

## COMMUNAL GRAZING LANDS AND THEIR IMPORTANCE IN INDIA AND SOME OTHER ASIAN COUNTRIES

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### ABSTRACT

Grazing based livestock husbandry plays an important role in the rural economy in India, Nepal, Bangladesh, Pakistan, Iran and other Asian countries. Communal grazing land, more commonly known as community or Panchayat grazing land, is also known as "Gauchar" in India. There is a drastic shrinkage or total loss of such lands due to encroachment. In addition, some of this land has been given to landless people by the government. Due to an increase in human and livestock populations and continuous overgrazing, besides cutting of woody vegetation, community grazing lands have deteriorated badly. It is a challenging task to restore, improve and manage the community grazing lands in India not only for improving the livestock economy but also helping to achieve the national target of 33% area under tree and grass cover. Protection of the valuable forests, the very existence of which has been endangered due to excessive grazing pressure on the forests is another priority. Some of these aspects related to community grazings have been discussed in this paper. Besides restoration, renovation and proper management of such lands, drastic reduction in the future livestock growth, especially of goats and buffalo, has been suggested.

### KEYWORDS

Panchayat, community, grazing, carrying capacity, silvipasture, productivity, nomadism

### INTRODUCTION

Communal grazing land is more commonly known as community or panchayat grazing land in India, Bangladesh, Pakistan and Nepal. Grazing based livestock husbandry plays an important role in the rural economy of India and its neighbouring countries. India has a total geographical area of 329 mha, which is about 2% of the world but it has to provide food for more than 944 m people and feed for about 18% of the world cattle besides its precious wildlife and other needs (Deb Roy 1995). Livestock population of Pakistan, the Indian arid region, Bangladesh and Nepal is almost equal or even greater than the human population.

It has been estimated that by 2000 A.D., human and livestock population of India would be 1020 and 600 m respectively and the deficit of food and fodder (green and dry) would be 75 and 1104 mt respectively (Deb Roy 1995). In Nepal, shortage of dry matter was 33% whereas in Pakistan and Sri Lanka, shortage in respect to total digestible nutrients and digestible crude protein was 23.17 and 26.23% respectively (Mathur 1996).

In earlier times, each village or a cluster of villages in India was given 5-50 ha of grazing lands depending on the cattle population and availability of such land, popularly known as "Gauchar" or Panchayat (grazing land) for the common grazing of village livestock. Due to the increased human and livestock population, continuous uncontrolled grazing and cutting of woody vegetation, community grazing lands have deteriorated. Besides some of the areas have gradually been encroached and given to landless people by the government, resulting in shrinkage of these common lands. All this leads to increased grazing pressure on the adjacent forest lands endangering the very existence of the forests.

Restoration, improvement, protection and management of community grazing lands in India is a big challenge, not only for the increased livestock economy but also for achieving the national target of 33% area under tree and grass cover. Some of these aspects are discussed under the following headings.

### Status of Community Grazing Land

There is very little published information about community grazing lands in India. In the land use statistics published by the Government of India (Table 1), community grazing land is not identified specifically. Community grazing land is comprised mostly of culturable waste and part of fallow land that is used legally for free grazing. All the other categories of lands except the cropped areas are illegally used for free grazing when opportunity arises (Pandeya 1988). Seventy to 80% of the forest is either illegally used for free grazing or is allowed by the Forest Dept., with very nominal user fees applied.

Total area available for grazing and forestry accounts for 40.4% or 123.13 mha (Singh 1988). In the case of some states insignificant forest grazing is practical. However, in the states of Himachal Pradesh, Jammu and Kashmir, Meghalaya, Nagaland, Arunachal Pradesh, Orissa etc., more than 50% of the total land area is used for grazing. As such, all these lands could be now included in the communal grazing lands.

