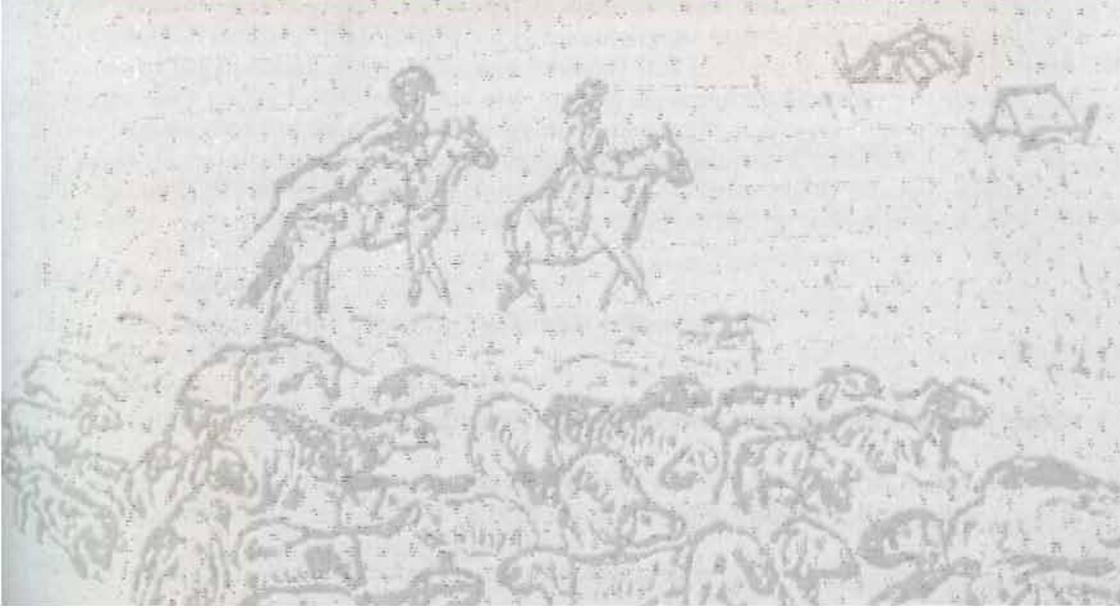
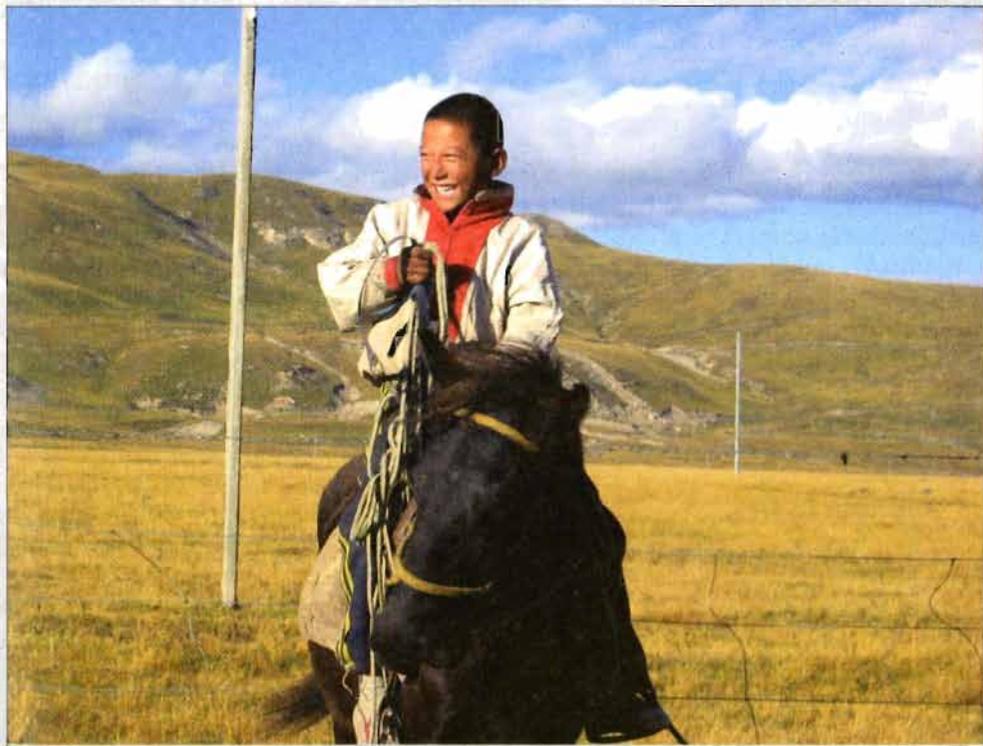
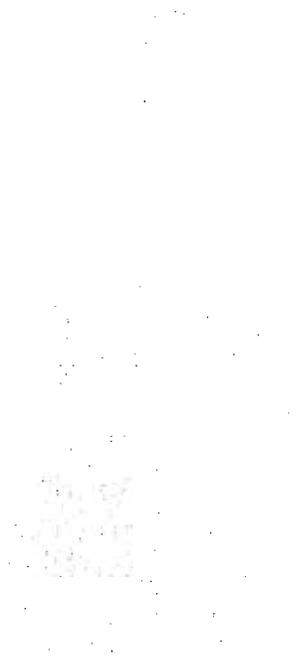


Integrated Application of Technical Skills and Participatory Approaches in Rangeland Improvement in Pastoral Areas





Cover Photo: A young herder of Maqu (*Camille Richard*)

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Background

The region

Animal husbandry is the only source of livelihood for the local Tibetan people of Maqu county, Gansu province, China. Increases in human and animal populations per unit area of rangeland in recent years, in addition to improper grazing practices and natural factors, have caused severe degradation of the Maqu rangelands. The main manifestations of this degradation are a decrease in the proportion of superior fodder grasses in the vegetation of the region, overgrowth of poisonous and non-fodder grass species, and small mammal and insect infestations. These occurrences have led to an acute decrease in the productivity of the rangeland, exacerbated by a drying climate. As a result, increasing sandiness of the rangeland is detrimentally affecting the life and work of the local people.

