

Studies on Long-term Changes in Herders Household and Land Use in Inner Mongolia, China

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Abstract: The arable land, artificial pastures, and enclosed grassland are widespread in Inner Mongolia, China from 1978. In this study, we observed and evaluated long-term changes in land use associated with Land reform movement during the period of 1947 to 2012 in Inner Mongolia. We interviewed 158 families of one village in 2012. Results indicate that, based on the history of arable land establishment, it is necessary to achieve improvement of arable land productivity, to improve people livelihoods. The development of irrigation facilities is one possible approach. Another approach is to return abandoned non-irrigated land to pasture land. This will protect hilly areas used for grazing utilization and reduce cultivation area which is distributed to each family. Support from Germany has enhanced agricultural productivity and ecological environment recovery, and also to the Grain for Green project and forestation. This also includes prohibition of grazing and aid in development of irrigation facilities. It is difficult to maintain herder's life based on low productivity agriculture in arid areas without grazing. As policies change, rural development should consider natural environmental conditions of grazing areas, traditional culture, customs, and religious aspects.

Key Words: Ecological environment recovery, Herder's households, Inner Mongolia, Land use

1. Background of Study and Objective

During people's commune period (1958-1982), the grazing land in Autonomous Region of Inner Mongolia of China was owned by the village community and shared among the villagers (Ren, 2008). After China's "Reform and Opening" (1978), implementation of various land management activities such as agriculture and mining caused land conversion which resulted in reduction of grazing land, decline of traditional nomadic culture, and erosion of the soil layer. In particular, starting from July 1997, a new land contract (grassland contract management rights) which lasted for years was distributed. As a result, the rights to use the land were given to the herders where they were allowed to use it for personal purposes. The stratification of herders has subsequently occurred (Yong-Hai, 2013).

The objectives of this study were: i) to clarify the cause of the stratification and of land privatization through the change of land use and; ii) to study the technical suggestion whereby the small scale generated stratification of herders can live locally without migration.

2. Study Area and Study Method

The study site (S village) was at the west of the sandy area which is located in the south-eastern part of autonomous region

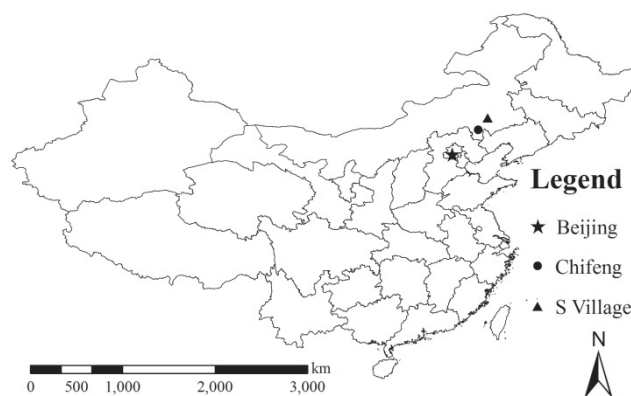


Fig. 1. Map of study area.

of Inner Mongolia, China (Fig. 1).

The geographic coordinate of S village is $43^{\circ}26'13.10''N \sim 43^{\circ}30'18.58''N$, $119^{\circ}43'16.00''E \sim 119^{\circ}52'41.53''E$, with land surface area of 6,310 ha, 376-635 m above sea level. The S village was located in a semi-arid area with annual precipitation of 390.2 mm^A) and annual amount of evaporation of 1,600~1,700 mm. The majority area is composed of hilly terrain (about 80%), salt accumulation areas in and around the lake, and desert land.

In year 2012, the population of registered families was 537 people (in 158 households). The main land use was animal agriculture (168 ha) and farming (with 10,000 sheep and goat).

The main income of the villagers was from agricultural

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Fig. 2. Land Distribution Table.



Fig. 3. Food Coupons used during 1980.

industry, livestock industry, and working in the city. The characteristics of S village are: (1) far away from the capital or city (2) the presence of a well-organized, local government resulted in the village being a model of good organization (3) the surface area of the village is much larger than the other surrounding villages (4) soil erosion has occurred in the village.

The survey methods included 1) a review of aerial photographs via “Google Earth” and “Tianditu” (2007 version); TIANDITU^B) is the website providing “one-stop” geospatial information services to personal users, enterprises, professional agencies and governments via networks such as Internet, mobile communication networks and Intranet. 2) Residents of S village were interviewed by phone for 72 times since September 2011 to the end of the year 2012. Specifically, i) phone interviews were carried out according to different projects. ii) phone interviews were carried out to 4-5 neighboring families. iii) phone interviews were made to any one of the family members within the families of Village S. 3) Face-to-face interviews were also made with all the villagers of Village S (158 households). Data were collected (land distribution, memo pad of village committees, family diaries, tax receipt of the herders), photos were taken, and the data about distribution, surface area, usage pattern (rent & borrow) were obtained during the field survey (Fig. 2).