Land use in different major regions of the world, given by Humprey (1989) indicated that in Asia permanent pasture and forests and wood lands are 678 and 540 mha compared to 788, 639 and 837, 1374 mha respectively, in Africa and America. According to Mathur (1996), sizeable pasture lands are available in Mongolia (80%), China (43%) and Iran (23%) but in most of the Asian countries it is below 7%. In India it is about 4%, even less in Bangladesh, but in Nepal it is about 12% of the geographical area. Forest land in India, Pakistan, Bangladesh and Nepal are 17.4, 2.4, 5.9, 36.7% respectively (FAO 1993).

At present, for all practical purposes, community grazing lands include in India (i) Panchayat grazing land specifically demarcated for the purpose, (ii) revenue and other waste land commonly utilized for grazings and (iii) degraded forest land illegally or legally allowed for grazing. All three classes of land are highly degraded and need renovation. In short, except the cultivated land during cropping season, each and every class of land where there is some vegetation is used for grazing at one time or another.

### Livestock Population

Livestock population in the Asian region is quite high (Table 2) especially in India, China, Pakistan, Bangladesh and Indonesia.

Looking to the meagre total geographical area of 14.7 mha 80% of which is rugged hills and mountains, the livestock population of Nepal is also very high. India has the highest cattle (192.6 m), buffalo (78.5 m) and goat (117.0 m) population followed by China which has the highest sheep (111.1 m) population.

Indian cattle, buffalo and goat populations compared to world and

Asian regions in 1992 is 14.58 and 46.72%, 53.25 and 55.42% and 20.33 and 36.41%, respectively. This gives an idea of the grazing pressure on the permanent pasture and other grazing lands of India which are only 11.68 mha.

Growth pattern of India's livestock population for 1951-82 was discussed by Singh (1988). The percentage increase in 1982 over 1972 for cattle, buffalo, sheep and goats was 6.98, 20.15, 20.20 and 40.28%, respectively. From 1982-92 the percentage increase was 0.97, 13.84, -7.63 and 23.52% (Patrick and Roy 1994 (Table 3)) respectively, which was much less than the rise during the previous decade. With the meagre permanent pasture and other grazing land of 11.68 mha, we must reduce drastically the growth rate of our livestock, especially buffalo and goats, even if we are not able to reduce the present population.

### **Productivity of Community Grazing Lands**

Primary productivity of grazing land in the Asian region is much lower than the world average and is as low as 0.1 t/ha/yr in the desert area to as high as 16 t/ha/yr in warm grasslands (Table 4).

India is endowed with almost all types of climate and vegetation complexes. There are five distinct grass covers in the country (Dabadghao and Shankarnarayan 1973) and the harvestable biomass production of grazing land in these grass covers varies from 2.2 to 5.0 t/ha.

Net primary production of grazing stands and plantation forests have been extensively studied in India (Chawdhury 1972; Kumar and Joshi 1972; Mishra 1973; Pandeya and Jain 1979). Some of the data are presented in Table 3.

It shows a bright picture of these lands but the real situation under use shows a harvestable above ground yield of only 0.5 – 2.5 t/ha/yr. The high yields could be attributed to the small sample size, inclusion of above ground biomass and recording of complete biomass. Konodia (1981) reported yields ranging from 0.52 to 0.94 t/ha/yr under open heavily grazed conditions from Jhansi district (U.P.), whereas Tyagi and Trivedi (1986) reported forage production of 0.5 to 2.0 t/ha on common grazing land from Bundelkhand region (U.P.). Saxena (1988) reported above ground biomass production varying from 0.11 to 3.6 t/ha in different districts of western Rajasthan. Pandey and Singh (1988) reported net primary production of 511.01 g/m<sup>2</sup>/yr on grazed grassland near Patna, Bihar. Net primary productivity of grazing land of the Aravalli hills varies from 443.92 to 1254.92 g/m<sup>2</sup>/yr (Katewa 1994).