Rangeland improvement techniques are recognised as important for pasture development; the major techniques to be promoted include fencing, eradicating small mammals, planting or replanting grass, and applying fertilisers. For sustainable development of pasture, there are several points to consider regarding methods of popularisation of rangeland improvement technical skills. One such point is how to promote herders' participation in the popularisation process – should we reorganise or improve the organisations for self-management and development of herders and strengthen their functions to promote sustainable pasture development? What should be our point of view in gender and women's empowerment issues during the popularisation process? How should we view sustainable development of the project in terms of organisation, manpower, and funding? Due to these questions, certain new methods were applied and necessary information disseminated during implementation of the South Gansu rangeland improvement project. The above were the main topics of study during implementation of the project 'Ecological management, demonstration, and popularisation of skills for highly efficient animal husbandry in Southern Gansu grassland' which is supported by Oxfam Hong Kong.

Project objectives

The project addressed the following three main problems.

- Poverty of herders
- Severe degradation of rangeland
- Low efficiency of rangeland animal husbandry on the Qinghai-Tibet Plateau

The project objectives were to increase productivity of rangeland animal husbandry and to stop rangeland degradation by both constructing artificial pastures and

improving natural pastures. The project attempted to enhance the sustainable economic development of poor local herder families and improve the environment while protecting available resources. Each of the 100 project families was given five mu of land (15 mu = one hectare) on which to grow highly productive fodder grass. This project also improved 150 mu per family of rangeland through small mammal eradication, grass plantation, fertiliser application, non-fodder grass removal, and pasture enclosures. The participatory concept was introduced to this project through step-wise review, conducted jointly by project technicians and herders, and through trainings on participatory approaches at different stages of project implementation.

The project partners

The following were cooperative partners in this project, carried out between April 1999 and September 2002.

- Hong Kong Oxfam – funding
- Lanzhou University – technical assistance
- Yunnan Academy of Social Sciences Department of Sociology – participatory assistance
- Government of Maqu County, Gansu Province – coordination
- Maqu County Animal Husbandry Bureau Grassland Station – implementation

Project implementation strategy

Adaptation to the local situation

Several characteristics of the local situation combined to make this project unique, and we explored these before beginning project implementation. Below is a discussion of these characteristics.

After pasture had been contracted to individual families, herders recognised the scarcity of pasture and soon developed a common wish to improve pasture availability by raising productivity of the existing pasture. Contracting of rangeland to individual families had created a favourable situation for pasture management and improvement by herders. In the past, pastures belonged to the community, but animals belonged to individual families; thus, herders strove to use pastures as much as possible and did not think of managing or protecting those pastures. Because there was no motivation to protect and develop the pasture, competitive grazing and overgrazing were very common.

Local herders spoken to during this study clearly recognised that the main rangeland problems they face are limited pasture area, low grass production, poisonous grass species, and rats. Zaxi of Gongma village group 3 said, "In 1958, the population was less than now, the number of animals was also less, and the grass reached horseback". His statement indicates serious degradation of rangeland and puts forward a herder's personal experience regarding rangeland issues. Pasture improvement is a common wish of herders.

The basic objective of the project to improve rangeland was identical to the government policy of animal husbandry development. Therefore, during implementation of the project, it was possible to use local governmental manpower and materials. This situation also encouraged the government to spread and

popularise the project, magnifying its demonstrative value. During recent years, the government has contracted rangeland to individual families, promoted construction of artificial pasture, and organised programmes to eradicate rats and insects from the rangeland. These have become the main activities of the grassland station under the local Animal Husbandry Bureau.

Useful traditional grazing management practices

During the project feasibility study, it was discovered that traditional grazing practices include some useful notions regarding pasture protection. These indicate that there are ideas and methods for conserving grassland embedded in herders' traditional animal husbandry practices. These ideas and methods can be directly associated with the principal guiding ideology of the rangeland improvement project.

Winter-spring pasture is differentiated from summer-autumn pasture, and rotational grazing is practiced in two of the four seasonal pastures. Winter-spring pasture is closed during summer and autumn to let the grass grow by protecting it from grazing so that there will be more grass during winter and spring.

Grassland tilling is prohibited. All herders know that tilled land would never grow grass for grazing in the future.

Herders have begun growing oats near their winter livestock sheds, which they harvest, dry, and store for winter. Oats are used as a feed supplement, especially for young calves and during snow disasters. This practice has brought livestock mortality to a minimum.

After contracting of rangeland to families, some groups of families did not fence their individual areas and instead practiced group grazing. These families made regulations based on their rich experience in animal agriculture restricting the number of animals per unit area of rangeland. In this way, they were able to maintain a balance among families and to guarantee a supply of grass throughout the year. We visited a family group in Gongma village group 3. The nine families of this group already had summer-autumn pasture contracted to them, but the winter-spring pasture had not yet been contracted. Three grazing sub-groups had been formed within the nine families. The group had limited animal numbers to 10 cattle, 20 goats or sheep, and ½ horse per person. People having more animals than the limit had to sell excess animals, hire other grassland on which to graze those animals, or ask families with fewer animals to graze them. Families having fewer animals could rent out their grassland or graze others' excess animals. Other family groups in other villages have similar regulations. Upper limits on the number of animals per unit area of rangeland have been derived from the rich experience of the herders and from their principle of surplus – when grass in the summer pasture becomes green, there should still be grass left in the winter pasture.

In summary, the chief objectives of the government and the herders to develop the grassland and to spread technical skills were identical. A participatory approach to project implementation was therefore possible. The question was how to apply participatory concepts and methods to the goal of spreading grassland skills.

Participation by relevant groups

In this project, it was crucial to have the participation of all members of project communities, as well as of certain other relevant and influential people. People whose participation was important included herders, weaker members of the community, and concerned institutions.

