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DEVELOPMENT OF PASTURE AND SILVI-PASTURE SYSTEMS IN THE ARID ECOSYSTEM OF RAJASTHAN

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The hot arid ecosystem occupying 32 m ha area, occurs dominantly in the country's north western parts. The arid zone in state of Rajasthan accounts for the largest area (62%) followed by Gujrat (20%), Punjab (5%) and Haryana (4%) of the total geographical area of hot arid-ecosystem (Table-1). The main features of this ecosystem are, low and erratic rainfall (200-500 mm/year), high solar radiation, extremes of atmospheric and soil temperatures, low relative humidity, high wind velocity. Though the total precipitation received in this ecosystem seems to be moderately adequate for arable annual Kharif crop production like, bajra, guar, mothbean, greengram, til etc. The erratic distribution of rainfall and extremely high evaporation result in frequent droughts and failure of arable crops are very common in this region.

Table-1 : Statewise areas of the arid zone in India

State	Area under the Hot arid zone (km ²)	Percentage of the total arid zone in India
Rajasthan	196150	62.0
Jammu & Kashmir	70300	-
Gujrat	62180	20.0
Andhra Pradesh	21550	7.0
Punjab	14510	5.0
Haryana	12840	4.0
Karnataka	8570	3.0
Maharashtra	1290	0.4
Total	387390	

Fortunately the hot arid-ecosystem of north-western India is the most highly populated arid ecosystem in the world. It is the home tract of pride native breeds of cattles (Tharparker, Rathi, Kankrej and Nagauri), ideal carpet wool producing sheeps (Magra, Chokla, Marwari and Jaisalmeri) and the important camel breeds. Because of uncertainty of rainfall, more risk is involved in the crop farming even in the years of partial droughts. Therefore, livestock based

farming system plays a pivotal role in the economy of arid ecosystem. Animal husbandry based farming system not only enhances the economic viability of farming systems but it also increases the sustainability of farming system, particularly in rainfed arid-ecosystem (Chaudhary *et al.*, 1993). It diversifies production and management options, increases total farm production as well as income and also provides year round employment to about two third of the human population in this region. Growth in the animal husbandry sector will help in increasing employment and will bring about income redistribution in favour of marginal farmers or landless labourers (Chaudhary, 1999).

Over exploitation of natural resources by increased biotic pressure resulting in scarcity of feed and fodder resources is the major constraint limiting the development of animal husbandry based farming system in the arid ecosystem (Table-2).

Table-2 : Demand & supply of grazing resources in North Western arid zone in 1981
(in Lakh tonne)

State/Districts	Demand	Supply	
		Without crop residue	With crop residue
Rajasthan			
Barmer	32.46	2.49	24.87
Bikaner	28.83	3.40	16.34
Churu	17.86	0.60	19.97
Ganganagar	29.86	0.87	23.19
Jaisalmer	12.28	6.09	10.96
Jalore	12.87	0.88	9.65
Jhunjhunu	11.82	0.28	6.74
Jodhpur	21.84	2.05	20.57
Nagaur	25.80	2.06	19.81
Pali	19.75	3.80	11.81
Sikar	16.66	0.50	8.04
Total	233.03	23.83	172.00
Haryana			
Hissar	14.83	0.40	6.17
Jind	11.88	0.16	4.25
Mahendragarh	8.39	0.20	4.14
Ambala	11.96	0.94	4.07
Rohatak	12.27	0.20	4.95
Total	59.33	1.30	23.58
Gujarat			
Kutch	9.75	12.23	26.83
Jamnagar	9.23	0.94	11.52
Rajkot	11.99	2.86	19.78
Surendranagar	7.15	1.68	15.60
Junagarh	15.69	2.29	15.10
Banaskantha	18.03	1.91	18.87
Mehasana	10.65	1.55	15.14
Ahmedabad	18.14	1.54	17.06
Total	100.63	25.00	139.90

Source: Sankernarayan and Kalla, 1985.