

GROWTH OF HEIFERS AND CHANGES IN VEGETATION IN A NATURAL GRASSLAND OVERSOWN WITH CARIBBEAN STYLO

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ABSTRACT

The paper reports a three year study on the growth of heifers and vegetational changes in a natural grassland oversown with caribbean stylo and grazed in a deferred- rotational grazing system. There were two feeding treatments. One set of grazing heifers was given common salt only. The other set of heifers were given supplemental feeding of leucaena green @4 per cent or Leucaena hay @ 1 per cent body weight. The supplemental feeding of leucaena was beneficial in terms of body weight gain particularly during the dry summer months. Population of the caribbean stylo oversown in natural *Sehima-Heteropogon* grassland gradually declined over the years. While the causes of decline in the population of oversown caribbean stylo are yet to be understood well, the practical implication of this study leads to suggesting resowing of the stylo after every three years in order to maintain its substantial population in the natural grassland used for rotational grazing.

KEYWORDS

Heifers, grassland, stylo, liveweight, vegetation

INTRODUCTION

Natural grasslands in India have poor soil fertility, poor forage quality and a very poor leguminous component in the vegetation. As such these grasslands can at best provide subsistence to draught and mature animals and cannot cater to the requirements of growing animals. Introduction of legumes is considered a panacea to cure these grasslands from the above three major negative factors. In order to test and validate this hypothesis a grazing trial with heifers involving oversown caribbean stylo in natural, semi-arid *Sehima-Heteropogon* grassland was conducted for three years. This paper reports this study conducted at the Indian Grassland and Fodder Research Institute, Jhansi.

MATERIALS AND METHODS

A 6 ha natural grassland with dominant grass cover of *Sehima nervosum* and *Heteropogon controtus* was reseeded in July 1991 with the caribbean stylo @ 4 kg/ha after a light soil working with pitter-discer a tractor mounted implement. The grassland was fenced into four paddocks of equal size and heifer grazing @ 1 ACU/ha was started from August 1992. Before legume introduction a basal dose of 20 kg P₂O₅/ha was applied. Deferred - rotational system of grazing continued up to April-May. Analysis of soil and vegetation, particularly stylo population was done both before and after each grazing cycle. Forage production was recorded from grazed grassland as well as from cages. Live weight of heifers was recorded. There were two animal treatments. First set of animals was allowed to graze reseeded pasture and only common salt was supplemented. The second set of animals also grazed the reseeded pasture but was additionally given supplemental feeding of leucaena green @ 4% body weight or leucaena hay @ 1% body weight.

RESULTS

The heifers gained body weight in monsoon and postmonsoon (July-January). The group of animals receiving leucaena supplementation gained body weight for a much longer period up to April (Fig. 1).

There were yearly variations in the body weight gain but overall trend and pattern remained as above. Botanical composition of the perennial grasses showed an increasing trend and the population of annual grasses declined over the years (Table 1). The caribbean stylo showed a spurt in population in the second year but declined in subsequent years. Population of other legumes also declined over the years. The forage yield of perennial grasses was, by and large, stable over the years but that of caribbean stylo gradually declined (Table 2).

DISCUSSION

The gain in the body weight of animals in the natural *Sehima-Heteropogon* grassland was possible due to oversowing of the caribbean stylo resulting in enhanced nutritional quality of the forage. Supplementation of leucaena green or hay further boosted live weight gain particularly during the dry summer period. In the summer (Feb-May) the natural grazing shrubs were grazed avidly and this was perhaps the major reason for body weight gain during the dry summer period. The population of major perennial grasses increased over the years because of a moderate grazing regime. The population of caribbean stylo declined over time, thus again proving its instability or lack of persistence in the grazing system. There were no significant changes in the soil organic matter and fertility level over the years.

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Table 1
Botanical composition (%) of species groups in the reseeded grassland

Species	Year 1	Year 2	Year 3
Perennial Grasses	27.6	40.2	44.4
Annual Grasses	48.2	12.6	46.4
Caribbean stylo	12.3	38.4	5.1
Other legumes	5.3	3.7	3.4
Forbs	11.7	1.7	0.6

Table 2
Forage yield (Kg DM/ha) from the reseeded grassland

Species groups	Year 1	Year 2	Year 3
Perennial grasses	2194.0	2185.7	2363.5
Annual grasses	286.7	176.2	406.2
Caribbean stylo	657.0	527.5	243.7
Other legumes	65.0	25.2	106.2
Forbs	70.0	5.7	20.2

Figure 1
Live weight gain of heifers grazing in reseeded grassland
T1 = Grazing on natural legume reseeded grassland + common salt
T2 = T1 Supplemented feeding of Leucaena

