



Agroecology in Extensive Rangeland Pastoralism in the Gobi Desert of Mongolia: Below the Eternal Blue Sky

Introduction

Mongolia is located in Central Asia in between Russia and China. With its land surface of 1,564,116 square kilometres (603,909 sq mi), Mongolia is the 18th largest and the most sparsely populated fully sovereign country in the world, with a population of around 3 million people. It is also the world's second-largest landlocked country. From a food production standpoint, the country contains little arable land for cropping; its greatest assets are vast acreage covered by grazing lands covered with grassy steppe vegetation, with mountains to the north and west and the Gobi Desert to the south.



Figure 1. Camels on Khongor sand dune in Gobi desert

The agriculture and food sectors are tremendously important to the economy as well as to the social make-up and ecology of Mongolia. Agriculture employs 35% of the total labour force and more importantly, it accounts for over 70% of employment in rural areas (Ministry of Labor, 2014). Agriculture in Mongolia, including cropping, livestock, forestry and fisheries, constitutes 20.6% of Mongolia's annual gross domestic product – livestock alone is 12%. Due to Mongolia's continental arid and cold climate, it is unsuitable for most cultivation. Only 1% of the arable land in Mongolia is cultivated with crops. The agriculture

sector therefore remains heavily focused on nomadic animal husbandry with 75% of the land allocated to pasture, and cropping only employing 3% of the population. Commercially raised animals in Mongolia include sheep, goats, cattle, yaks, horses and camels. They are raised primarily for their meat and milk, although goats are valued for their cashmere wool and camel and yak wool is gaining popularity.

Dundgobi aimag (province) is located in the middle part of the Gobi Desert and is a vast dryland steppe with sparsely grown but highly nutritious grass such as wild leek and saxaul. The Oldokhiin Devjikh pastoralist community in Khuld soum (town) of Dundgobi has 64 pastoral household members. The community has collaborated with several scientists and is actively involved in some projects implemented by Mercy Corps since 2005 for planting trees such as elm and seabuckthorn, bushes and vegetables. Mr Tumurchuluun Tavkhai is the chairman of the community who has been taking initiatives to organize collaborative actions with his community members and motivating young herders to inherit traditional knowledge and wisdom. His community is a good example of surviving under challenging climate conditions. In this part of the Gobi Desert, their initiatives involve building relationships between herding livestock in a traditional way and planting trees to cope with sand movement and land degradation and putting efforts into spring water conservation.

Case study provided by Munkhbolor Gungaa: Communication, M&E and networking coordinator, FAO representation Mongolia, Promoter of MANIP and WAMIP Pastoralist Alliance.

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This community is a member of Mongolian Alliance of Nomadic Indigenous Peoples (MANIP), which is a national network coordinated by pastoralist leaders supported by FAO's Pastoralist Knowledge Hub programme.

Description of the Agroecology system

The agroecology practices of Mr. Tumurchuluun's community in this part of the Gobi Desert can represent a model of healthy food production through environmental protection along with quality fibre production such as camel wool and cashmere. This system is beneficial for women, who do not need to be dependent on external inputs, and maintains extensive rangeland animal husbandry.

Here the agroecological system could be described as "from pasture to table" through pastoralists' knowledge, wisdom, culture, dignity and capacity with environmental governance to ensure healthy food production. Extensive rangeland animal husbandry in Mongolia is a centuries-old system. The harsh climatic conditions and pasture characteristics have contributed to shaping people that are highly adept at living and surviving nomadically, following grazing areas year around. Traditional knowledge of nomadic animal husbandry and the keeping indigenous breed of livestock has been central to their production system, in the following ways:

- Herders follow good pasture, and have identified which areas in which season are best for animals.
- Local plants are well known for animal and human health care although modern medicines are now combined with traditional species of plants.
- Families follow traditional annual economic cycles with combining goats for cashmere and sheering camels in spring; making milk products such as airag (fermented horse milk), cheese, yogurt and dried curd in summer; selling animals in fall for butchering while also preparing dried and frozen meat at home; preparing for peak market periods including Nadaam in July and Tsagaan Sar (lunar New Year's) in winter through food preservation in naturally cool underground storage facilities.
- Animal breeding and mating takes place in fall with herders carefully determining days of mating to regulate herd size and quality – although national subsidy policies are disrupting traditional systems.
- Herder families show respect to animals by not slaughtering young animals, normally waiting two winters.
- Traditionally, herder families consume more meat in winter, dried meat in spring and milk in summer.

Traditional cultural practices are also maintained to keep connected to "Mother Earth" such as the traditional customs of paying respect to nature and sacred areas. Women primarily give blessings by throwing milk and rice towards the sun and moon. This has been a tradition kept for generations.

People from Dundgobi sing well. Singing has an important position in Mongolian nomadic culture, especially long throat singing in the open space of the Gobi steppe, while riding horse and herding livestock or attending races (<https://www.youtube.com/watch?v=Ac2kLamqiwU>).



