced from 195 to 93 workers (from 2008 to 2009.) In the previous individual grazing set-up, one farming household required at least one person for grazing. In cooperative grazing, only two to five people are needed for each group. The resulting excess labor supply was diverted to activities other than grazing. For example, 32 people were assigned to harvesting forage and 62 people to industries other than raising livestock.

The diversion of this excess labor supply to new types of employment was a significant development. Among those who turned to other industries, 34 are now working in construction and product processing industries located within 20 to 50 km from Su Jiwan Village, through the county government's job assistance programs that gave priority to these workers in providing employment information in the area.

(2) Evaluation of Cooperative Sale of Livestock

Table 2 shows the number of livestock sold, income, and average unit price for the 12 farmer groups surveyed in the study. There were 253 cattle sold in 2009, 10 heads (4%) more than in 2008 (243 heads). Also, income from sales increased to 15% and average unit price to 11%. On the other hand, for sheep, number of grazed animals sold decreased by 268 (14%), but the number of confinement-reared sheep increased by 402 (111%). The average livestock unit price also increased by 17% for grazed sheep and 14% for confinement-reared sheep. The range of the average unit price also shows that there was a considerable increase in price levels for all livestock types from 2008 to 2009.

These effects are attributed to the shift from individual negotiations to group-based bidding, wherein intensified livestock sales resulted in increased trade volume, and strengthening of price competitiveness brought about higher unit prices. However, there is a need for further analysis of the relationship of these changes with other factors such as further changes in number of livestock sold.

Table 2: Livestock sales before and after policy implementation.

	Number of livestock sold (Heads)			Livestock sales income (10,000 Yuan)			Livestock average unit price (Yuan/head)		
	Before	**After**	**Increase Rate**	**Before**	**After**	**Increase Rate**	**Before**	**After**	**Increase Rate**
Grazed Cattle	243	253	4.1%	48.5	55.9	15.3%	1995.7 (1668– 2357)	2205.6 (2045 – 2480)	10.5%
Grazed Sheep	1867	1599	-14.4%	65.3	65.1	-0.3%	349.6 (303 – 380)	407.3 (375 – 430)	16.5%
Confinement-reared Sheep	362	764	111.0%	13.1	31.5	140.5%	361.5 (320 – 410)	412.6 (380 – 450)	14.1%

Source: Data from survey of Su Jiwan grazing management groups

Table 3 shows the changes in the farmers' income before and after implementation of the policy. Overall, the income for the entire Su Jiwan Village reached 2,803,000 Yuan, which is 525,000 yuan (23%) more than the previous year. The income breakdown shows that livestock production

income increased by 20.8%, but as mentioned earlier, there was even more remarkable increase in labor export earnings and in income from other industries.

The above effects are attributed to cooperativization of grazing and sale of livestock, but the government also played an important role in providing new employment opportunities for the resulting excess in labor supply.

Table 3: Changes in income after policy implementation

	Before	After	Amount of increase	Rate of increase
Income (10,000 Yuan)	227.8	280.3	52.5	23.1%
Livestock	176.7	213.6	36.8	20.8%
Fodder cultivation	22.4	24.1	1.7	7.5%
Labor export earnings	13.0	22.3	9.3	71.8%
From other industries	15.6	20.3	4.7	29.8%
Income per person (Yuan)	4,735	5,827	1,092	23.1%

Source: Qinghai Menyuan Agriculture and Livestock Bureau Statistics Management Center, "Statistics" and Su Jiwan Village Committee materials.

(3) Comparison of the Groups in the Study

Table 4 shows the characteristics of the 12 groups that we were able to survey among the 21 groups in the village. First, regarding the number of livestock per group, the highest at 3,128 heads was almost eight times more than the lowest at 422. Also, the average number of livestock per farming household ranged from 106 to 448 heads, indicating that the groups varied from small- to relatively large-scale farmer groups. The government did not impose particular rules in forming the groups, but instead they were formed by fellow neighbors joining the same group.

Second, there was an observable difference in grazing area per head (grazing pressure). Group 3 had the smallest grazing area per head at 0.8 se (533 m^2), three times smaller than Group 1, which had the largest at 2.4 se (1,600 m^2). Before the groups were formed, grazing area per head ranged from 0.7 to 5.2 se (467 to 3,467 m^2), showing that there was reduction, albeit small, in the difference between the smallest and largest grazing area. Notably, two groups exceeded the ideal grazing area of 1.9 se/head (1,267 m^2/head). Further studies are needed to determine the relationships of the effects of these differences in number of farming households, number of livestock, and grazing area per household.

