

RANGE & PASTURE IMPROVEMENT PROJECT, MASLAKH (QUETTA-KALAT CIRCLE)

RESULT OF FOUR YEARS PROTECTION AND OTHER RANGE IMPROVEMENT PRACTICES

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Introduction.—In Quetta-Kalat region of West Pakistan hardly 2% of the total land area is under cultivation. Due to the limiting factors of low rainfall and scanty ground water supply the economy of this region has been and will continue to be primarily pastoral. Improvements of forage supply for livestock from the grazing lands is an obvious necessity. A range and pasture improvement scheme has been started at Maslakh near Quetta as a pilot project to evolve techniques of range and pasture improvement in this region. The project extends over an area of 115,040 acres.

The scheme was started in the middle of 1954 and so far in addition to complete protection from grazing, various range improvement works have been carried out, e.g., check damming, gully plugging, pit digging, water spreading and development of water for livestock.

Preliminary studies on the ecological changes in vegetation are being regularly carried out. For the proper appreciation of the results achieved it is necessary to give a brief description of the past history and other factors connected with the range.

Past History.—Before reservation in 1951, the local tribesmen used to graze their animals and also used to lease out this area for grazing of Afghan nomadic graziers at nominal income. It is estimated that the upper portions of this land were used for grazing 10,000 animals in summer and in winter the lower portions were used by about 20,000 animals of local people and Afghan graziers. With this heavy intensity of grazing it is natural that the area would be greatly eroded and devoid of natural cover of grasses and bushes. The topography is not very rugged, although the entire area is strewn with a net work of dry stream beds originating from the western slopes of Maslakh range. These streams drain in a general south-east north-west direction and join in the main stream in the centre of the valley. The general direction of the flow of the main stream is north-east to south-west.

Climate.—Average rainfall of 40 years is said to be 8.8 inches (the figures are not very authentic). The rain-fall data is, however, being maintained by the Forest Department since January, 1956. Most of the rain is received in winter season—summer rains are erratic. In the summer the maximum day temperature goes up to 100°F but nights are relatively cool. Winter temperatures have maxima of about 55° and minima of 15° F.

Geology.—Outcrops of the Khojak sand stones and shales exist in the Maslakh range. They dip west-ward and are overlain by Siwalik red clays which are saturated

with salt. These clays are covered with a thin mantle of recent and sub-recent alluvium, sand pebbles and boulders.

Silty, red to buff clays of Siwalik period occupy the valley, these clays are well saturated with white salts and, therefore, are bad sources for supply of good quality water. Whatever pockets of water are encountered in these clays are unfit for human and animal consumption, being highly saline.

Soil is shallow, depth varying from 1 to 18 inches on a gravel layer, which is loose. Gravel of medium size are found inter-mixed with the soil material. Texture of the soil is predominantly loamy fine sand with very little organic matter. Water holding capacity of the soil is therefore low.

Water Supply.—The two flanks of the valley are composed of Khojak shales (Oligocene) which have very often proved to have fairly good quality water. Water encountered in the lower parts of the valley is extremely bitter as compared to that found in the zones further away from the axis of the valley. Water level in wells varies from 35 to 50 feet. There are a few natural water springs in the hills.

Procedure and Method.—A general reconnaissance survey of the area was carried out. This gave a general idea about the species found in the area. The density and composition of the plants and herbage yield of the area as a whole was calculated by ocular estimate—by plot method. Twenty sample plots 3.1 ft. square in 1954 and 200 plots in 1958 were taken at random. Vegetation growing in each plot was recorded and total density of the vegetation and present composition of each species was then studied by ocular reconnaissance.

The green grass or current season's growth was clipped air dried and then weighed in grams per plot. This air dry weight of green grass in grams per plot was multiplied by 10 to convert to pounds per acre.

Results.—Out of the three different vegetation types found in Maslakh the results of *Haloxylon/Poa* type are given here since this type covers about 80% of the total area. As a result of 4 years protection it has been found that *Haloxylon* the undesirable species which is neither palatable nor has any grazing value decreased considerably, whereas the desirable forage increased simultaneously. Even among the desirables, the annuals decreased from 97% to 47.06% whereas perennials increased from 3% to 52.94% as per details given below :—

SPECIES	PERENNIAL OR ANNUAL	PLANT COMPOSITION IN % IN <i>HALOXYLON/POA</i> TYPE.	
		1954	1958
Grasses.			
1. <i>Aristida plumosa</i>	P	—	0.80
2. Annual bromes			
(<i>Bro. danthomae</i>) ..	A	28.25	5.95
(<i>Bro. tectorum</i>) ..		25.75	9.82
3. <i>Eleusine falgellifera</i> ..	P	—	0.62
4. <i>Cymbopogon schoenathus</i> ..	P	—	0.01
5. <i>Hordeum murinum</i> ..	A	—	1.44
6. <i>Poa bulbosa</i> ..	P	—	1.05
7. <i>Poa siniaca</i> ..	P	2.50	41.35
8. Other annual grasses ..	A	—	3.89
9. <i>Carex physodes</i> (Grass like)	—	0.50	9.11
		57.00	74.04
Forbs & browse.			
10. <i>Aelorupus laevis</i> ..	A		1.64
11. <i>Astrgalus</i> spp.	A		1.40
12. <i>Eremopyron distans</i> ..	A		2.65
13. <i>Koelpinia linearis</i> ..	A	43.00	9.70
14. <i>Zizyphora tenuior</i> ..	A		2.08
15. Others. ..	A		8.49
Total ..		100 %	100.00 %