

# PARTICIPATIVE MANAGEMENT AND REHABILITATION OF THE VILLAGE COMMON PASTURES IN THE CENTRAL HIGHLANDS OF TURKEY: IMPORTANCE OF DIAGNOSTIC SURVEYS IN PROJECT PLANNING AND EXECUTION

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## ABSTRACT

Most of the pastures in the central highlands of Turkey have been replaced by cereal production over the last 50 years. Also, the mismanagement of the existing pastures, i.e., early grazing and over stocking of animals, has resulted in severe degradation of pasture species. A study, involving a multidisciplinary approach, was initiated and included botanical and socio-economic surveys, improvement of village-based feed resources, and realistic livestock feeding schemes to put limited feed resources to best use. Results of socio-economic survey studies in selected villages are presented as prerequisite information for initiation of a forage, livestock and range rehabilitation project.

## KEYWORDS

Common pastures, socio-economic surveys, feeding calendar, grazing, supplementary feeding

## INTRODUCTION

In the central highlands (CH) of Turkey, the development of cereal culture displaced commonly grazed pastures - a side effect of which has been increased village common range degradation. Most of the permanent pasture areas in the CH of Turkey have been replaced for cropping purposes over the last 50 years (Bakyr, 1971). In the past, development projects on rangeland in Turkey included seeding and fertilizing conducted as on-farm studies and demonstrations. These demonstrations were initially accepted by villagers with great interest, but efforts ended up in failure because of relatively high cost of establishment and subsequent mismanagement of the pastures (Munzur, 1989). Socio-economic constraints often restrict the sustainable use of common pastures. Because of traditional and excessive use, rangelands never reach their full productive capacity, and farmers are not aware of the gains that could be obtained through adoption of better management techniques. Additionally, from a policy point of view, the lack of ownership of rangeland prevents land users from investing in improvements because there is no guaranteed benefits from the investment. The socio-economic part of study focuses on a descriptive diagnosis of villages and current means of providing feed for animals. Results obtained from the survey studies are presented herein.

## METHODS

Three districts, namely, Polatly, Kalecik and Çubuk of the Ankara Province were selected as the project's pilot area. From these districts, 14 villages were identified as potential locations. The study area was divided into two distinct localities, namely, plateau (Polatly) and mountainous lands (Kalecik and Çubuk). Since it was a diagnostic study, the first focus was the whole village, followed by data collection at the farm-level to identify the use of feeding resources in the pilot area. In the preliminary survey with *Muhtars* (village leaders), the aspects included were the number of households; farmers

using rangeland; range, arable and fallow land area; ratio of income derived from crop and animal production; feed legume, livestock inventory in the villages. The feeding calendars were constructed with the aim of identifying currently-used feed resources for both small and large ruminants. Farmers were questioned about components of livestock diets for each month of the year, based on the method of Goodchild *et al*, 1994.

## RESULTS AND DISCUSSION

There were considerable differences between the plateau and mountainous areas in terms of characteristics determined in *Muhtar* survey (Table 1). There were 141 households in the plateau survey area compared with 47 in the mountains. In the plateau area, about 84% of the total households are livestock owners whose animals mainly depend on common pastures. In the mountain area, 95% of the households depend on rangeland to graze their animals but they have less access to rangeland compared to villagers in the plateau area. The plateau villages have 21.2 ha of arable and 9.0 ha of fallow land per household compared with 8.7 ha arable land and 0.7 ha fallow land per household in the mountain area. The major crops in the plateau are cereals (wheat and barley), and are the mainstay of agriculture grown for home consumption in the mountains. In the mountain area, common vetch was found on 100 ha (2.1 ha/household) while no feed legumes were found in the plateau area. Livestock contributed about three-fourths of the annual income in the mountainous area but only one-third in the plateau area. There were twice as many small ruminants compared to cattle in the plateau and twice as many cattle in the mountains compared to small ruminants.

The small ruminants in the mountainous area were more dependent on rangeland grazing, whereas, much more cereal stubble grazing was found in the plateau area (Fig 1). As supplemental feed, vetch straw was used in the mountains, while barley grain and concentrates were more commonly fed on the plateau. Cattle also depended on rangeland to a larger degree in the mountains than in the plateau areas; however, in the mountains they were supplemented with a more diverse mix of feeds such as hay, vetch straw and grain and smaller amounts of barley grain.

