

## PRODUCTIVITY AND ECONOMICS OF BER (*ZIZIPHUS MAURITIANA*) BASED HORTIPASTURE SYSTEM AS INFLUENCED BY INTEGRATED NUTRIENT MANAGEMENT UNDER RAINFED CONDITION OF RAJASTHAN

L. R. MEENA\*

ICAR-Central Sheep and Wool Research Institute

Avikanagar-304 501 (Rajasthan), India

\*(e-mail : lrmeena63@gmail.com)

(Received : 21 August 2015; Accepted : 5 December 2015)

### SUMMARY

A field experiment was conducted at CSWRI, Avikanagar (Rajasthan) for two consecutive years during kharif seasons of 2012 and 2013 on sandy loam soil to study the response of grasses and ber plants to integrated nutrient management system. The results of study revealed that grass species had significant effect on yield and yield attributes. Yield and yield attributes were attained higher in *Cenchrus setigerus* species than *Cenchrus ciliaris* except spike length. Highest green fodder (19.87 t/ha), dry matter (4.48 t/ha), grass seed (120.18 kg/ha) and protein content (7.36%) were recorded in *C. setigerus*. Ber (*Ziziphus mauritiana*) leaf fodder (3.93 kg/plant), fruit (36.84 kg/plant) and fuel wood (23.31 kg/plant) were higher in association of *C. setigerus* than *C. ciliaris*. The maximum gross returns of Rs. 104 429/ha, net returns of Rs. 72 029/ha and benefit : cost ratio (2.21) were recorded in combination of *C. setigerus* and ber plants in hortipasture system. In integrated nutrient management system where 50 per cent RDF of NPK through fertilizers +50% through sheep manure was promoted grasses as well as ber plants resulted increase in green fodder yield by (80.71%), dry matter (35.07%), grass seed (36.14%), protein (26.62%), ber leaf fodder (42.67%), fruits (47.34%) and fuel wood (90.31%) over control treatment (no fertilizer, no organic manure). The maximum gross return (Rs. 122 374/ha) and net returns (Rs. 79 652/ha) were realized where combined use of organic and inorganic sources of plant nutrients in grasses as well as in ber plants under ber based hortipasture system. The higher benefit : cost ratio was noticed with 100 per cent RDF of NPK through fertilizers (2.19).

**Key words :** Productivity, economics, hortipasture system, INM

Over exploitation of production systems by ever increasing human and livestock population results in declining productivity of marginal and sub-marginal lands in semi-arid agro-ecosystem which has more illicit effect on productivity of arable crops. Marginal and sub-marginal lands in semi-arid areas are unable to produce sufficient and sustainable. Therefore, scientific management of underutilized lands can be done through cultivation of horti-pastoral crops in place of high value agricultural crops, thus, productivity of lands can be increased many folds. Thus, legitimate role of poor lands can be increased for human food security and livestock production in present prospect and retrospect's (Meena

and Mann, 2011). Under fragile agro eco-system, there is need to mitigate the aberrant climatic conditions through plantation of woody component ber (*Ziziphus mauritiana*) in association of perennial grasses under hortipasture system which could prohibit soil and water erosions from soil surface, thus restoring soil fertility by addition of mulching materials viz., fallen ber leaves and grass residues in the form of plant parts and roots (Ram et al., 2005). Ber is very hardy to drought conditions due to well-developed long tap root system than other perennial components. Under low rainfall areas monoculture is often risk prone due to crop failures but grasses and ber plant can be grown very well under

Present Address : Principal Scientist, Indian Institute for Farming Systems Research, Modipuram, Meerut-250 110 (Uttar Pradesh), India.