

## CHAPTER 9

### PRINCIPLES OF RANGE MANAGEMENT - VII

resource evaluation  
& planned management

#### IMPORTANCE

Managing rangelands is a long time business activity and, therefore, requires planning. Planning itself requires evaluation and documentation of current and potential range resources. The accuracy of the estimates about the worth of various range resources will determine the quality of planning, will render it increasingly pragmatic and will ensure success. The evaluation of range resources is an important professional cum time consuming assignment and can be best performed by a team of specialists including a Meteorologist, a Soil Scientist, a Hydrologist, a Range Specialist, an Animal Scientist, an Economist and a Social Scientist.

It is a wise policy to spend some time and money and obtain the professional advice of above referred experts especially of a Soil Surveyor, a Range Specialist and an Economist before making any major investment in Range Management. The above referred experts should visit the area thoroughly, take soil, water and vegetation samples for laboratory analysis and make suitable recommendations.

#### OBJECTIVES AND GENERAL PROCEDURE.

The ultimate end result of evaluation is the preparation of a series of detailed maps about;

1. various parameters of local climate; especially type, quantity and distribution of precipitation,
2. land capability classification, precisely defining limitations, prescribing precautions and treatments,
3. sources of on-surface and underground water, quality and quantity of available water, possibilities of water spreading,
4. type, density, condition and palatability of range vegetation, estimated current annual forage production, possibilities of cultivated forage production,
5. types of suitable livestock species and breeds,
6. available present and future markets for forage and livestock, cost benefit ratios of various combinations of grasses and livestock.

Range vegetation should be surveyed and studied more intensively and carefully than other range resources because of following two reasons.

1. Vegetation itself is one of the two major objective of Range Management; the other being range livestock.
2. Vegetation is best indicator of other resources. Plants stay at the site all the time throughout the year and these witness all kinds of events and pressures and are exposed to all favourable as well unfavourable features. Condition of vegetation is, therefore, a fool proof indicator of average cumulative impact of all resources.

#### RANGE VEGETATION EVALUATION.

As for as estimation of carrying capacity of the range is concerned, it is suggested that at least 1-5% of total area be sampled at random for reliable and replicable results. Vegetation should be sampled twice or thrice a year to account for seasonal variations in the vegetation form and to account for repeated resprouting.

Pakistan's range vegetation is made of two major components. First one is grass/herb cover and the second is shrub/tree cover. Forage production by grasses and herbs is estimated by sampling range area with a reasonable number of randomly placed meter square quadrats leading to a sampled area of 1%-5% of total area and clipping grazeable vegetation at height of 3-4 cm above ground. Forage production by shrubs and trees is estimated by randomly selecting and clipping accessible foliage of 1%-5% respectively sample shrubs and trees from various size classes. The above mentioned both estimates are added to get a total estimate of forage production in oven dry weight (kg) per acre per annum. Estimated available forage production is taken as 40% to 60% of total production. This variation in percentage of available production depends on condition of vegetation. If the condition is good to excellent, 60%-70% may be taken as available but if the condition is poor to very poor 40% or even less is taken as available. For medium condition 50% is taken available. The oven dried available forage production estimates (kg) for the whole range area is divided by 3300 to get number of animal units (cows) that can be sustained on the area throughout the year and for ever. These animal units (cows) can be easily converted into equivalent number of sheep or goats by multiplying the A.U. figure with 5 and 3.3 respectively.

In case present vegetation cover in a managed range is poor due to biotic pressures (which of course is controllable in range), a rough idea of the true picture of natural vegetation can be had from studying vegetation of nearby protected pockets such as WAPDA enclosure, Sui Gas enclosure, Cantonment enclosure, Botanical Garden, Forest Department enclosure, Railway enclosure, T and T enclosure or any private enclosure. The vegetation of a nearby managed rangeland can be good indicator of present and potential vegetation cover of the site in question.

Subsidies, loans, grants, technical advice available from various governmental and non-governmental agencies and individuals should be noted. Lines of communications and means of transport should also be mentioned.

#### RANGE MANAGEMENT MAP.

The salient information points contained in all above referred maps are finally transferred to one map, called Range Management Map. All important and frequently required information is put together in this map. As a net result of all studies and maps, the range area is grouped into 4 to 6 or more blocks having more or less uniform vegetation and having more or less equal forage production. Area suitable for water spreading (and for cultivated supplemental forage production) is also shown. Available drinking water points (and new ones to be developed) are also indicated in this map. Location of present and projected stock water points, tree shelterbelts, sheltered and open animal enclosures at the head quarter, feed and hay storage sheds should all be marked on the map.

#### RANGE MANAGEMENT PLAN.

All above information pertaining to the evaluation of range resources is used in developing a management plan for the range area in question. A management plan is a concise written statement of known range resources, objectives, a time table for carrying out appropriate field works and economic evaluation of all above referred activities. A management plan generally consists of following parts.

#### **PART I. Resource evaluation.**

##### **1. Introduction**

2. Brief history of the area
3. Brief description of resources with appropriate maps.
4. Potential resources.
5. Important limitations.
6. General precautions.
7. Range Management map.

**PART II. Objective of Management.**

**PART III. Plan of work.**

1. Time table of routine range management operations to be carried out.
2. Time table of proposed developmental range operations.
3. Grazing system to be adopted.
4. Range vegetation species to be reseeded artificially along with programme of their reseeded.
5. Different livestock species to be reared and their number.
6. Programme of animal management operations.
7. Marketing programme for plants and animals (products).

**PART IV. Financial statement.**

1. Details of expenditure.
2. Details of income.

Necessary flexibility must be provided in schedule of works in Part III of management plan. The plan should be taken as a general guideline and it should allow the manager plenty of room for elbow movement as for as routine operations are concerned. It should, however, at the same time, strongly discourage the manager from making abrupt and major policy changes without undertaking necessary spadework and without discussing the issue at proper forum and without the knowledge and approval of the seniors. Successful Range Management is possible only if its Management Plan is followed persistently and intelligently in letter and spirit.

### TEST QUESTIONS

1. What is the importance of range resource evaluation and planned management?
2. What are the ultimate end-results of resource evaluation ?
3. Give detailed procedure of evaluating "Carrying Capacity" of a range.
4. What is meant by a "Range Management Map" ? What is its significance.
5. Give outlines of a "Range Management Plan".