There are interacting constraints that have prevented the implementation of simple programs of range management. Livestock owners want more feed from range, but increased grazing pressure on range results in less and less off-take from day to day. Experiences suggest that the missing link in the past was full participation of village farmers in the work. Also, integration of feed production with livestock production has been lacking. In terms of crop production, the mountain area is more extensively farmed while the plateau is intensively cultivated. The existence of about 45% fallow in the

plateau area provides great scope for improvement by replacing fallow with forage to take grazing pressure off the range. In the mountain area vetch straw and grain contribute significantly to winter-feeding. The current acceptance of forage legumes in this farming system suggests an avenue for delivery of improved forage legume varieties such as the Hungarian vetch (*V. pannonica*) that are autumn sown and more productive than common vetch. It is generally believed that the small ruminant population has declined in the central highlands by 30 to 40% since 1991. This may explain a relatively low grazing pressure of about 4.1 ha/AU in the plateau area. In the mountainous area, the stocking rate is 1.2 ha/AU which is about the same as reported by Büyükburç (1993). The valuable information obtained from the survey studies has enabled us to make comparisons between the two different study areas and to select two representative villages (Kargali and Gölköy) for rehabilitation and management work in two important ecosystems - the mountains and plateaus of central Anatolia in Turkey.

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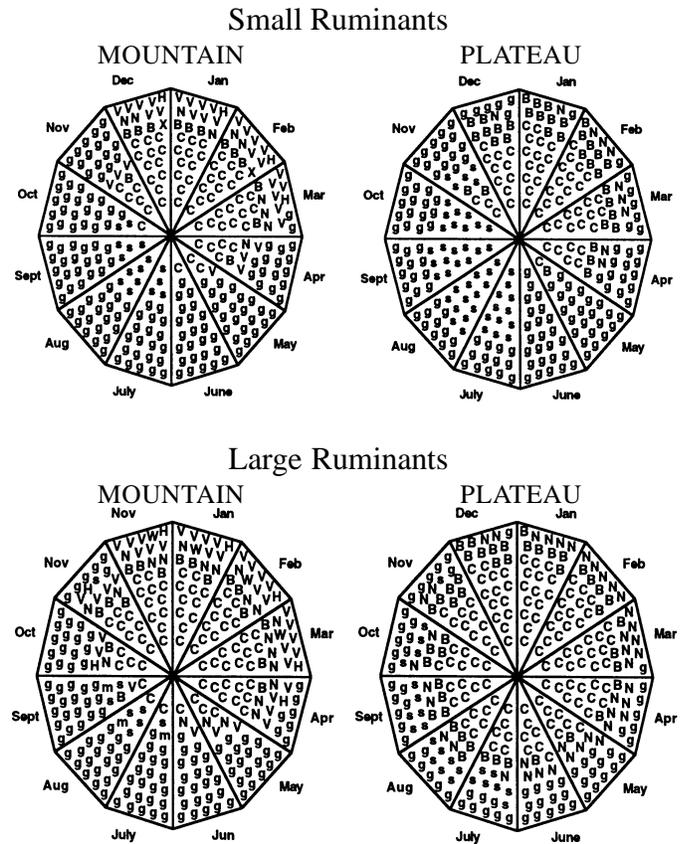
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**Figure 1**

Feeding calendars of large and small ruminants in mountainous and plateau areas of Central Highlands of Turkey. Ingredients of diets as reported by farmers; each symbol represents 4% of the diet in each month. Upper-case symbols denote hand feeding: C, cereal straw; B, barley; N, concentrates; V, vetch straw; W, vetch grain H, meadow hay; X, wheat grain. Lower-case symbols denote that animals were grazing: s, cereal stubble; m, meadow; g, pasture and range grazing.



Characteristics	Plateau Area (Polatlı County)	Mountain Area (Çubuk, Kalecik Counties)
Number of households	141.0	47.0
Households using range	119.0	40.0
Rangeland area (ha/household)	11.0	7.7
Stocking rate (AU <sup>1</sup> /ha)	4.1	1.2
Arable land (ha/household)	21.2	8.6
Fallow (ha/household)	9.0	0.7
Feed legume sown (ha/household)	0.0	2.1
Cattle/Village	225.0	345.0
Sheep/Village	2550.0	1011.0
Goats/Village	93.0	231.0
% Annual income: livestock	35.0	71.4
% Annual income: crops	65.0	28.6

<sup>1</sup> AU; Animal Unit (500 kg live weight)