

## CHAPTER 11

### RANGELANDS OF PAKISTAN - II

— Sindh —

There are three extensive range areas which are as follows.

- A. Registan (Nara) = 3.8 mh approximately. 910
- B. Thar-(Tharparkar) = 4.5 mh " 125 — 400
- C. Kohistan = 1.2 mh " 150 — 200

In addition, riverain belt along Indus and Hub rivers is also present which may be considered as an extension of Kohistan. Thar and Kohistan are medium to high potential range areas whereas Registan (Nara) is a low potential area. The above areas will now be briefly described one by one.

#### A. Registan Range Area

It is southern extension of Cholistan desert of Punjab and western extension of Rajasthan desert of India and includes areas from the districts of Khairpur and Sukkur. Climate of the area is extreme. Average annual precipitation is 90 mm which is highly variable and erratic. Underground water is brackish. The environment is hostile to plant growth. The average carrying capacity of properly managed and artificially reseeded areas is considered to be 40 ha per animal unit per annum.

The following palatable grass species are common in the area:

- Aristida depressa* Common, grass of fair forage value, grazed by sheep and goats.  
(Lumb)
- Cenchrus ciliaris* Rare, very palatable grass, grazed by all.  
(Dhaman)
- Cymbopogon jwarancusa* Common, grass of poor forage value, grazed by sheep.  
(Khawai)
- Dicanthium annulatum* Not very common, grass of good palatability, grazed by all.  
(Muragha)
- Eleusine compressa* Common, fairly palatable grass, eaten by all kinds of livestock especially by sheep.  
(Chhimber)
- Elionurus hirsutus* Common, palatable, grazed by all kinds of livestock.  
(Karera, Gorkha)
- Panicum antidotale* Rare, palatable grass, grazed by all.  
(Garam, Malai)

Following browse species are also found:

*Calligonum polygonoides* Common, moderately palatable browsed by camels and goats.  
(Phog)

*Haloxylon salicornicum* Common, forage value is poor, contains a lot of salts, browsed by camels only.  
(Lana)

*Prosopis cineraria* Common, very high forage value browsed by camels and goats. Also provides timber and firewood.  
(Jand)

*Salsola foetida* Common, palatability, grazed by camels.  
(Lani)

*Tamarix dioica* Grazed by goats, camels.  
(Pilchi)

*Zizyphus jujuba* Grazed by goats, camels.  
(Ber)

*Zizyphus nummularia* Grazed by goats, camels.  
(Mallah)

#### Major Recommended Operations

1. Grazing according to carrying capacity.
  2. Mixing sand in clayey flat by their ploughing across summer winds.
  3. Planned Grazing: Planned but simple grazing programme developed in due consideration of prevailing semi nomadic and nomadic patterns.
  4. Providing limited irrigation in selected favourable sites wherever possible.
  5. Planting of fodder trees and trees: Fodder use of existing trees be regulated and new ones planted.
  6. Irrigated fodder: Allotting irrigated land on western fringe of the desert to Registanis who would bring at least 70 per cent of their land under fodder crops. The fodder production allotment to progressive farmers who could develop underground water resources.
  7. Opening up of forest plantations, especially during period of emergencies.
  8. Stock Water Development. such as shallow-wells, ponds, ponds with adjacent shallow-wells, wind-mills, etc. It is most important of all the operations.
  9. Livestock kinds: Mixed livestock herd is desirable.
  10. Livestock Management.
  11. Livestock Marketing.
- Re-seeding of forage grasses on selected high potential sites.

#### B. Thar Range Area

It includes areas from districts of Hyderabad, Tharparker, Sanghar and Mirpur Khas. Ecologically, the tract can be categorized as tropical thorn desert. The Thar desert is subjected to heavy soil erosion partly due

to dry land cultivation and partly due to overgrazing. In the northwestern and southwestern dunes wind-blown sand is a natural phenomenon. The landforms and soils of Thar are similar to that of Cholistan.

Climate is from arid in the north to semi-arid in the south. Summers are hot (45°C) and winters are mild (5°C). Humidity is fairly high in the marine zone. Rain-fall is scanty and erratic and most is received during Monsoon season. Average annual precipitation varies from 125 mm in north to 400 mm in the south. There are poor rains once after every three years and complete drought once after every ten years. Surface run off is absent since all rain water is absorbed by the sand. Perched or trapped water is somewhat brackish. The environment in most places is favourable for range vegetation.

Livestock production is the major land use in the region. Dryland farming is also practised, wherever, rainfall is adequate. Millet, sorghum and castor crops are cultivated in the dune valleys. Forestry is limited to irrigated and riverain tracts. Small villages are located, wherever, watering ponds are available. The ground water is 200-300 m deep and brackish. Sweet water is, however, found in Nagarparkar, Mithi and Diplo near Run of Kutch. Rangelands in Tharparkar desert are in poor to fair condition. Desirable grasses have disappeared. However, shrubs still produce good browse. During winter, the desert does not support grazing, and most of the livestock migrate to irrigated areas. The average carrying capacity of properly managed areas is considered to be about 7-10 ha per animal unit per annum.

The following palatable grasses are commonly found in various parts of this area.