3. Transition of Land Privatization and Arable Land

3.1. Field rations (Per capita)

During the people’s commune era, state government owned the livestock and grazing lands. In 1980, these livestock were first distributed among the herders on a per capita basis. In 1983, 510 ha out of 6310ha grazing land were enclosed with fence. In 1985, a part of these areas was distributed among the herders. A total of 117 ha of arable land (field rations) was distributed 0.17 at ha/person and 150 ha of artificial grassland was distributed at 0.23ha/person

among the herders. In the same year, “Model Labor” herders’ surname with D in the autonomous region privatized 67 ha of the joint use land into personal usage land supported by the national project.

After the reform and opening of Chinese economy, the field ration was distributed to the herders due to lack of food. Until the “Planned Economy System” period (1949-1992), Food Center was charged with management of food through Food Coupons. Herders used food coupon and cash to obtain their food supply. In 1993, this Food Coupons system was abolished (Fig. 3).

The purpose of the distribution of artificial pasture was to feed the livestock and lambs that were sick. However, the number of livestock was still low at that time and hence the artificial pasture was not necessary. In addition, the food supply was insufficient and the income of herders was low. Furthermore, the land was converted into arable land due to reasons such as the need to produce the Mongolian traditional food, proso millet (*Panicum miliaceum*). The purpose of the national project was to create a model for the wealthy herders by using herders with surname D as examples.

3.2. Small enclosed pasture (Per household)

From 1989, for the purposes of feeding, exclusion from gardening areas, feeding of sick livestock, and availability of a food source for livestock during winter months through the cultivation of grass, the lands were enclosed at a rate of 1 ha / household. In 1995, the herders could acquire authorization from the village committee to enclose land as follows: 0.67 ha/household if there are 1-2 family members in a family; 1.33 ha/household if there are 3-4 family members in a family; or 2 ha/household if there are more than 5 family members in a family. Because the groundwater level was high around the village, the wealthy herders dug a well to support newly developed irrigation facilities. This addition to access to irrigation water led to expansion of the enclosure. On the other hand, because the groundwater level around the pasture

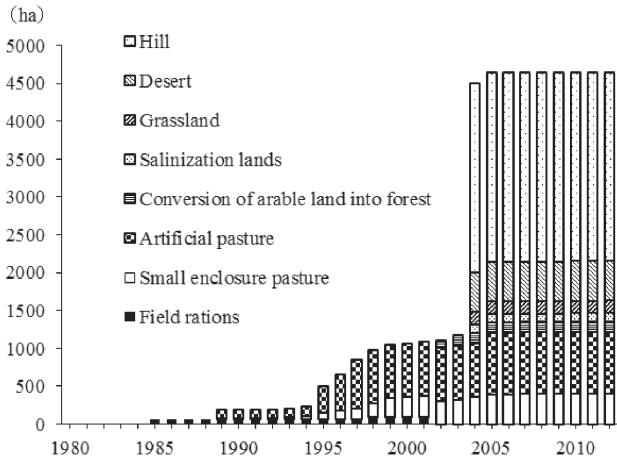


Fig. 4. Transition of land use in S village. Note : The land distribution of S village, face-to-face interview, “Tianditu”.

was low and not suitable for irrigation, the herders used the enclosure as arable land only if the amount of annual precipitation was sufficient. If the amount of annual precipitation was too low, the enclosure was used and expanded for artificial grass harvesting to secure food for the winter feeding of livestock. As a result, the total area of the small enclosed pasture was expanded to 412.5 ha.

3.3. Artificial pasture (Per livestock)

A three years “Artificial Pasture” project was performed in 1995-1997. For 58 households with 100 head or more sheep, 3.3ha artificial land per livestock was allocated. According to Germany Support Sand-Control & Afforestation Project, shelter forest was planted in year 2003 and for the remaining 58 households whose livestock were less than 100 head (according to the population of goats and sheep 1997), arable land of 3.3 ha / head was allocated in year 2005. Fifty-eight households that were distributed land during 1995 to 1997 had been weeding the distributed land as livestock feed until 2001, but “Seasonal Prohibit Grazing” policy of 2002 and “Annual Prohibit Grazing” policy of 2005 caused the reduction of livestock numbers, and thus the land used for weeding (rental or own land area) became arable land for planting of grain gradually. After that, until May 2010-2012, artificial pasture distribution per livestock was about 200 ha, and mostly purchased by the merchants outside the village.