A recent resource survey in Ambabai village in Jhansi district (Anon. 1992) revealed that forage production from the community grazing land was only 0.133 t/ha, whereas from the private grassland, although quite limited in area (5%), it was 2.0 – 2.5 t/ha. The Ambabai village example is an extreme case of overutilization, but not uncommon in India. It is now being renovated.

### **Grazing Intensity and Carrying Capacity**

Carrying capacity is defined as the maximum number of animals that an area of land supports on a sustainable basis. It can be expressed numerically as stocking rate (Hocking 1992).

The problem of overgrazing is faced in almost the whole of the Asian region, with a total of 1453.4 million cattle, sheep and goat populations, but especially so in India, Pakistan and Bangladesh (Table 2).

In arid conditions, grazing pressure ranges from 1-4 ACU/ha/yr against the normal carrying capacity of 0.2-0.5ACU/ha/yr (Singh 1988). Chakravarty (1971) estimated that an area of one million ha in the arid and semiarid region of India is subjected to grazing by 16.78 million livestock against the carrying capacity of 2.5 sheep/ha or one cow per 2.4 – 4.0 ha. The situation during the last 25 years has further deteriorated with a fast increasing livestock and human population.

The temperate and alpine grasslands of western Himalayas are used by semi-nomadic and nomadic pastoralists during May to October. The grazing pressure on such lands is frequently 2.5 to 4.7 times greater than the carrying capacity (Shankar and Gupta 1992).

The increased grazing pressure on the common grazing land replaces the edible perennial grass cover with weeds and annuals. Further reduction in grass cover accelerates the erosion processes and loss of soil fertility.

### **Grazing System and Pastoralization**

Community grazing activity in India and other adjoining Asian countries is mainly dependent on the availability of grazing resources, pasture and other grazing land mentioned earlier. A variety of grazing systems are practiced in different climate zones where pastoralization is the way of life. There are nearly 30 pastoral communities located mainly in the northern and western parts of the country. Few such communities are found in the central and southern regions of India.

The "Kharak" system of grazing in the hills of Uttar Pradesh and the "Gols" system of grazing in Rajasthan are examples of grazing practices in which a tribe moves forward or changes the site after using it. For nomadic tribes, four grazing systems are recognized in India, namely (i) Total nomadism, (ii) Semi-nomadism, (iii) Transhumance, and (iv) Partial nomadism. These are discussed in detail by Tyagi and Singh (1988). Sheep breeders of Madhya Pradesh and "Banjaras" of Rajasthan are examples of the first type whereas "Gujjars" of Himachal Pradesh and Punjab, "Kumaoni" and "Jodha" of Uttarakhand (U.P.) are examples of semi-nomadism and "Gadariya", Ahirs of Uttar Pradesh, Madhya Pradesh and Rajasthan, "Bhils" of Madhya Pradesh and "Gauda" of Orissa are examples of partial Nomadism.

### **Restoration of Community Grazing Land**

Community grazing land in most parts of the country has either drastically been reduced or has almost disappeared. Restoration is most important not only for providing regulated grazing but also for protecting valuable forests but at the same is most challenging. This could be done out of the various wastelands including degraded forest lands. One option is restoration of such lands to village Panchayat for their improvement and proper management for the purpose of providing necessary forage and grazing for the village livestock besides some fuel wood from the silvipasture blocks.

In India, all wasteland development programs in progress or already carried out are mostly for afforestation purposes, in which significant finding is required. Very little attention is being given to meeting the daily needs of forage and grazing of village livestock. As a result, the principle cause of failure on most of the afforestation programs has been animal damage. This is true not only in India but also in Bangladesh, Pakistan, and other Asian countries, with large livestock populations.

Total area needed for community grazing land of a particular village or a group of villages depends on the present livestock population of

the village, condition and availability of wastelands, including degraded forest land, the future livestock growth and the total forage and fodder and the crop residue produced by the individual farmers. Forage budget of a typical Bundelkhand village (U.P.) was recently discussed (Anon. 1992).