Herders' groups and coordinators

Advantage should be taken of pre-existing local community groups and decision-making mechanisms for design, monitoring, and evaluation of project implementation and for spread of technical skills. In Tibetan communities, self-organised groups are well established; eight to ten families usually comprise a small unit called a 'group'. The families in most of these spontaneously formed groups are related by blood. Such organisations are closely related to the daily lives of herders. They also work as forums for discussion of important issues and for decision-making; important group issues included when to move to winter pasture from summer pasture every year, where to place the limits on livestock numbers, and how to cooperate in production activities such as cutting wool and weaving tents. Some groups also sell their animals together when prices are high, after which they rent out their rangeland or look after others' livestock for a price. These groups can be invaluable in motivating herders to participate in implementation of rangeland improvement projects in grazing areas. There were 12 herders' groups in this project. For prompt dissemination of knowledge, spreading of information, and motivation of herders, and to reduce the workload of technicians, each herders' group elected one reputable coordinator with the capability of motivating and organising group members. For motivation of women, women's coordinators were also elected. Problems faced by herders were conveyed to technicians through these coordinators. During technical skills popularisation and project activities, coordinators informed and gathered herders, accelerated the flow of information, and interested herders in self-development. During small mammal eradication from the large pasture area, herders' groups participated and worked together to manage the pasture. During grass planting, herders' groups discussed the technical skills and exchanged expertise. Mutual cooperation among families within herders' groups especially helped families consisting of women and children.

Discussion between technicians and herders were very helpful in revising and improving project design and implementation and had important significance for the success of the project. For example, if technicians discovered drawbacks in the natural pasture management of a certain family, they did not stop investment and services to that family just because its management did not meet the standards required by the project. Instead, they discussed the causes of poor management with the group of herders and determined which problems the family could overcome, which problems were faced by all families in the group, and in which issues technical or implementation aspects of the project should be changed.

Women and weak community members

Division of labour between males and females is not equal, and women tend to hold the interests of their children and their households above their own interests. Male herders in high-frigid grazing lands are mainly responsible for herding animals; selling livestock, dairy products, leather, and wool; and purchasing garments and other goods. Female herders are responsible for milking, preparing clarified butter,

weaving, carrying water, conducting household chores, and caring for children. Since women provided much of the labour for the project, it was very important that the project reflect their feelings and opinions. Thus, the project took into consideration participation by women and other weak members of the community. Women are busiest during the summer, when their labour intensity is very high and their labour duration very long. Due to this and other differences in the daily activities of males and females, timing of training sessions and services were arranged with potential female participants' convenience in mind. Much attention was paid to providing women and other weaker members of the community with technical skills and encouraging them to communicate their ideas, opinions, and problems. Technical and labour assistance was provided to families consisting of women and children, and these families were encouraged to participate in community and project activities and to monitor project results. Through this project, women's capacities were enhanced and their position in society improved.

Concerned institutions

To different degrees, the County Government, the County Animal Husbandry Bureau, the County Grassland Station, the County Hygiene Bureau, the County Education Bureau, the County Health Care Station, the County Women's Association, the County Veterinary Station, and the two Prefecture Governments all participated in the project. Participation of this variety of entities promoted project implementation. Herders' difficulties and demands were discovered and addressed by many of these authorities.

Participatory methods for selection of beneficiaries

Participatory methods were most evident in two stages of the project, selection of families and finalising by the families of the project implementation plan. The 40 families of the first beneficiary group were selected through discussion with local herders, using the participatory method of grading from rich to poor. At every project site, name lists of poor, middle class, and rich herders were made public using participatory methods, and poor herder families were declared project beneficiaries. The project provided them with the resources required for rangeland improvement free of charge. It also provided them with technical skills for rangeland improvement and other necessary services.

Technical methods

Fencing and pasture enclosures

The 150 mu site for fencing and pasture enclosures was chosen according to criteria determined by the technicians after consultation with the herders. Management of this site conformed to the traditional grazing pattern. A grazing restriction contract was made with the herders and was in effect during the growing season. After this restriction period, herders were allowed to use the pasture according to their experience and the health condition of their animals. Underweight animals were usually allowed to graze there from December to May, during which period grass was relatively scarce.

Grass plantation

After a discussion among technicians and herders, cultivated annual grasses (oats and barley) were planted for each family in nearby shed areas or greatly degraded areas. The sites and area for these plantations were determined by the herders

themselves, and mechanical tillage was conducted by the project. During the first year, technicians measured the grass plantation area of each family and drew a project construction area map. They also demonstrated to the herders grass plantation, management, harvesting, and storage. Herders took responsibility for the prevention of grazing in these areas. During the following years, technicians both provided timely technical assistance to the herders, and also collected experiences and suggestions from the herders. In the second year of project implementation, herders of Ouqiang village suggested sowing grass seed before mechanical tillage to prevent bending of the grass and to minimise physical labour. We had a serious discussion about this suggestion and found that it had some theoretical merit. Therefore, we decided to spread this skill to 100 herder families, to whom it proved very beneficial.

Small burrowing mammal eradication (zokor and pika)

Small mammal eradication was the most difficult technical skill to popularise. In the past, herders did not support pest eradication and sometimes destroyed or disturbed eradication efforts by breaking the traps used, or by simply not allowing us to enter pastures. However, after we conducted intensive herder education, they were eventually convinced of the severity of the troubles brought about by these burrowing mammals and began to welcome us and to support our efforts.

Methods of eradication adopted by the project were traps, use of single-dose poison, and a few local methods such as filling holes with water during the winter. Rat catching was practiced mainly in areas of high *Myospalax fontanierii* (common Chinese name zokor) activity. However, trapping was difficult, and herders were unable to do it themselves. Therefore, the project hired technical workers to trap, and herders only participated by determining areas for eradication and by managing livestock during eradication activities. The single-dose poison method was used to eradicate *Ochotona thibetana* (Tibetan plateau pika) in areas where *Myospalax fontanierii* was less active. Eradication of *O. thibetana* was conducted mainly during winter and spring, as herders had some leisure time during those seasons, and could therefore participate. Technicians worked together with herders to determine areas for this type of eradication and taught herders how to apply the poison safely. Technicians also made a contract with the herders concerning grazing restrictions in these areas during the period in which the poison was effective. Results of eradication activities were monitored jointly by technicians and herders, and any eradication remaining to be done after the project was conducted by the herders themselves.

