

CHAPTER 12

RANGELANDS OF PAKISTAN - III — N.W.F.P. —

There are three range areas in North-Western Frontier Province which are as follows:

- A. Alpine and Moist temperate = 2.3 mh approx.
(Northern hills).
- B. Dry Temperate (south-western hills) = 2.3 mh approx.
- C. Sub-tropical (south-eastern plateau) = 1.1 mh approx.

100 — 630 mm
650 mm — 1500 mm in Temp
180 — 720 mm
230 — 350

The rangelands of NWFP are medium to high potential areas. Moist temperate grass lands are particularly highly productive. These areas will now be described briefly one by one.

A. Alpine and Moist Temperate Pastures

These include areas from districts of Hazara, Swat, Dir, Chitral, Malakand and from districts of Gilgit, Diamar, Chilas and Skardu Northern Area.

In some places (Alpine) climate is extremely cold and dry during winter: in other places (Temperate) it is less severely/moderately cool and moist. Average annual precipitation varies from 100 to 630 mm in Alpine zone and from 650 mm to 1500 mm in moist temperate zone. The environment here is very favourable for grass growth. Areas lying above an altitude of about 3000 m and below the zone of perpetual snow constitute alpine pastures. These are characterised by short, cool growing seasons and long, cold winters.

The vegetation is mostly dominated by slow growing perennial, herbaceous and shrubby vascular plants and extensive mats of cryptogams (mosses, lichens, etc). Much of the landscape of the alpine pastures is rugged and broken with rocky, snow-capped peaks, spectacular cliffs and slopes. However, there are also many large areas, gently rolling to almost flat topography. The forage production from various range types in alpine and sub-alpine zones is as follows:

<u>Range Types</u>	<u>Forage Yield (DM kg/ha)</u>
Meadows	1240
Shrub meadows	2660
Shrub	2400
Kail/fir forest range	1270
Birch range	Not sampled
Shrub grassland	2300
Grasslands	2300

The main limiting factor is low temperature during many winter months of the year. Average forage production recorded was 700 kg/ha. Alpine meadows contain luxuriant ground flora. These alpine meadows have the greatest value as grazing lands. Trees are conspicuous by their absence in this type. Vegetation consist of perennial forbs, and grasses. The average carrying capacity of a well managed area is considered to be about 5 ha per animal unit per annum. Alpine forests are subjected to heavy grazing during summer. No planned grazing system is followed. Crop production, livestock rearing and forestry are major land uses. Maize, rice, wheat and barley are important cereal crops.

The following palatable grasses and annuals are common in this area:

<i>Agropyron spp.</i>	<i>Festuca spp.</i>
<i>Agrostis spp.</i>	<i>Poa spp.</i>
<i>Aristida spp.</i>	<i>Pennisetum orientale</i>
<i>Bromus spp.</i>	<i>Potentilla spp.</i>
<i>Chrysopogon spp.</i>	<i>Annuals of family compositeae</i>
<i>Cymbopogon spp.</i>	<i>and Ranunculaceae.</i>

Following woody species having some forage value are also common.

<i>Abies pindrow.</i>	<i>Fraxinus spp.</i>
<i>Acer spp.</i>	<i>Indigofera spp.</i>
<i>Aesculus spp.</i>	<i>Juniperus spp.</i>
<i>Alnus spp.</i>	<i>Pinus wallichiana.</i>
<i>Artemisia maritima.</i>	<i>Prunus spp.</i>
<i>Berberis spp.</i>	<i>Quercus spp.</i>
<i>Betula spp.</i>	<i>Rhododendron spp.</i>
<i>Cedrus deodara.</i>	<i>Rosa spp.</i>
<i>Corylus spp.</i>	<i>Rubus spp.</i>
<i>Ephedra spp.</i>	<i>Ulmus spp.</i>



Major recommend Operations

1. Soil and water Conservation practices on selected favourable sites.
2. Artificial reseeding of grasses and planting of forage shrubs and trees on selected favourable sites.
3. Grazing at suitable stocking rate.
4. Planned Grazing including Hay-Making.
5. Integration of Forestry with Grazing.
6. Livestock Management practices (supplementary feed, shelter, hygiene, preventive medicine).
7. Keeping mixed herds.
8. Development of communications and marketing of livestock and their products.