### Improvement of Community Grazing Lands

Most of the available community grazing lands or the restored wastelands, used for the purpose, would be in a highly degraded condition and would need to be renovated.

First step in improvement of the community grazing lands is the necessary soil and water conservation measures (Anon. 1992). This is followed by dividing the whole area into five equal compartments. Every year one such compartment is taken up for development and closed for grazing, half taken under silvipastoral development and the other half for grassland/pasture development (Deb Roy and Pathak 1983, Deb Roy 1990, Pathak and Roy 1994, Singh 1988). In the second year, the second half of the development area is open to grazing and the next compartment is taken up for development. The first half, i.e. the silvipasture area closed for grazing in the first year, may be open to grazing at the end of the third year. The process is repeated every year so that in the fifth year, the whole area is developed.

Once the lands are developed, they should be managed properly for sustained production from grazing. Besides meeting the fodder and grazing needs of the livestock, grazing land would also help in achieving the national target of 33% area under tree cover.

### Grazing Management

In order to maintain the vigour of the grass and legumes and also to meet the needs of the livestock, community grazing land may be subjected to one of the grazing systems namely (i) Continuous grazing, (ii) Deferred grazing, (iii) Rotational grazing and (iv) Deferred rotational grazing for a given site at a specific period as per requirement.

In **Sehima** dominated semi-arid grasslands at Jhansi (India), deferred rotational grazing was found much superior to continuous systems (Upadhaya et al. 1971). In the arid grazing land situation, Das and Paroda (1980) observed a 22% increase in dry matter yield of *Cenchrus* under deferred rotational grazing compared to only 6.3% under continuous grazing. Stocking rate increase was 0.49-0.73 sheep/ha under the former compared to 0.53 sheep/ha under the latter system of grazing. In *Lasiurus* dominated grassland in western Rajasthan, deferred rotational grazing gave higher body weight gains of heifers over continuous systems. Calving of animals was also higher in the former compared to latter system (Shankarnarayan et al. 1981).

Rotational and deferred rotational grazing are not feasible in many places in the Himalayan Grassland. At low altitude, the local practice of enclosing the area for 5-6 months (June – October), followed by controlled grazing and later cutting of grasses for stall feeding, has been recommended (Singh et al. 1988). In high altitude regions also, the grazing pressure could be reduced by restricting grazing on selected sites on a yearly basis. Deterioration of plant composition due to continuous grazing has been recorded by Gupta (1988).

For fixing stocking rate in the grazing land, information on grazing height/animal weight relationships would be of much use to make adjustments to the traditional carrying capacity during the growing season, or year round, as the case may be.

Similar to participatory forest management with village protection committees, there should be a community or panchayat grazing management committee to look after the protection and management of the grazing land.

### CONCLUSION

Grazing based livestock husbandry plays an important role in the rural economy of India and its neighboring countries with huge livestock populations. With the reduced area and deteriorated conditions of the community grazing lands, these huge livestock resources are, instead of becoming assets, becoming a liability and endangering the very existence of our valuable forests. Restoration and improvement of the deteriorated community grazing lands and their proper management is a must not only to provide adequate forage/fodder and grazing to the livestock but also for saving the valuable forests and achieving the national target of 33% area under tree and grass cover. This is true not only for India but also for other Asian countries with huge livestock populations. Drastic reduction in future growth rate of our livestock populations and immediate reduction wherever possible is a necessity.