Fertiliser application

To raise the productivity and quality of the fodder grass, small amounts of inorganic fertiliser were applied to severely degraded areas within the closed pasture area during each spring season. During this procedure, technicians explained the skills to herders, demonstrated the process, and encouraged them to do it themselves. In addition, local cow and goat dung were used as organic fertilisers, and trenches were dug in each project community for compost. Technicians explained the details of size and management of the trenches; and herders were required to dig the trenches, fill them up, cover them with thin membrane, and apply water and fertilisers. Through project implementation, herders witnessed the positive results of fertiliser application, so that most project families decided to apply surplus cow and goat dung to their pastures.

Replanting of grass

On barren lands in the project area, grass replanting was conducted during spring and autumn. Grass seed used was usually a locally available, superior fodder species with suitable reproductive traits. During replanting, technicians explained and demonstrated to herders how to sow seeds, cover them with soil, and observe germination. In addition, technicians taught herders how to identify the superior fodder species and how to collect seeds in order to replant the fodder grass in the absence of technicians.

Removal of poisonous and non-fodder grasses

Poisonous and non-fodder grasses in project families' closed pastures were removed manually. Herders shared their experiences about which grass species livestock did not eat, and technicians taught herders how to identify the poisonous and useless grass species in the early seedling stage. This topic was revisited each year during vegetation monitoring. Technicians also taught the herders how to remove the grasses and asked them to continue this practice.

Important issues for consideration in a participatory project

During the process of participatory exploration, project managers learned that in order to enhance project sustainability, the following crucial issues must be considered:

- project staff's familiarity with and enthusiasm about the participatory concept,
- formation, self-management, and productivity of herders' groups,
- gender sensitivity and women's participation,
- adaptability of new techniques and ability to assimilate herders' experiences.

Below, these issues are discussed individually.

Participatory training to familiarise project staff with participatory concepts

From the very beginning of the project, staff training and capacity building was considered important. Throughout project implementation, training sessions were conducted on the participatory approach, the main contents of which were participatory project management, participatory monitoring and evaluation, participatory mid-term review of the project, and gender issues and social development. The participatory approach was adopted for all training sessions, and the subject matter was associated with actual implementation of the project.

Staff thus obtained the skills to communicate better with herders and to conduct on-the-spot demonstrations and trainings of technical skills. Since staff considered interviews with herders a tool with which to solve existing problems in the project, herders' problems and demands were listened to and immediately conveyed to project leaders and managers. Project staff thought at first that herders were uneducated people who could be of no help to the project, but they later came to know that herders' traditional knowledge and experiences were quite useful to the project. Understanding the lifestyles and production systems of the herders helped them manage the herders' requirements, as well as the timetable and progress of the project. These changes in working attitudes of project staff were the foundation of participatory implementation of the project.

Where it was possible to gather herders, staff conducted intensive trainings for coordinators. Where settlements were scattered, technicians travelled to provide technical services to individual families. They also distributed technical information materials written in both Tibetan and Chinese. Technicians explained and demonstrated the important points of the technical skills and encouraged experienced local herders to discuss rangeland management and livestock husbandry. Exchanges between project and non-project families were increased to enhance the skills of both groups.

Use of herders' groups for project implementation and management

Self-management of herders' groups

During the exploration phase of the project, the amounts of artificial and natural pasture to be allotted to each project herder family were determined through discussion with the herders. According to the original plan, each family was to construct 20-30 mu of artificial pasture and improve about 200 mu of natural pasture. During the project feasibility study, however, promoters of the participatory approach suggested that herders themselves should determine the area of rangeland to be improved. One reason for which herders themselves needed to make this decision was that traditional herder experience prohibits the tilling of large areas of natural pasture. Thus, if herder families were each required to construct 20-30 mu of artificial pasture, they would not be enthusiastic about participating. At present, most herders have planted oats around their winter pasture sheds on only two or three mu of land.

To protect natural pasture, herders' groups have placed restrictions on the size of artificial rangeland. In order to reduce the differences between project implementation and local practice, it was suggested that determination of size of artificial pastures should be conducted under the regulations of the herders' groups. Regulations on livestock populations and maintenance of pasture quality would also be followed. If the project wants to expand artificial pasture, staff should first discuss options with the group and receive the group's consent. Only thus would the project be feasible.

To achieve community development, it is not necessary to improve all natural pasture or to construct all artificial pasture simultaneously. The project will be more sustainable if herder families and groups are given room to develop their ideas. This suggestion was adopted by the project managing committee, Lanzhou University, and Maqu grassland station. Thus, the area of rangeland to be improved was determined according to the requirements of individual families. Considering their own capacities to maintain the pasture, most herder families expressed their wishes to construct only three to five mu of artificial pasture. The area of natural pasture to be improved was also adjusted according to experiences of the herders, and 100-150 mu per family was agreed upon. Due to a disparity in level of management among herders, some families constructed their pastures together with other families; these groups varied in size. Families that ran their enterprises individually, and poor families, to whom benefits could not be guaranteed, fenced their pastures and practiced restrictive grazing.

Examples of the functioning of herders' groups

In some places, although rangeland has been contracted to individual families, high costs of fencing and placement of water sources have caused these groups to continue grazing their animals in common. In Gongma Group No. 2, small group 3, nine families still graze their animals commonly. However, their allotted grazing area is insufficient at only 207 mu per head. Therefore, this group had a discussion and decided to use their money designated for fencing to rent other rangeland. Another small group in Gongma Group No. 2 includes eight families who have divided the pasture into four parts. One part is assigned to one sub-group made of two families with similar family sizes, livestock numbers, and pasture areas. This sub-group of two families grazes their animals together.