Figure 2. Community action: milking the animals



The experience of Mr. Tumurchuluun, who planted trees and bushes to cope with sand movement and desertification and created a favorable environment to live in the climate harsh zone, provides an example of a good practice in this harsh environment. Water is very limited. Although a few springs are found in this dry zone, wells are also being drilled. Mr. Tumurchuluun has built an underground water well within his field that covers greatly the necessity of drinking water for his horses and irrigation of plants, and he protects it carefully.

In the challenging agroecological zones of the Gobi desert, pastoralism presents the best livelihood strategy to provide food, income and employment. Although traditional knowledge of livestock is strong, the Oldokhiin Devjikh community has been supported by Mercy Corps and some scientists to learn new practices for tree planting and vegetable growing and later by the FAO Pastoralist Knowledge Hub through MANIP by exchanging international experiences. Today this community serves as a place for visitors to learn from its good practices and lessons learnt. His community is also in a good position to attract tourists and develop community based tourism.

Young people involvement



Figure 3. Mr. Tumurchuluun is teaching a youngster to identify plant species

Involving young people in the agroecological action is one of the big worries of the community leader and elderly members there. However, the community has initiated the organization of young herders gathering at provincial level to encourage their enthusiasm in pastoralism. Several young members of the community have been supported by MANIP and attended many international events. Some of them have found their professional path and are preparing to gain higher education in agribusiness and other topics. The community and MANIP members look to those youngsters as hope for the future. The provincial and district governments are preparing courses for young herders together with matching elder

herders to youth. Unfortunately, less and less young people are staying in rural areas; diversification of income with more added value products is urgently needed.

Political space

On one hand, the Government of Mongolia sets its priorities for agricultural development under its policy to promote intensified animal husbandry, which could be a possible approach for urban and peri-urban areas. On the other hand, the local people see promoting extensive rangeland pastoralism as the most viable way of life in Mongolian drylands. There is limited research on extensive rangeland management, combating desertification and economic growth in this arid zone. Local government are attempting to use limited resources to build better public infrastructure such as roads and community centres, provide adequate health and education services and support young herders – but there are still great needs for developing diverse income sources.

Outcomes of the practices

The livestock herding on the rangeland does not require additional, or external investment. There is even a saying in Mongolia that the livestock heads are grown naturally themselves without any labour and cost demand. The benefits from the livestock products include milk, meat, wool, cashmere, leather, skin and hides etc. However, in terms of benefits, it would be more remunerative to local communities if these products are processed locally and marketed with added value.



Production and Income

Dundgobi is an arid zone with four distinct seasons supporting pastoral life. A key species of the pasture is a naturally growing wild leek that gives a strong garlic/onion flavor in the meat and milk (gobiproject.weebly.com/plants.html). As mentioned above, sheep, goats, horses and camels are all present and provide economic and food products at different times of the year. Each herder family balances labour resources against the demands of pasture conditions and market prices. Shearing cashmere from goats, shearing camels and milking are all labour intensive activities and give different returns depending on the prices which fluctuate during the year.

In the case of Oldokhiin Devjikh community the main income source is generated from camel wool and goat cashmere as well as sheep and goat milk and meat. The meat and milk have special flavor of the wild onion and they can be local brand products. For the camel wool, due to the market price falling from MNT 7,500 to MNT 2,500 per kilo this year, this high potential raw material's value has been greatly reduced. The community is putting an effort in investing to build pre-processing factory in the village center knowing that there is still potential demand of market (for e.g. in Japan) to promote camel wool. Both local government and community members highlight the need of locally coordinated processing units or factories for the meat and wool.



Figure 4. Camel sheering

Mr. Tumurchuluun has noted that most funds, which come through international organizations and projects, skip this part of the Gobi and he feels that it can be related to weak understanding of the realities in the region, and a tendency to escape from this challenging area, often influenced by political leaders or someone, who have more access to information of available credits and funds in other areas of the country.

Given the strong traditional practices and unique cultures and production systems, there is every reason to find ways to support the communities that carry on such traditions, respecting and working within the challenges of their local ecologies.

Message from pastoralists to pastoralists

“While the cities are growing and urban areas are rapidly developing, the main food and ecological supply source is still in rural areas. Win-win for the rural and urban people would be to realize the benefit of maintaining the traditional culture, knowledge and practices in combination with modern appropriate technologies and innovations.

Transferring knowledge in herding livestock, communicating and protecting the environment and developing the pastoralism as attractive to the youth has been always kept as priority of many experienced and elderly herders.

Enabling access to markets through improving coordination and building business linkages would help decrease impact of large number of livestock on land degradation and increasing sustainable livelihoods of Mongolian herders in climate challenging environment.

Sun over the placid!”

—Tumurchuluun Tavkhai, pastoralist leader from Gobi desert