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**Table 1**

Land Use Distribution in India (mha)

	1950-51	1991-92	% of Reporting Area (1991-92)
Geographical area		328.73	
Reporting area for land utilization statistics (1-5)	284.32	305.06	100.00
Forest	40.48	68.02	22.30
Not available for cultivation (a+b)	47.52	41.02	13.50
(a) area under non-agricultural use	9.36	21.53	13.50
(b) barren and uncultivated use	38.16	19.49	6.40
Other uncultivated land excluding fallow land (a+b+c)	49.45	30.39	9.90
(a) permanent pastures and other grazing lands	6.68	11.68	3.80
(b) land under miscellaneous tree crops and groves not included in net area sown	19.83	3.64	1.20
(c) culturable waste	22.94	15.07	4.90
Fallow lands (a+b)	28.12	24.22	7.90
(a) fallow lands other than current fallows	17.44	9.85	3.20
(b) current fallows	10.68	14.37	4.70
Net area sown (6-7)	118.75	141.41	46.40
Total cropped area (gross cropped area)	131.89	182.73	-
Area sown more than once	13.14	41.32	-

Source: Government of India 1995.

**Table 2**

The livestock population in the Asian region (1992) (unit 1000 head)

	Cattle	Buffalo	Sheep	Goat
Bangladesh	23700	820	700	18000
Bhutan	422	4	52	40
Cambodia	2274	794	-	-
China	82760	21983	111143	95032
DPR Korea	1300	-	390	300
Fiji	160	0	1	124
India	192650	78550	44407	117000
Indonesia	11000	3400	5900	11400
Iran	6900	300	45000	23500
Laos	993	1131	-	104
Malaysia	720	200	275	350
Mongolia	2900	-	150400	5200
Myanmar	9470	2099	284	1076
Nepal	6246	3058	912	5406
Pakistan	17745	18273	26994	38564
Philippines	1656	2569	30	2449
Rep. Of Korea	2517	-	3	473
Sri Lanka	1568	896	17	502
Thailand	6820	4793	153	144
Vietnam	3135	2863	-	425
Subtotal	374976	141736	386663	320106
Developed Countries				
Australia	23602	-	146820	500
Japan	5025	-	31	36
New Zealand	8450	-	53500	700
Subtotal	37077	-	200351	1236
Asian Region Total	412302	141736	578018	321362
Rest of World	871886	5785	686705	252819

Source: FAO 1992.

**Table 3**

Net primary production of grazing stands and plantation forests in some parts of India.

Site	Condition	Dominant Species	Production (t/ha/yr)
Varanasi			
I.	Protected moist	Heteropogon contortus	42.2
II.	Grazed stony	Heteropogon contortus	15.4
III.	Grazed	Aristida cyanatha	20.1
IV.	Protected	Heteropogon/Bothriochloa	13.8
V.	Grazed	Desmostachya bipinnata	8.3
Pithoragarh			
I.	Grazing lands (protected)	Bothriochloa pertusa	11.5
II.	Study period Protection	Cynodon/Bothriochloa	8.66
Plantation Forest Chkia			
I.	Grazing lands (Protected)	Dichanthium annulatum	13.6
II.	Under teak (13 yr old and open to grazing)	A mixture of grasses	4.46
Jodhpur			
I.	Grazing lands	Cenchrus – Aristida	1.6
Ujjain			
I.	Grazing lands	Dichanthium	5.2
Pilani			
I.	Grazing lands	Dactyloctenium	3.6
Rajkot			
I.	Grazing lands	Sehima – Aristida	4.0

Source: after Pathak and Roy 1994

**Table 4**

Grazing pressure on semi-arid grazing lands of India

States	Grazing pressure (ACU/ha)	Existing carrying capacity (ACU/ha)
Punjab	51.68	0.37
Harayana	18.32	0.20
Uttar Pradesh	12.07	0.187
Rajasthan	7.68	0.68
Madhya Pradesh	6.03	0.76
Maharashtra	2.24	0.97
Karnataka	1.04	1.09
Andhra Pradesh	2.17	1.17

ACU = Adult Cattle Unit is equivalent to 6 sheep. Average weight of an adult cattle estimated at 350 kg and its per day forage requirement at 2 percent of the body weight or 7.5 kg dry forage per day.

Source: after Shankar and Gupta 1992.