In other instances, winter pasture has been contracted to individual families, but summer pasture has not. In Gongma Group No. 3, winter pasture is contracted to small groups. Here, every small group has already selected one to three leaders (members with good reputations) to be the nucleus of their small group. These leaders arrange meetings within their small groups and represent their small groups in meetings of bigger groups. In some small groups, sub-groups consisting of two or three families are formed to make certain decisions. One of these decisions regards the division of pasture. Pasture is first divided among sub-groups in a small group, wherein allotment of each specific segment of pasture to an individual sub-group is accomplished by drawing lots.

The above examples illustrate the wisdom of making use of pre-existing social organisations in Tibetan communities. They also illustrate these organisations' function in cooperation and decision-making, as well as in encouraging herders to participate in project design, implementation, management, popularisation, and evaluation. This will increase their level of participation and ownership, which will in turn empower herders to discuss problems, put forward possible solutions, and seek support from probable donors. All of these steps have long-term effects on sustainable project development.

Use of herders' groups and possible constraints

In order to utilise local organisations for the project, beneficiary families were divided into several small groups from different geographical areas, and each group elected one coordinator to be responsible for project-related activities. As the functions of pre-existing traditional organisations differed, small groups and their coordinators could not act uniformly in implementing the project. There were differences in the roles played by small groups and coordinators in herders' daily lives. In some places, small groups organised herders very effectively to participate in project implementation. For example, during the visit and interview at Waleka village, it was learned that small groups accomplished most of the daily production activities of the herders there and had their own set of methods and a common fund chiefly used in religious and other common small group activities. These small groups also determined times for animal migration to new pastures and limited numbers of animals.

There are also instances in which use of local organisations is difficult. For example, the 29 families selected for the project from Anmao village were scattered over a large area. They had been divided into three small groups with six coordinators. The main

accomplishments of the coordinators and small groups were oat plantation, fence repair, and fertiliser application. There were three annual meetings of coordinators for discussion of matters of common interest. In spring, they discussed fence repairs, timing of excluding animals from closed pastures, timing of migration, arrangement of grass plantation, and winter lodging. When returning after winter, they discussed fence repair and utilisation of closed pastures. In some project areas, families in the herders' groups are quite scattered; in this case, a single family does all the work, and there are no collective activities. In these areas, herders' groups are limited structures that only notify people of the processes of project implementation. Promotion of participatory skills in these areas is still a great challenge.

However, traditional organisations also have a fatal shortcoming – unequal gender considerations. According to local practice, only male members of families participate in group discussions of important matters. If male members are not at home, or there are no male members in a family, female members usually do not participate in meetings. Therefore, families consisting only of women and children are totally excluded from the social decision-making process, and their interests are not considered. At present, most poor families consist of only women and children, and thus have no place in the social decision-making mechanism.

Women's participation and gender sensitivity

Although objectives and strategies concerning gender were fixed at the beginning of the project, realising them during its implementation was a challenge. In the initial stage of the project, families consisting of women and children only were identified as important to support. They were not only beneficiaries, but also participated in project design and evaluation. Furthermore, the first project line staff (of which there were women in every group) had uninterrupted discussions with women and later conveyed their opinions at small group discussions. Males and females should attend separate technical training sessions whenever and wherever possible, and timing of female training sessions should be arranged to their convenience. Our observations showed that women are relatively less busy between November and March, and this is a good time to meet with them. However, some rangeland improvement activities are restricted by seasonal changes. For example, grass plantation should be finished by May, and rat eradication and second sowing of fodder grass seeds are also restricted to certain times. Most project work is conducted during the season when women are busiest. Therefore, from the point of view of project work and women's convenience, training sessions should be arranged during winter.

A comprehensive analytical study of gender-related division of labour was conducted during project implementation. Division of labour relating to major project activities was identified, and timely interference was carried out on crucial issues. Application of fertiliser, for which goat dung is composted and applied to natural pasture, is a main technical aspect of the rangeland improvement project. In this region, cow dung is used for burning and is basically a woman's duty. If a man dealt with cow dung, people would laugh at him. During the initial stage of the project, no men collected fertiliser to apply to rangeland. It was thus an extra job for the women. The pastures are quite large; each family had about 150 mu of pasture for improvement by fencing, so had no consideration been made at the beginning regarding gender-related division of labour, fertiliser application would have greatly increased the workload of the women.

If the only consideration were project results, there would be no need to consider labour intensity. However, overload of labour sometimes affects project results. Also, overloading of women by the project obviously does not benefit the women. Because project staff were sensitive to the gender issue, they started encouraging men to collect and apply fertiliser. At the same time, certain changes were made in the method of fertiliser application; women's workload was decreased somewhat through natural fertiliser application by goats, sheep, and cows directly to the closed rangeland during grazing. This process shows that unless the gender issue, gender-related division of labour, and effects of the male dominated decision-making systems of local communities are taken into consideration during and after project implementation, women's workload can be greatly increased and their opinions excluded from project design and policy.

This project attempted to promote women's development, and after three years of project implementation, there was a rise in women's enthusiasm to participate. They were more confident about expressing their views, had good relations with the first line project staff, and were able to put forward their ideas concerning the project. These women cared about the project and worked to maintain and repair the fencing. However, there were still some restrictions that prevented the establishment and development of women's groups; these included traditional concepts of gender, scattered settlements and poor transportation, lack of women's collaboration in technical activities, and lack of an existing mechanism suitable for a women's group.

