



*Research Article*

## **Fodder and grasses production on rangeland of dry eco-system for scaling up of milk productivity**

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**Abstract :** The study on balance sheet of demand and production of grasses and cultivated forage crops on rangeland of Hillocks Watershed of Amarpur-Bedaura-Chamraua were computed and summarized. The main objective was to increase the milk production in the dry eco-system through raising of palatable grasses and forage crops on range land and reclaimed degraded land. The fodder demand has gone up from 16031.0 t to 33848.1 t due to increased of livestock demography from 6973 in 1997-98 to 14388 in 2003-04. Prior to start of watershed management the shortage of fodder 973.4 t in 1997-98 to 15037.5 t in 1999-00 was met from the outside area of watershed but this gap fully filled up from 2000-01 by thriving of palatable grasses on rangeland and growing of forage crops on reclaimed degraded soils. In addition to this the extra fodder was supplied to the outside watershed families from 2000-01. The milk production increased from 683040 litre in 1997-98 to 3027000 litre during 2003-04.

**Key Words :** Hill and valley, Dry eco-system, Palatable grasses, Rangeland development, Watershed management

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### **INTRODUCTION**

More than 70 per cent population of India derives its livelihood and environmental securities directly from natural resources like soil, water, vegetation, livestock and village enterprises. Escalating demographic pressure has reduced per capita cultivated land from 0.48 ha in 1951 to 0.14 ha by now. Livelihood needs of rural communities are expected to be realized from increased productivity without degrading qualities of natural resources. The management of natural resources in hilly area of Bundelkhand is very difficult task

because it is a part of great Central Indian Plateau, consisting mostly of valleys all around hills, ravines and crags. These odd situations highly confined the milk production due to least supply of palatable grasses and fodder. Thus, the quality milk production in hillocks area can only be possible with the development of palatable natural grasses in range land. The development of rangeland and growing of fodder crops in dry eco-system for increasing the production of quality milk is the subject matter of this manuscripts.

### **EXPERIMENTAL METHODS**

The plot area of 2216.8 ha of rain water management is located in Amarpur, Bedaura, Barupura, Murar, Chamraua and Kilchwara Bujarg Villages of Jhansi district in Bundelkhand, U.P. The pilot site of hillocks and villys is characterized by semi-arid climate, undulating topography, residual soil of erodible nature, deep-water strata underlain with hard impermeable rocks, poor crop husbandry including low fertilizer use and irrigation. The mean annual rainfall is

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**Table 1 : Lives tock population demand and production of fodder during different years of project**

Particulars	1997-98 (Base year)	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Animal population	6973	8076	9536	12629	13253	13850	14388
Demand of fodder (t)	16031.0	19521.8	22603.0	30416.7	31674.2	32831.5	33848.1
Production of fodder (t)	15057.6	14992.2	17565.5	35520.2	40467.2	42982.2	46076.7
Gap in fodder production (t)	(-) 973.4	(-)4529.6	(-)5037.5	(+)5103.5	(+)8793.0	(+)10150.7	(+)12228.6
Milk productivity (l)	683040	688080	1029480	2514000	2668200	2852400	3027000

972 mm, which is largely received during mid-June to mid-September. Water surplus is 168 mm from July to September. The moisture availability period for the crop growth is 122 days. Watershed soils are classified as class II, III and IV as per land capability classification. The area is composed of highly eroded *rakar* soils. About 2180 ha area of the watershed was treated with peripheral/marginal bunds, submergence bunds, gully plugs, check dams, water storage structures and vegetative measures. Rain water was harvested in gully plugs, check dams, water storage structures and big dams which have the capacity of about 120 ha-m. The natural pasture land/rangeland was developed by growing of grasses like *Digitaria biformis*, *Digitaria triformis* and *Paspalm* on 36.83 ha area under class IV land of watershed. The demand of fodder for livestock of the pilot area of watershed was computed during 1997-98 to 2003-04 as per recommendation of different National and International Institutions (Anonymous 1989; Singh *et al.*, 1988; Singh, 1995 and Singh, 1999). The rain water harvested in water storage structures was used for protective irrigation to the fodder crops grown under reclaimed rangeland and cultivated land.

## EXPERIMENTAL RESULTS AND ANALYSIS

The results on livestock population showed an increasing trend over the base year of 1997-98. Animal population of pilot area increased from 6973 during 1997-98 to 14388 during 2003-04 (Table 1). Prior to management of rainwater in the pilot area the demand of fodder was 16031 t in 1997-98, which increased to 33848.1 t in 2003-04. The results showed that there was tremendous increase in fodder production. The production of fodder was increased from 15057.6 t to 46076.7 t during a period of six year. Such an increase in fodder was due to development of fodder and grasses on rangeland and cultivation of forage crops on reclaimed degraded land.

It was observed that prior to implementation of programme, the gap between demand and supply of fodder was fulfilled from outside of pilot area, which was checked from 2000-01. Thus, the study revealed that the grasses and

forage crops productivity can be increased by management of rangeland in degraded hilly eco-system. The milk production increased from 683040 litre in 1997-98 to 3027000 litre during 2003-04. Similar results were also reported by Singh (1995), Singh (2006) and Singh and Katiyar (2006).

### Conclusion:

Management of rangeland through natural thrived palatable grasses enhanced the milk productivity more than four fold.

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