Also, 1,260 heads out of the total number of livestock scheduled for shipping during the time the survey was conducted were reared in confinement without grazing in natural grasslands. This translates to conserving the use of an equivalent to 2,000 se (133 ha) of grassland (1,260 heads × 1.53 se/head). Aside from the natural grassland area, land area for growing pasture also increased from 1,470 se (98 ha) in 2008 to 3,030 se (202 ha) in 2009, making production of forage for 6,000 sheep units possible. These data shows that there was a reduction in the natural grassland load.

Table 4: Number of livestock and grassland area per group (2009.)

Group	No. of Households	No. of livestock (Heads)	No. of livestock per household (Heads)	Grassland area (se)	Grassland area per household (se)	Grassland area per head of livestock (se)	Livestock income (Yuan)	Income per household (Yuan)
1	4	422	106	1018	255	2.4	26300	6575
2	3	840	280	1480	493	1.8	34600	11533
3	4	1000	250	838	210	0.8	106300	26575
4	6	1020	170	1742	290	1.7	98600	16433
5	4	1160	290	2064	516	1.8	108400	27100
6	5	2010	402	3666	733	1.8	122380	24476
7	10	2046	205	3205	321	1.6	215300	21530

Table 4: Number of livestock and grassland area per group (2009.) - continued

8	5	2072	414	3104	621	1.5	127900	25580
9	5	2238	448	4424	885	2.0	224720	44944
10	6	2366	394	2957	493	1.2	108600	18100
11	11	2395	218	3629	330	1.5	129800	11800
12	11	3128	284	4775	434	1.5	221600	20145

Source : Qinghai Menyuan Agriculture and Livestock Bureau Statistics Management Center, and Su Jiwan Village Committee

5. Conclusion

A policy aimed at achieving balance between preservation of grassland ecology and livestock production was implemented by adapting a new grazing management system at Su Jiwan village. This was done by combining production groups to restructure the system for sharing grassland and livestock resources. Attempts are being made to avert the overuse of grassland by adopting measures such as maintaining appropriate livestock population through sales and combining grazing with confinement rearing of livestock.

How should the policy be assessed? As a whole, the cooperative management system of this policy is similar to the collectivization policy that was previously adopted in China. However, one fundamental difference with the previous policy is in where the main responsibility for management lies. In the collective system, the principal manager was the "village," while in the current system, management responsibility is entrusted to the cooperative body (i.e., the group), and each group exercises autonomy. Also, in the collective system, the village had ownership of land and livestock assets, while in the cooperative system, ownership rights belong to the group. In other words, in the cooperative system, the merits to the group remain an important concern in the process of maintaining order in grassland and livestock use, which in fact had been a difficult issue to deal with individually.

How did the individual farmers evaluate this policy? Our results show that all the 32 farmers who participated in the survey gave a positive response to the implementation of the policy, citing increase in income after implementation. Particularly, as reasons for their support for the policy, aside from "reduction in workers needed for grazing" (100 %,) they cited "reduction in disease incidence" (80%) and "reduction of workload due to the unified management system" (80 %.) During the initial stages of implementation, the farmers were skeptical of the benefits of the policy, and few were willing to participate. However, their interest in the policy gradually increased, and by October 2008, 60% of the villagers had participated in the policy implementation, and 14 collaborative management groups had been formed. By October 2009, there were 106 participating farmers comprising 21 groups.

However, among the problems cited were "lack of technical know-how for management of feeding during confinement rearing of livestock" (53 %,) and "difficulty in shifting to other industries due to lack of education" (53 %.) Others cited "low appraisal value for natural grasslands" (16 %.) Furthermore, combined use of confinement rearing aimed at proper grassland use would subsequently result to increase in volume of forage feed and hay required. In view of this, further studies on how to deal with increase in land area for growing farm feed, purchase of grass from neighboring areas, and increase in cost associated with these activities are needed.

The differences between groups in terms of livestock population and grassland use were remarkable, and this is an issue that we would like to pursue further, particularly by conducting a management assessment study that includes cost considerations.

We recognize that not a long period has passed since the policy was implemented in Su Jiwan Village, and the overgrazing condition is still not completely averted. Verification efforts that include technical considerations must be pursued so that the example of Su Jiwan Village will not end up only as a mere model case but will affect and spread to the whole Tibetan region.

Footnotes

1) Data are from Su Jiwan Grassland Management Center. Livestock number is expressed as sheep units (for cattle, computed as four sheep per cattle.)
2) Before- and after-policy-implementation data refer to data for 2008 and 2009, respectively. The policy was implemented at the beginning of 2008 but the results of implementation were obtained in 2009. Economic data for 2008 is considered as before-implementation data.

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