Adaptation of new skills and assimilation of herder experiences

Spreading new grassland technical skills is not easy, because application of the new skills will change lifestyles and modes of production. Herders were totally dependent on natural pasture until new technical skills made them capable of producing grass on artificial pasture for use during winter and spring. This put an emphasis on improvement of natural pastures through grass plantation, field management, fertiliser application, and small mammal eradication. Production of grass on artificial pastures and human management of natural pastures necessitated a change in herders' traditional lifestyles and modes of production. More research on traditional animal husbandry knowledge and its similarities and differences with the new technical skills is required during project implementation. Herders having problems with such changes in their lifestyles and modes of production should be helped to overcome these problems. We may need to modify the original plans and designs of projects to make them more suitable to the production environment and the life habits of herders. During the three-year project implementation, herders expressed their great interest in new technical skills. In the initial stage of the project, we were mostly worried about small mammal eradication, because the notion of non-violence was considered the greatest obstacle of the project. However, during implementation, we found that herders already understood the importance of eradication due to grassland degradation and severe rat activities. They supported the technicians in eradicating these burrowing animals, and during the process, they learned to eradicate them themselves.

Herders' wisdom and experiences were also assimilated to improve technical measures. For example, herders suggested that the timing of oat planting should be changed to avoid wind damage to the oats. They said that grazing goats and sheep on the closed pastures at an appropriate time for an optimum duration would be

beneficial to the natural growth of the pasture – it would raise the utility of the pasture while reducing the work of fertiliser application. They put forward that they could eradicate rats by closing holes with mud. They wanted to use fencing for two different purposes, improvement of pastures and grazing spaces for feeble or sick animals; the latter greatly reduced the livestock mortality rate. This demonstrates that paying attention to herders' experiences is extremely important, and any new technical skill can be adapted to the local situation only with herder participation. We feel that if collaboration between technicians and herders were improved, there would still be much room for improvement in project design.

Lessons learned from project implementation

Below, the logistics of applying participatory methods to the grassland improvement project are discussed. These include encouraging participation by herders and women, problems encountered in implementing the participatory approach, allocating herder funding, managing project hierarchy, and promoting technical skills.

Problems and possible solutions regarding participation by herders and women

Convincing herders and women to participate in project monitoring is an important step towards empowering them to participate in project management. During project implementation, a participatory monitoring and evaluation system was established through discussions with relevant groups using training sessions and other participatory methods. During training sessions, project staff learned about participatory monitoring and herders learned that the previous monitoring system depended mostly upon technicians' sample tests and annual systemic data collection conducted in winter. Once herders started discovering problems with project implementation, they reported these to the first project line staff. Problems identified by herders concerned quality control monitoring of fencing, selection of sites for rangeland improvement, and construction of artificial pasture. Since herders and women were encouraged to regularly monitor project works, they felt much more positive about participation, and the project benefited.

Now, after only three years of project implementation, herders and women are monitoring the project. They have witnessed the significant results of rangeland improvement and artificial pasture construction and have started to volunteer labour for the project. Some herders' organisations composed of relatives were not efficient enough, but other communities had very efficient organisations for discussions and decision-making. These organisations provided good bases for monitoring by herders and women had their own direct and simple standards of evaluating project results.

Problems

Much must still be done to establish participatory management at the policy-making level of the project. Even after establishment of the participatory monitoring and evaluation system, project management was unable to determine a suitable method of establishing routine participatory management. Herders' groups and coordinators held discussions only with project staff; they did not play important roles at the management level. This phenomenon basically continued the traditional 'down to up' management and indicated that in order to establish a participatory management mechanism, an overall change in project management is necessary. The project did not clarify herders' groups' rights and created a large gap between project policy

makers and project implementation staff. Within the project management system, there were several problems with communication between policy makers and project implementation staff. The situation might have improved had policy makers been more sensitive, but they considered 'assigning tasks' to staff the most efficient and simplest way to achieve goals, and thus carried on insufficient open discussions.

Another problem was that traditional, gender-based division of labour, keeping women very busy, prevented them from participating in project monitoring and management. Also, some herders had not yet mastered the technical skills of rangeland improvement, and some families consisting of women and children only or having handicapped members were unable to perform the required fieldwork. These problems affected rangeland improvement outcomes. Further, herders and women were busiest from June through September, a period that overlaps with project construction work to some extent. Arranging project activities during the summer-autumn season requires herders to return to their pasture improvement areas on winter-spring pasture to participate in activities and monitoring. Some herders' summer-autumn and winter-spring pastures are 45 km apart, some project families are quite scattered geographically, and the transportation system is poor. Therefore, this presents a big logistical problem for those herders.

Encouraging herders and women to participate in project monitoring also increases the workload of the already-too-busy first line staff. One reason the staff are so busy is that they must conduct demonstrations of technical skills from June through September, and these technical demonstrations are another area of difficulty. There is controversy over technical criteria versus herders' methods and ideas, and it is difficult to develop a suitable combination of the two. This question will only be answered if academic institutions acknowledge that herders' knowledge is as important as that of experts.

Solutions

Due to the situations described above, we must explore and examine future working plans that will allow herders and women to participate in and monitor project implementation. These plans must first select a small group of herder families concentrated in a small area, with relatively good social organisation and four seasonal pastures for improvement and experimentation. Only after gaining experience from this can the project be implemented in a wider area; otherwise, expenses will be high and results minimal. Also, appropriate times should be arranged monthly for staff discussions to share experience and weaknesses. Issues put forward by herders during monitoring should be discussed in a timely manner and prioritised so that important issues can be addressed immediately and others can be considered. In both of these cases, timely responses and explanations should be given to herders. At present, herders' and women's monitoring of project implementation entails only collection of data. How to encourage further participation in project management and policy-making is still a big question. Strengthening of herders' and women's organisations and description of the decision-making and management function of each level of management are important steps towards an answer to this question.

Allotment and management of herder funds

For a high-investment rangeland improvement project like this one (10,000 Yuan RMB per family), ensuring sustainable investment is a question for serious consideration. In this project, two investment sources besides Oxfam Hong Kong were considered. Government officials can be influenced by successful implementation and long-term effects of a project, and the government can then be asked to invest. Investments can also be obtained from wealthy local herders to sustain such projects.

If, in order to expand the scope of the project, herders are asked to accumulate a part of project funds, participation of herders in the project, and thus project sustainability, will be enhanced. Based on results and level of herder acceptance of this project (non-beneficiary families envied beneficiary families, and beneficiary families were very satisfied with project results and with the services of the first line staff), we conclude that it is possible to raise a part of project funds in this manner. However, there are several important aspects to consider when doing so.

