

Chapter 1

Introduction

RANGELAND DEFINED

In Pakistan, the local term for rangeland is "Chiragah," which is erroneously considered as wasteland and synonymous with desert or arid land. However, in 1973, the National Committee on Range Management defined rangelands as "Uncultivated areas (although sometimes disturbed by unthoughtful cultivation) that support natural or seeded herbaceous or shrubby vegetation with or without trees." The range ecosystem includes physiography, soil, vegetation, water, animal life and associated atmosphere. The above definition is in close agreement with the definition by Stoddart et al. (1975) who described rangelands as those areas of the world which by reason of physical limitations low and erratic precipitation, rough topography, poor drainage or extreme temperatures are unsuited to cultivation and which are a source of forage for free ranging native and domestic animals, as well as a source of wood products, water and wildlife.

Management of rangelands implies the application of ecological principles. Stoddart et al. (1975) defined range management as the science and art of optimizing the return from rangelands through the manipulation of range ecosystems. The American Society for Range Management (1964) defined range management as the art and science of planning and directing range use to obtain sustained maximum animal production consistent with perpetuation of the natural resources. Viewed within the ecosystem framework, range management has been defined as management of a renewable natural resource composed of one or more range ecosystems for the optimum sustained yield by the combination of goods and services (Vallen-

tine, 1971). In the past, the rangelands in Pakistan have primarily been managed for livestock production. However, the multiple use concept of rangelands also includes the protection of watersheds which drain into a number of big dams like Tarbela and Mangla, and providing of wildlife with a vast complex of natural habitats. These concepts have been recognized by researchers, planners and environmentalists.

SCOPE AND IMPORTANCE

The major land uses in the country are agriculture, forestry and livestock production. Of the cultivated area, about five million hectare (24 per cent) is barani (rainfed) while 16 m ha (76 per cent) is irrigated. About 60 percent of the total area of the country is rangelands. This area partly supports 93.5 million head of livestock.

Forests occur over 4.5 percent of the country, which produce only about 0.3 million cubic metres timber and about 0.4 million cubic metres of firewood. The estimated annual demand is 1.9 million cubic metres of firewood. The shortage is met from farmlands and by imports of wood and wood products worth about Rs. 1.7 billion per annum (Pakistan Economic Survey, 1986-87).

Forestry is the major land use in northern Pakistan followed by crop cultivation; livestock grazing is prevalent in the forest areas. Baluchistan, which covers about 40 percent area of the country, primarily depends on livestock production from its rangelands. In the provinces of Punjab and Sind livestock is also an important source of income in the arid and barani areas. In the arid rangelands of Baluchistan, Thal, Cholistan, D.G. Khan and Tharparkar, the main occupation is livestock production, which is their only source of income. At present, the sheep and goats obtain about 60 per cent of their feed from rangelands (Zaffar Uddin, 1977) while the horses, donkeys and camels receive about half of their feed from rangelands. In Baluchistan, 90 percent of the required livestock feed is provided by range (FAO, 1983).

During the past 40 years, several range development/improvement projects have been implemented in various ecological zones of Pakistan. Range research conducted by National Forage and Pasture Programme and Provincial Forest Departments has yielded useful information. In this study, an attempt has been made to synthesize the available technology to develop comprehensive plans to manage and efficiently utilize vast national rangeland resources.

In the Hindu Kush - Himalayan region, livestock grazing is an important land use and the shortage of livestock feed and fuelwood are the major constraints. Forage and pasture technology in the region is at varying stages of development. Pakistan is blessed with a variety of range conditions, so successful rangeland management practices in Pakistan could be tested and utilized gainfully under similar ecological conditions in the countries of the region.

CONSTRAINTS AND PROBLEMS OF RANGELANDS

Most of the rangelands in Pakistan are overused due to certain practices, customs and problems peculiar to the Hindu Kush - Himalayan region. By and large, the rangelands are common tribal or village property not conducive to the regulation of proper grazing. The nomadic grazing also results in over-exploitation of the resource. Stockmen make little effort to improve their rangelands.

Khalil (1960) and Said (1961) also studied constraints of range and forest lands and identified the following biophysical factors as causes of the deterioration of rangelands in Pakistan.

Number Versus Quality: In the rural areas, the status of a man is judged by the number of livestock he owns, irrespective of their quality. This has led to the retention of useless unproductive, uneconomic animals, which adds to the grazing pressure on rangelands.

Land Tenure System: Most of the rangelands are common tribal or village property. Everybody in that group is allowed unrestricted grazing. But nobody is responsible for conservation, resulting in utter ruination of the area.

Migratory Herds: Another important factor contributing to over-grazing of rangelands in the western region is the seasonal influx of pawindahs (nomads) along with their livestock from Afghanistan. These nomads come to Pakistan at the start of winter and feed their animals in Pakistan ranges throughout the season. It increases the grazing pressure on rangelands which are already heavily grazed.

Arid Climatic Pattern: The major part of Pakistan lies in the arid and semi-arid zone, characterized by low precipitation, extreme temperature and low humidity. These conditions are very difficult for plant life. There are frequent droughts and the forage capacity fluctuates greatly with precipitation. Under such circumstances, stringent efforts are required to prevent overgrazing; as once vegetation is lost, it is difficult to restore.

Scarcity of Water: This is another limiting factor in the proper utilization of range resources. Many areas are not grazed because no facilities exist for stock watering.

Underground water supplies are limited and flooding has resulted in the destruction of low lands due to deposition of sterile sand and gravel on otherwise fertile fields. Wind erosion has also played havoc with this area by spreading sterile sand on good agricultural land and shifting sand dunes choke canals and lines of communication.

Some of the major constraints identified by Sub-Committee on Range Management are listed below (Government of Pakistan, 1983):-

- Absence of an independent range management agency vested with

authority, responsibility and accountability to undertake a range management programme.

- Lack of awareness, appreciation and encouragement on the part of senior administrators has discouraged those who have earned their post-graduate degrees in range management from advanced countries. The range management cadre has never been allowed to grow. This situation has forced most of the highly trained scientists to leave the country. Those still struggling within the country have little opportunity.
- In any range management/development programme, effective cooperation and participation of people is essential. Such participation by stockmen has been almost completely absent in all of the range management projects implemented so far.
- The funds available for range management/improvement are generally very meager and their impact is minimized by spreading them over large areas.
- Although livestock is the chief product of rangelands, very little attention has been paid to range livestock management.
- Range management research or development programmes launched and executed so far lacked necessary support, such as adequate resource analysis and surveys.
- Since range management activities were carried out by the Forest Department, it continued to be of secondary importance to forest development activities. Being both arduous and difficult, range management assignments were given to those outside the field of specialization, thus preventing the development of a cadre of professionals duly motivated and devoted.
- Exceptionally difficult and unfavourable working conditions and the absence of suitable incentives have dissuaded members of the Forest Service from accepting range management jobs in the Forest Department.
- Planning and development authorities generally give low priority to range management/development projects as these do not measure up to criteria involving direct economic returns.

Because of limited irrigation resources, the vast arid and semi arid areas of the country cannot be brought under crop cultivation. However, these areas have high potential for livestock grazing and dry afforestation. The recent prolonged drought prevailing in the country further warrants the necessity of developing a comprehensive master plan for the management of rangelands in Pakistan.