<i>Aeluropus villosus</i>	<i>Eleusine flagellifera</i> (Chimber)
<i>Aristida depressa</i> (Lumb)	<i>Elionurus hirsutus</i> (Karera, Gorkha grass)
<i>Cenchrus ciliaris</i> (Dhaman)	<i>Panicum antidotale</i> (Malai, Garam)
<i>Desmostachya bipinnat</i> (Dab)	<i>Sporobolus spp.</i> (Khiv, Khui)

Following browse species are also common:

<i>Acacia senegal</i> (Kikar)	<i>Prosopis cineraria</i> (Jandi)
<i>Calligonum polygonoides</i> (Phog)	<i>Tecoma undulata</i> (Lahura)
<i>Euphorbia caducifolia</i> (Thor)	<i>Zizyphus nummularia</i> (Ber, Mallah)

### Major Recommended Operations

1. Grazing at suitable stocking rate.
2. Planned Grazing.
3. Artificial reseeding of grasses on selected favourable sites.
4. Water Conservation on selected favourable sites.
5. Hay-making.
6. Croplands for fodder production (alfalfa, Bajra x Napier hybrid).
7. Forest lands to be opened for grazing.
8. Planting of fodder trees, i.e., Prosopis, Salvadora, Acacia, Zizyphus, Tecoma on selected favourable sites.
9. Stock-water Development.
10. Livestock kinds, i.e., mixed herds.
11. Livestock Management.
12. Livestock Marketing.

### C. Kohistan Range Area

It includes areas from districts Karachi, Thatta, Dadu, Larkana, Jacobabad and part of Lasbela District. It is in the form of a belt between Kohistan hills and Indus river. Ecologically, the tract can be categorized as a sub-tropical, arid, submountain zone. Extreme temperatures up to 45°C in summer and 3°C in winter are frequently met. Strong winds blow from the southwest to northeast during summer at 60 km/hour. Relative humidity is fairly high and exceeds 80 percent during the monsoon. Due to severe wind erosion, the top soil is thin. Most of the rocks contain limestone. Areas in the valley contain silt to loamy silt with a thick layer of sand.

Climate varies from semi-arid in south and arid in the north. Average annual precipitation is from 150 mm in north to 200 mm in south. Rainfall is erratic and unevenly distributed. Under-ground water is variable from sweet to brackish. Land in Kohistan is used for livestock grazing, dryland farming and wildlife habitat. Dryland farming is done wherever adequate perched water is available. Small dams have also been constructed at a few sites. Plains, depressions and valley bottoms are cultivated with millets, sorghum and castor even when rainfall is moderate. The vegetation of Kohistan is dictated by topography, soil type and relief. Hills contain open bushlands whereas foot-slopes have thickets of shrubs and trees. The plains are usually devoid of natural vegetation as a result of dryland farming. The average carrying capacity of well-managed and adequately watered range areas is considered to be equivalent to 5 - 10 ha per animal unit per annum.

The following palatable grass species are commonly found in this area:

<i>Aristida depressa</i> (Lumb)	Common, poorly palatable grass.
<i>Cenchrus ciliaris</i> (Dhaman)	Common, highly palatable, readily grazed by sheep, cattle, goats and camels etc.

<i>Chrysopogon aucheri</i> (Saba)	Common, highly palatable grass.
<i>Cymbopogon jwarancusa</i> (Khawi)	Common, poorly palatable grass.
<i>Digitaria bicornis</i> (Phorion)	Common, poorly palatable grass.
<i>Eleusine flagellifera</i> (Chhimber)	Common, poorly palatable grass.
<i>Eragrostis spp.</i>	Common, poorly palatable grass.
<i>Saccharum spontaneum</i> (Kai)	Common, poorly palatable grass.
<i>Sporobolus marginatus</i> (Khiv)	Common, highly palatable, readily grazed by sheep, cattle, goats and camels etc.

Following browse species are also common:

<i>Acacia nilotica</i> (Babul)	Common, highly palatable browsed by sheep, goats and camels.
<i>Acacia senegal</i> (Kikar)	Common, browsed by goats and camels.
<i>Capparis aphylla</i> (Karir, Kari)	Common, browsed by sheep, goats and camels.
<i>Euphorbia caducifolia</i> (Thor)	Common, browsed by sheep, goats and camels.
<i>Prosopis cineraria</i> (Jand)	Common, highly palatable browsed by sheep, goats and camels.
<i>Salvadora oleoides</i> (Van)	Common, browsed by sheep, goats and camels.
<i>Tecoma undulata</i> (Lahura)	Common, browsed by sheep, goats and camels.

#### Major Recommended Operations

1. Soil and water Conservation Operations on selected favourable sites.
2. Grazing at suitable stocking rate.
3. Controlled or planned grazing: elimination of grazing on erodible areas and its replacement with grass-cutting.

4. Artificial Reseeding of grasses and planting of forage shrubs and trees on selected favourable sites.
5. Establishment of rainfed or irrigated perennial pastures on suitable locations to overcome problems of range seasonality.
6. Encouragement of farmers to grow fodder/grain crops (shaftal, sorghum, millets, etc.) for supplementing range forage production.
7. Planting of fodder trees/shrubs to provide high quality nutrition forage and to overcome range seasonality.
8. Development of water points.
9. Keeping cattle, sheep and goat together as mixed herd or separate herds.
10. Livestock Management comprising of breeding, selection, management and timely off take.
11. Organization of marketing for livestock and their products.
12. Water spreading as in Rakh Miran, Dera Ismail Khan.

### TEST QUESTIONS

1. Enlist major rangelands of Sindh alongwith their areas. Suggest areas that are relatively better than others.
2. Describe characteristic features of Nara range areas. How do these areas compare with Cholistan Desert Areas ?
3. How will one improve Tharparkar Range Areas ?
4. Write a detailed note on Kohistan Range Areas.
5. Enlist essential pre-requisites of range improvement that are common for all range areas of Sindh.