

Mountain summer farming in Basho valley, Northern Pakistan

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Farming practise in Basho

Basho valley situated in Baltistan, a region of the Northern Areas of Pakistan, is found within a semi-arid and rugged mountainous landscape (Umrani *et al.*, 1989). Cultivation is limited, especially in the upper part of the valley which lies within a single-cropping zone about 3.200 m a.s.l.. Livestock products like meat, milk (including processed products like butter and cheese) fibre, hide and manure are essential for the agro-pastoral



Summer farm in Basho Valley

Photo: J. Teurlings

economy. Livestock are also held as insurance and sold if there is special need for cash. Different forms of lease, exchange and co-ownership of livestock provide spread of risk and establish ties between households within Basho and also with people from other valleys. Summer farming is an important and integrated part of the production system, enabling the villagers to utilise the rich high altitude pastures, as seen in many marginal mountain areas worldwide. Parallels are found to the summer farming system practised in mountainous area of Norway hundred years ago.

The household is the basic production unit. The farming practise is labour intensive and is to a large extent organised as co-operative work. Herding of the animals, processing of milk, cultivation of fields, collecting of fuel wood and timber and building houses are all carried out in groups. Men's and women's activities are often segregated and labour-tasks are divided according to gender.

Basho farmers keep local breeds of sheep (*Ovis aries*), goats (*Carpe hircus*), cattle (*Bos taurus*), yak (*Bos grunniens*) and crossbreeds between cattle and yak. The female offsprings from crossing cow and yak (*dzomos*) are healthy, fertile and good milking animals, while the male offsprings (*dzos*) are sterile and used mainly as draft animals for plowing and treshing.

The total number of households in Basho is estimated to about 300 and the number of inhabitants is about 2400 (Zia, 1998). The mean number of animals per household in Basho is estimated to 10 small and 4 large ruminants (Zia, 1998). Keeping large numbers of animals has long traditions and herd size directly reflects the owner's prestige and status in the society. A large part of the herds is unproductive, partly due to few females in the herds but may also indicate low fertility rates. Only half of the cows give birth each year. Probably due to fodder shortage during the winter and unfavourable age composition of the herds. This indicates that the peasants' objectives keeping livestock are complex and not marked oriented.

Pastoral seasonal migration

The majority of the livestock owners are practising a two-step migration to temporary summer settlements at higher altitudes. This seasonal migration to higher pastures is a strategy for utilising the natural resources for multi-species grazing, and related to seasonal changes in the production and quality of forages along a latitudinal gradient.

In Basho, people distinguish between a *broq* which is a grazing area with a temporary used house or shed called *khlas*, and a *sosa* which is a pasture without a *khlas*. Each household normally have their own separate *khlas*. Sometime closely related families and households with little labour forces or few animals share a *khlas*. A *khlas* has a pen to keep the animals gathered and protected against predators during the night.

Most of the villagers have exclusive grazing rights connected to the village and *broq* or may have shared rights together with others villages. These rights are partly performed exclusively. Village's grazing rights to the high pastures are entered in an agreement dating back to 1918 (Steinsholt *et al.*, 1998). Due to ongoing socio-economic processes the use of these rights are changing. Some of the common pastures i.e., pastures with open grazing access are situated at low altitude close to the upper villages while others are alpine pastures at higher altitudes. The lower common *sosas* function as waiting areas for animals from households without exclusive grazing rights while they wait for growth of vegetation in the common alpine pastures.

The lower *broqs* often have multipurpose function, mainly by increasing the area of land under cultivation and for grazing young and weak animals and sheep, goat and lactating cattle in the surrounding pastures. Elevation limits cultivation at the higher *broqs*.

The higher *broqs* are therefore mainly production units making it possible to utilise the more remote higher pastures for milk and meat production. The entire family, including women, children and elders and their grazing animals may move to the lower *broqs*. Village household leaders and village representatives decide when to move and the entire village or even several villages may move at the same day. The date of moving depends on grazing pressure close to the village, vegetation growth at the pastures and when weeding of cultivated fields in the village is finished. Heavy grazing on the fields, health condition of the livestock and heath are also taken into account. By scheduling livestock movements and limiting grazing of the meadows and pastures close to the villages, critical winter grazing land and crops are protected during the growing season. Livestock are not permitted to return until the village representatives decide.

In summer time, while most people stay at the *broqs*, the cultivated fields near the village still require labour input. All fields need to be weeded several times during the growing season and the crops should be watered every day. For this reason large households divide their labour force among two or more altitudinal levels. Smaller households are forced to change location frequently, visiting the village fields only during daytime or to delegate duties to relatives.

As the season progresses forage becomes scarce and forage quality at *sosas* connected to the lower *broqs* decreases. Snowmelting occurring at higher altitudes trigger the growth of fresh vegetation at higher *sosas*. Due to remoteness and low accessibility of these rich pastures the animals are taken to the second level *broqs* in mid summer and early autumn. The time for moving to higher *broqs* depends on available vegetation in the areas, but also on the progress of important work like weeding at the lower *broqs*. At this time the women's work on the lower *broqs* is finished and all women, girls and younger children, accompanied by older men move back to the village.

Only men and boys move to the higher *broqs*. Normally one collective *khlas* is used by all herders and animals belonging to the village or the co-operating households. The men co-operate in all operations; herding the animals, processing the milk and cooking.

Alpine pasture is common grazing areas above pastures connected to the higher *broqs*. The alpine pastures are only available for a short period in late summer/early autumn. The quality of the vegetation is probably high but the access is difficult. This leads to less competition for forage resources. The uppermost alpine pastures are mainly grazed by free-ranging animals.

The autumn retreat towards the village is triggered by low temperatures reducing biomass production and forage quality. On their return they stop at the lower *broqs* where most of the family members stay until crops are harvested, normally in the end of August to mid September. The pastures which not have been grazed heavily during the stay at the higher *broqs* are now grazed again. There are common waiting areas at lower elevation where the animals are held in order to limit grazing of the pastures close to the villages and meadows and harvested fields which are grazed during the winter. If weather is cold and snow prevents grazing the animals have to be stall feed with hay and crop residues.

Herding practise

Healthy and not milk-producing large ruminants are free ranging at higher altitudes through the summer season but are pushed upwards by people and lactating animals moving to the *broqs*. The *dzos* are taken down to the *broqs* or villages for ploughing or other heavy work when needed. Lambs, kids, calves and sick animals are kept in the villages or near the *khlases* while the rest of the herds are taken to the grazing areas early in the morning and brought back to the *broqs* or villages in the afternoon. The main reason for keeping the herds in enclosures at the *khlases* or in the villages at night is, besides having them gathered for the evening and morning milking, to protect them from predation mainly by wolves. A male member of the family herds the animals. Normally relatives and/or neighbours join together in herding cooperations and the herding responsibility is circulated among the households in a fixed order. Small ruminants are herded strictly together and guarded all through the day and may perform vertical movements of up to 1000 m, whereas lactating and weak cattle are being directed to the grazing areas in the morning and gathered and returned for milking in the evening. In the meantime the animals remain unattended and allowed to spread out while grazing.

Small ruminants depend on high quality forage whereas large ruminants are better adapted utilising bulk forages of lower quality. The division of the livestock is therefore a strategy for an effective use of the pastures and to reduce the labour requirements of herding where small ruminants use the pastures at a higher altitude followed by cattle. The dynamic seasonal multi species grazing system is a complex and integrated part of the agro-pastoral system where the households try to optimise the total outcome taking into account pasture characteristics, as well as social and cultural factors.

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