Aspects to consider when using herder funding

If using herder funding for a project, very poor families, and families consisting of women and children only, need a guarantee that they will not be excluded from the project because they cannot invest. One way to do this is to fix a ratio of non-investing poor families to investing families. For example, poor families, or families having less than a certain number of animals, could make up 20% of the beneficiaries. Poor families can be categorised in a variety of ways, and this ratio should vary according to site characteristics. Through participatory discussions, herders can select very poor families that will receive benefits from the project but that need not invest in it. Effort is, however, required to guarantee fairness and that selected families are truly poor and unable to invest.

The amount of money herder families can invest, and in which aspect of the project they should invest, must be decided. According to our experience, fencing is extremely expensive, and herders cannot invest the entire amount required for fencing. They should probably be encouraged to invest in materials to be used by the project, such as chemical fertilisers and seeds for artificial pasture. These herders lack cash during the seasons when grass seed is sown, so a practical and feasible method is to lend them project money as needed and let them return it in the autumn when they make cash from selling animals.

It must also be decided for what herders' returns from investments will be used; should they be used to expand the project, or should they become a common fund for use by the small group according to the common interests of its members? They can also become a social welfare fund to be lent to poor families or to increase production. No matter where it is invested, herder discussion about use of such a fund is good for community solidarity and is an effective way to enhance common participation of herders' groups in project management.

Even if the proportion of herders' investment is only 10%, it will increase workload remarkably. According to others' experience, workloads of project staff are only decreased when they successfully promote herder participation in project implementation and management.

Project staff also worry that herders may not be reliable, promising to invest a certain amount of money but never handing over the cash; or that the already-very-busy first line staff will have higher workloads due to herder investment. There is, therefore, a lack of understanding among project staff about herder investment in the project. However, from past experience, we conclude that herders themselves lend and borrow money in their daily lives and can usually be counted upon to be reliable. Regarding staff time requirements, if staff can free themselves from the task of technical skill demonstrations, they will have more time to promote herder participation and investment in the project.

There have been some positive changes in the herder investment situation. Through implementation of the first project cycle, herders got personal experience of project results. The most expensive task in the project, fencing, had already been completed by that time. Only annual expenses, such as purchase of seeds, were left. Some herders then used their own money to buy seeds. In previous years also, herders had bought oat seeds themselves but did not buy many, since they were needed for only two or three mu of rangeland.

The key points in promotion of herder investment are to convince herders of the importance of investment and to explain to them in detail the process of investing. In some villages, herders' groups discussed the ratio of herders' investment early in the beginning stage of the project. However, further discussion was still required to create a policy for improving the system. It is suggested that a detailed plan for herder investment be prepared, including ratio and mode of investment and uses and details of management, before project implementation next year.

According to others' experiences in herder investment, money can be lent to herders in spring or summer to buy grass seed, and they can pay back the loans in autumn when cash is available to them. In this way, the same money can be used during the following year. However, plans should be made to expand the influence of the project and increase the amount of investment. The area of improved rangeland should increase every year, and the number of beneficiary families should increase accordingly. There should be a detailed task design, which should be improved throughout implementation by discussions with herders.

Managing project hierarchy

Slowness in conveying and responding to problems was the biggest constraint to participatory project development. Establishment of a management system is an important step towards sustainable development and local assimilation of the project. The first cycle of the rangeland improvement project was coordinated by Lanzhou University. A leaders' group had been formed consisting of coordinators, county government officials, and leaders from the Bureau of Animal Husbandry. This group took responsibility for project implementation. Under the implementation group, there was a project office to carry on day-to-day matters. Grassland station staff were responsible for daily operations and for spreading technical skills among herders. This management hierarchy had too many levels; in this system, when a project implementation problem was faced, it had to be conveyed to the project office through the first line staff. The project office reported it to the responsible person in the implementation group.

Participatory approaches should first be applied to internal management of the project itself. Although many people were involved in the project, most of them did not participate in daily management of operations and implementation. Only three persons – Project In-charge from Lanzhou University, Chief of the Bureau of Animal Husbandry, and Chief of the Grassland Station – were responsible for project coordination and management, and decision-making authority rested with them. The first line technical staff, on whom implementation of the project totally depended, were not part of the project office. Thus, there was a gap between decision-making and implementation. Office staff could not accompany first line staff to solve everyday issues, and first line staff did not have the authority to create or adjust major project policies.

Project achievements

During the three-year implementation, anticipated results were achieved in all project parameters. The effectiveness of integrated application of the various technical skills was greater than is implied by simple addition of the effectiveness of the individual technical measures. Hence, the results of the project were very practical. During project implementation, annual grasses were planted in three consecutive years. Implementation of rangeland improvement measures and participation of herders, especially women, enabled this project to exceed other rangeland improvement projects in terms of economic, social, and ecological aspects.

Economic achievements

Although there was continued summer drought in Maqu County, and part of the project area underwent winter snow disaster, the mortality rate of adult livestock of the project area was two percent lower than that of the county as a whole, meaning that some 900 cattle, sheep, and goats were saved. The survival rate of young calves was raised by 30%, meaning that about 3,000 more young calves survived than otherwise would have. Artificial pasture and enclosures played key roles in protecting livestock from disaster. Grass production of artificial annual grass species was 3,544 kg/mu. Production of native grass increased to 453 kg/mu from the previous rate of 271 kg/mu. There was a notable change in the standard of living of project families. For example, in one family in the project area of Da'erqing, the head of the family, Lama, is a ten-year-old boy. He has a mother who is over 60 years old and an unmarried elder sister. They had 40 cattle and 40 goats before project implementation, and now they have 100 cattle and 100 goats. Last year, they bought solar energy lights. Another example is that of Sangpa's family in the project area of Anmao. This family increased their goat numbers from 46 to 150 using their fenced pasture. Cairang Dongzhibu's family in Anmao did not have livestock but earned 3,500 Yuan per year by renting his fenced pasture to others.