B. Dry-Temperate Range Areas

These include hill areas from districts of Dera Ismail Khan, Kohat, Bannu, and south-western tribal territories. The climate is moderately cool and rather dry. Average annual precipitation varies from 180 mm to 720 mm. Moisture deficiency and low temperature are two main problems in the way of vigorous plant growth. The average annual carrying capacity of well managed areas is considered to be 7-10 ha per animal unit per annum.

Following palatable grass species are commonly found in this area:

<i>Andropogon spp.</i>	<i>Pennisetum orientale.</i>
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Cymbopogon spp.
Chrysopogon spp.
Dicanthium annulatum

Stipa pennata.
Thymus serpyllum

Following browse species are also common:

Acer.
Artemisia maritima.

Fraxinus.
Quercus ilex.



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 erodable areas and its replacement with grass-cutting.
4. Artificial reseeding of grasses and planting forage shrubs and trees on selected favourable sites.
5. Establishment of rainfed or irrigated perennial pastures on selected areas to overcome problems of range seasonality.
6. Encouragement of farmers to grow fodder/ grain crops (shaftal, sorghums, millets, etc.).
7. Planting of fodder trees to produce high quality nutrititious 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 operations (supplementary feed, shelter, culling, hygiene preventive medicine).
11. Organization of marketing for livestock and their products.

C. Sub-tropical Range Areas

These include the valleys of Peshawar, Mardan and upper Indus plains of Dera Ismail Khan districts. The average annual precipitation varies from 230 mm to 350 mm. The environment is not favourable for plant growth during most part of the year, mainly due to moisture deficiency. Average carrying capacity under good management is estimated to be about 3-5 ha per animal unit per annum.

Cynodon dactylon. Readily grazed by buffaloes, sheep.
 (Khabbal).

Eleusine flagellifera Grazed by sheep.
 (Chhimber).

Elionurus hirsutus Readily grazed by all animals.
 (Karera, Gorkha)

Panicum antidotale Readily grazed by all animals.
 (Malai).

Saccharum spontaneum. Grazed by buffaloes, sheep.
(Kahi)

Following browse species are also common:

Acacia nilotica Readily browsed by goats, camels.
(Kikar)

Copparis aphylla Browsed by goats, camels.
(Karir)

Prosopis cineraria Readily browsed by goats, camels.
(Jand)

Salvadora oleoides. Browsed by goats, camels.
(Van)

Tamarix dioica Browsed by goats, camels.
(Pilchi)

Zizyphus jujuba Readily browsed by goats, camels.
(Ber)

Zizyphus nummularia Readily browsed by goats, camels.
(Mallah)



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 erodable 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 to overcome problems of range seasonality.
6. Encouragement of farmers to grow fodder/grain crops (shaftal, sorghums, millets, etc.).
7. Planting of fodder trees to produce high quality nutrititious 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 operations (supplementary feed, shelter, culling, hygiene, preventive medicine.
11. Organization of marketing for livestock and their products.
12. Water spreading in sub-tropical zone (Dera Ismail Khan) with reseedling of *Sporobolus helvolus*.

TEST QUESTIONS

1. Enlist major rangelands of NWFP alongwith their areas. Indicate high potential areas.
2. Describe characteristic features of Moist Temperate Ranges. Enlist 3 most important range improvement operations.
3. How will one go about improving Dry Temperate Range Areas ?
4. How do Sub-tropical Range Areas of NWFP compare with Dera Ghazi Khan Range Areas of Punjab ? Name 3 most important range improvement operations.