From 1985 to 2003, private use of land was divided into four types: (1) fields for growing field rations (per capita), (2) artificial pasture, (3) small enclosed pasture, (4) conversion of arable land into forest. But from 2004, these four types of land were nominally assigned into salinization land, grassland, desert, and hilly areas (see Fig. 4). Despite the four different nominally assigned types of land, the fact is the land use form was of joint-use including land for field rations, artificial land

and small enclosed pasture. By 2004, distributable land of the village was distributed to all of the herders. Distribution rules were distributed on the basis of livestock numbers and population. Its total area was 4,699 ha, which was about 74.5% of the land’s total area.

4. Summary and Discussion

In the grazing area of Inner Mongolia, per capita land distribution of artificial pasture was at first aimed to supplement for the lack of food, and feeding of lamb and livestock with disease. The enclosed pasture project supported by the state was to establish a model of wealthy herders called “Model Labor” and to promote private use of land. However, small livestock numbers, lack of food and the need to produce proso millet (traditional Mongolian food) were accelerated resulting in much of the land being converted into

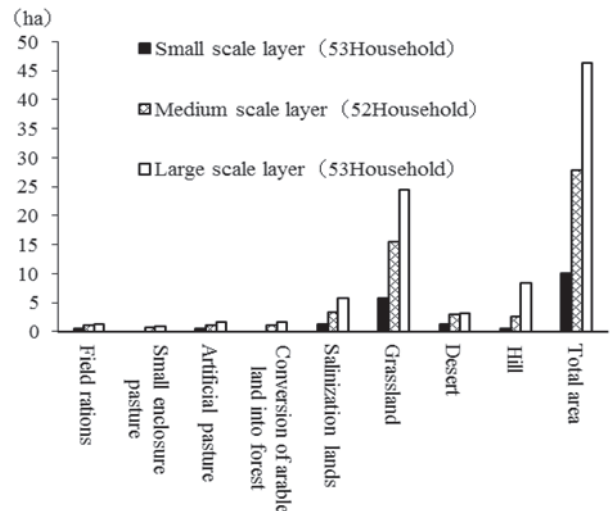


Fig. 5. 158 households were divided into three levels according to the area of private land they are in charge of. Note : Horizontal axis: business name (distribution years are according to old order). (Created by Land Distribution Table of S village).



Fig. 6. The center pivot irrigated land using the drop-type sprinkler in the purchased area by a merchant outside the village (August 2013 shooting).

arable land. In 1989, for the purpose of sand prevention, feeding sick livestock, and ensuring winter reserve for livestock by the cultivation of artificial grass, land was enclosed as “Small Enclosed Pastures” by households. In the area where groundwater levels were high, wealthy herders dug wells and developed irrigation facilities to expand the enclosure area of arable land. However the area with low levels of groundwater was not suitable for irrigation. The enclosure area was expanded due to plantation, if sufficient rainfall was received, If rainfall was not sufficient, land was used for winter livestock feed.

The artificial pasture project for enclosure of livestock per ground, which aimed at wealthy herders in the 1990s and the implementation of the “Law of the People’s Republic of China on Land Contract in Rural Area”^{C)} in 1997, a 30-year’s land contract was implemented and the distributable lands were distributed into salinization land, grassland, desert, and hills (Yong-Hai, 2013).

In the grazing area of Inner Mongolia, there is a distribution rule which states that 70% of the whole village’s land is distributed per capita and the remaining 30% of the village land is distributed per livestock. However, some of the actual distribution of S village such as field rations, small enclosure pasture, artificial pasture, afforestation, and salinization land are different from the distribution rules. For example, fields for growing grain rations were distributed per capita, small enclosed pastures were distributed per household, artificial pastures were distributed per livestock, conversion of arable land into forest was distributed per capita, and salinization lands were distributed per capita.

Additionally, the period of distribution was also different.

Nevertheless, the distribution of grassland (population 70%, livestock 30%), desert (population 70%, livestock 30%), and hill (population 70%, livestock 30%) were still following the distribution rules. As a result, 1) Distribution period difference had affected the growth of the livestock. 2) The difference of privatized area occurred due to the difference of distribution rule (**Fig. 5**). 3) Land was sold (purchased by merchants outside the village) due to the time-limited land distribution (30-years period), difficulty to irrigate arable land and others unstable reasons (**Fig. 6**). In conclusion, based on the reasons mentioned above, stratification of herders has taken place.

Notes

- A) Data obtained from Hao-Er-Tu Weather Station which located at about 66 km in north of S village.
- B) TIANDITU: <http://tianditu.cn/map/index.html>
- C) Article 20 in “Law of the People’s Republic of China on Land Contract in Rural Area”: The contract for arable land is 30-years period whereas the contract for grassland is 30-50 years period.

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