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Integrated nutrient management in fodder oat + *Lathyrus* intercropping system under medium land situation of Jharkhand

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Abstract

A field experiment entitled "Integrated nutrient management in fodder Oat + *Lathyrus* intercropping system" was carried during three consecutive *Rabi* season from 2015 to 2017-18 at forage research field situated at R V C campus of Birsa Agricultural University, Kanke, Ranchi. The experiment was laid out in Split-plot Design with four intercropping in main plot and three integrated nutrient management under sub plot and replicated thrice. Fodder oat equivalent yield and productivity per day influenced by intercropping methods as well as nutrient management. Sole fodder oats sown at 100 percent recommended dose of fertilizer perform comparable as intercropped. However, oat + *lathyrus* (3:2) grown at 50% N of RDF (inorganic) +50% N of RDF (vermicompost) recorded higher fodder oat equivalent yield (FOEY) 374.87 q ha⁻¹ and 5.20 q ha⁻¹day⁻¹ as green fodder productivity.

Keywords: Oat+ *lathyrus*, fodder intercropping, production, INM and productivity per day

Introduction

Agricultural and its allied activities in India are pivotal in rural economy, as it contribute nearly 13.7 percent of the GDP (gross domestic product) in 2013 and nearly 50 percent of work force (PTI, 2013). Among the different activities crop and livestock production is a key component of farming systems not only in India but also among South-East Asia and in Africa particularly with small and marginal farmers, estimated about 678 million, which indicates importance of livestock to their livelihoods (Anonymous, 2000) [1]. Huge livestock population of Indian sub- continent is not only a source of livelihood for poor but also acts as a three dimensional nutritional security i.e. for human, animal and crop nutrition. Our country is leader in cattle (16%) and buffalo (55%) population and has world's second largest goat (20%) and fourth largest sheep (5%) population (Anonymous, 2009) [2]. The livestock sector adds almost one third (32%) of Agricultural output in India. As India is rearing nearly 20% of world livestock on the fodder production in 7.06% of net cropped area (132.86 rnha) as well as on 3.7% of pasture/grazing land. As such we are providing 18.2 kg of fodder/animal or milking half fed cow. Cattles and other lactating animal needed balanced and quality diet as per their body weight (Tripathy, *et. al*, 2009) [6]. As feed and fodder contains about 55-60 percent of total cost of milk production (Singh, K.A. 2008) [5]: thus, good quality of green fodder having sufficient nutritive value is the demand of the day. Animal improvement and production system depends on inclusion of improved breeds or through artificial insemination coupled with continuous supply of nutritious and palatable green fodder.

Jharkhand meets hardly 50 percent of the feed and fodder requirement for their livestock. The farmers face green fodder deficiency in winter when they have only paddy straw, dry stalks of summer cereal fodders or dry summer grasses. Thus, there is needed to grow green fodder during *Rabi* season from available limited irrigation resources. Among the different *Rabi* fodder Single cut oat and *lathyrus* has enough potential to survive dry condition. Further, the combination of roughages and legumes in animal ration are considered as palatable and balanced diet. Soil of our state have no sufficient nutritive capacity to produced even fodder crop without proper fertilization. As soil have poor organic content so role of farm yard manure (FYM) and vermicompost (VC) became essential in quality herbage production. Looking the need of quality fodder and organic manure present experiment was formulated.

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Conclusion

The present investigation shows that, the highest fodder oat equivalent yield and productivity per day of *oat+lathyrus* (3:2) grown at 50% N of RDF (inorganic) + 50% N of RDF (vermicompost) was (374.87 qha-1 & 5.20 qha-1day-1). This was due to higher production of oat and conversion of higher value *lathyrus* into oat. On the basis of the findings of the experiment it may be concluded that, the fodder oat+ *lathyrus* (3:2) grown at 50% N of RDF (inorganic)+ 50% N of RDF (vermicompost) will be beneficial and economical in terms of production and productivity.

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