Social achievements

This project addressed the gender issue, and women's participation was considered an important aspect of policy making and development. The project thus had a tremendous effect on gender development in the high-frigid grazing land. Beneficiary women's labour intensity was slightly reduced, while their status in the family and society and their right to make decisions were raised to some extent. In the past, women herders did not appear before guests. Now, they have started to visit with guests and actively exchange ideas and opinions.

Through application of science and technology and dissemination of technical skills, livestock husbandry was enhanced. As a result, production capacity and the standard of living were increased remarkably.

There were notable changes in grazing habits. For example, herders of Luoyonghong and Waleka villages of Gongma Group 3 extended the grazing duration of winter pasture by 20-30 days, which greatly reduced pressure on degraded summer pastures and promoted their restoration. As it is not necessary for herders to follow their animals throughout the day in the winter pasture, labour was also saved.

There have been great changes in herders' ideology, illustrated by the fact that beneficiary families started sending their children to school and that financially weak herders are now benefiting from cooperation. Non-project families began studying the rangeland improvement technical skills learned by project families, and this led to changes in their ideologies, as well. For example, Luobai from Ouqiang, although he was not included in the project, conducted fencing and grass replanting under a project family's direction and supervision; in this way, there has been notable improvement in some non-project families' economic condition.

Due to project implementation and reporting, leaders of the Party and of the government were compelled to reconsider conventional mechanisms for elimination of poverty. Changes were also made in the traditional mode of management. Furthermore, the Oxfam project is now not only popular in Maqu County, but has also had great influence in Gansu Province. Hong Kong Radio, Gansu TV, and Maqu County TV broadcast special programmes on the Oxfam poverty elimination in rangelands project, and this played a key role in attracting more external investments to Maqu County. These investments came in the context of the national policy of development of western China, as well as ecological construction.

Ecological achievements

Through implementation of integrated rangeland improvement measures, this project stopped the degradation and desertification of project area rangeland. Proportions of poisonous and non-fodder grasses were reduced by 20%, and proportions of superior fodder grasses were increased. Troubles due to small mammals were reduced remarkably, and in some places, rats were totally eradicated. Project implementation had positive effects on water and soil conservation, prevention of wind erosion, fixation of sand dunes, protection of water sources, purification of air, and improvement of vegetation composition and structure. The project has demonstrated methods for improving the overall ecological health of the grassland.

Suggestions for future projects

Sustainable development of grassland animal husbandry should not depend on technical measures only. Rather, technical skills, culture, government coordination, and gender issues and women's participation should be integrated. The following are suggestions for improvement of future projects such as this one.

Establish fair methods for selecting beneficiary families

Before project design and implementation, a detailed baseline survey should be conducted. Project beneficiary families should be selected on the basis of this survey

and through active participation of herders. Justice and transparency should be maintained in the selection of project beneficiary families.

Change technicians' working styles

Change in technicians' working styles from 'simple demonstration to herders' to enabling herders to do it themselves increases herders' faith in technicians. Herders make up the main body of technical skill popularisation; therefore, attention should be paid during project implementation to capacity building of herders and assimilation of their experiences, and issues raised by herders should be dealt with immediately.

Organise herder interactions

After project implementation, herders had acquired the basic ideas and experiences of rangeland improvement technical skills. Organisation of interactions among these herders will enhance their existing organisations and promote further rangeland improvement. There should be interactions among herder families within the project, project and non-project families, and old and new project families. Such interactions will establish the functions and roles of herders in the transmission of technical skills, as well as facilitate plan design. Experiences of others show that farmers learn more effectively when taught by other farmers. In rangeland areas, where settlements are so scattered, such types of interaction are highly valuable. During our participatory review organised by herders, some herders said that they had already introduced project technical skills and experience to non-project families, and some non-project families had started to invest in rangeland improvement. Enhancing interaction among herders will expand the effective area of the project and systematise interactions already in practice.

Advantage should also be taken of women's potential to self-organise; women should be organised and their participation in the project expanded. Gender equality in control of resources should be promoted and women's influence in the community strengthened. Women's capacity building should be addressed during project implementation. These activities will ensure a good foundation for sustainable project development.

Promote herders' groups and determine the function of a herder coordinator

Promotion of herders' groups and of an effective herder coordinator depends on whether there is anything to be accomplished by the groups and the coordinator. If returns from herder investments are used in a community fund, or interactions among herder families must be organised, herders' organisations can be encouraged to take over such activities. Establishment and operation of herders' groups should be explored and functions and capacities of coordinators strengthened.

Develop a feedback system for herders' needs through the first line staff

During the participatory review, herders reported on many of their needs, not all of which were related to the project. Some needs were within the scope of the first line staff, while others were completely unrelated. The review revealed that herders considered first line staff not only technicians, but also sources of information and important media for contact with the outside world. It would be an injustice to herders not to allow them to reflect needs unrelated to the project or to the staff's work. Therefore, a broader system of information collection and feedback should be

established by project management. Separate methods for collecting, sorting, processing, and reporting opinions and suggestions either related or unrelated to the project should be established. New projects or issues requiring further survey may arise from these needs of herders. For example, the idea for an explorative project regarding health problems of rangeland women arose in this manner. An effective information feedback mechanism could be the following.

Herder → Coordinator → Technician → Project office → Oxfam

Establish an efficient system for popularisation of rangeland improvement technical skills

Project sustainability depends upon whether herders, local governments, and technical departments are able to independently accomplish maintenance and development tasks. Sustainability of technical skills depends on three things: herders' initial mastery of the skills, establishment of technical assistance services linked to the local technical department, and funding to support these services. Encouraging governments and herders to invest in rangeland improvement (as 'payback' for development of the skills involved) can guarantee sustainable funding. Therefore, small loans for rangeland improvement should be considered. Also, the technical skill popularisation system should be 'bottom-up', and the technical service group should provide continuous follow-up guidance, guaranteeing continuity of technical skill innovation.