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Conceptual Advantages Of Intercropping Peanut Or Pearl Millet By Manipulating The Planting Geometry Of Castor

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ABSTRACT

Field investigations were conducted to explore the possibilities of peanut and pearl millet by manipulating the planting geometry of castor under rainfed conditions at Hyderabad, AP, India. Two sets of intercropping with peanut and pearl millet with intercrop rows ranging from 1 to 7 along with the sole crops were raised following a randomized block design on a sandy loam soils during the rainy season of 2001 and 2002. Several approaches were employed to evaluate the possible intercropping advantages to meet the different options of the firms. The results through bivariate analysis of variation furnished different inferences compared to the conventional approach, the intercropping of 5 rows of peanut in castor spaced at 180 x 13 cm or 3 rows of pearl millet at 120 x 20 cm in castor at its density to maintain about 41,000 plants ha^{-1} consistently proved to be the most productive treatments. The biological productive efficiency recorded land equivalent ratios (LERs) of 1.79 and 1.90 by intercropping 5 rows of peanut and 1.85 and 1.93 with 3 rows of pearl millet in 2001 and 2002, respectively. The standardized minimum yield goals for a *set priori* as proportion to the total productivity from the corresponding intercropping treatments were also high from these treatments compared to rest of the intercrop row proportions. These are explained by the plots of effective land equivalent ratios (ëLERs) graphically. The staple land equivalent ratios (SLERs) were standardized minimum yield requirement as a proportion to the sole crop yield of the major crop also revealed similar results. These assessments are also explained graphically. The maximum net returns of Rs. 4698 and Rs. 10,072 ha^{-1} were obtained by intercropping 5 rows of peanut among other row ratios during 2001 and 2002. Among pearl millet intercropping treatments maximum net returns of Rs. 6331 and Rs. 8948 ha^{-1} were realized by intercropping 3 rows than the rest of the treatments. The relative net return (RNR) indices established that these profits were statistically superior. The per rupee net returns vital to the poor farmers were also maximized to 0.64 and 1.40 by intercropping 5 rows of peanut and 1.17 and 1.66 by intercropping 3 rows of pearl millet in castor spaced at 180 x 13 cm and 120 x 20 cm, respectively.

Key words : Peanut, Pearl Millet, Inter cropping, caster.

INTRODUCTION

Castor (*Ricinus communis*) is widely cultivated in the Indian dry regions of Western state of Gujarat and Southern state of Andhra Pradesh. In India, it is cultivated over an area of 1077 x 10^3 ha. It is the most admired crop of poor farmers. Its deep tap root system enable it to grow deep on soils of medium to poor texture, extremely low fertility, degraded soils with low moisture holding capacity and in low rainfall regions. It is mostly cultivated as a sole crop in wide rows of 90-150 cm. The spacing within the rows is not uniform and not specific. Hypothetically, the precious resources between the wide spaces of castor rows are robbed-off by the spectrum of weed flora. It is envisaged that these wide gaps could possibly be better exploited by growing drought tolerant crops of different maturity duration to increase the total productivity of land *per se* and the profitability. Pearl millet (*Pennisetum americanum*) is such an option. It is highly drought tolerant, mature early by 90 days and provide the domestic staple food requirement for the farm family. Peanut (*Arachis hypogaea*) is another crop which tolerates the moisture starved situations, mature by about 110 days and provide edible oil. These two intercrops are likely to provide substantial food and oil to the poor farmers much ahead of the maturity of castor by 135 days. The manipulation of planting geometry of castor is another sound principle to harness the temporal differences in peak demand of resources like light and other inputs Al-Bakry and Saran, (1985); Prasad and Verma, (1986); Singh and Singh, (1988); Jadhav *et al*., (1992). These are the considerations that led to plan this experiment to explore the productive and profitable options of intercropping peanut and pearl millet by manipulating the planting geometry of castor under rain grown conditions.

MATERIALS AND METHODS

The experiment was conducted in the rainy season (June to October) for two years during 2001 and 2002 at

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