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PRODUCTION POTENTIAL AND ECONOMICS OF MESTA INTERCROPPED WITH PIGEONPEA

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ABSTRACT

The experiments was conducted at the Crop Research Station, Bahraich, (U.P.) during kharif, 2008 and 2009 to study the effect of intercropping systems with mesta under upland situation in eastern U.P. Mesta was intercropped with pigeonpea in different row ratio and mesta, pigeon pea as sole crop was also taken. The results revealed that among the intercropping systems mesta + pigeonpea (4:2) row ratio was more economical. However, the highest mesta equivalent yield (29.25q ha^{-1}) was obtained from mesta + pigeonpea intercrop in 4:2 row ratio and higher net return Rs. 35000 ha^{-1} was also recorded under same treatment.
Keywords: Production potential, economics, mesta, inter cropped, pigeonpea

INTRODUCTION

Considering the importance and possibilities to save the precarious inputs like nutrients, water etc. without harming the yield and better utilization of land (Chatterjee *et al.* 1992; Mandal and Majumdar 2010). An investigation was under taken to study the feasibility of growing pulse crop as intercrop with mesta as the main crop on sandy loam soil. Pigeonpea is a wonderful gift of nature being the richest source of protein nutrition ranked second under most important legume crops of India, occupying 14.5% area and contributes to 15.5% of total pulse production (Mishra *et al*. 2011). People of India are mostly vegetarian and their protein requirement for growth and development is mostly met with pulses. The pulse plant take so little and give much to our soil that are their significance in restoring and maintaining the fertility status of soil can never be ignored. Pulses can be intercropped with mesta and give better utilization of resources namely soil, moisture nutrients etc. Pulses grow very vigorously and cover the ground surface, hence they suppress the weeds. Thus, the multiplication weed is checked and the soil remains fertile and trouble free. Keeping these views the present experiment was taken to asses mesta with pigeon pea for better yield as well as net return ha^{-1}.

MATERIALS AND METHODS

The experiment was laid out to study the effect of mesta based intercropping system towards yield of sole and intercrop in randomized block design with 5 treatments and 3 replication during the kharif season at the Crop Research Station, Bahraich during 2008 and 2009 in a plot size of 5x4 m. Soil was normal in reaction (pH 7.5), low in organic carbon 2.6 g kg^{-1}, available N 180 kg ha^{-1}, P_2O_5 13.5 kg ha^{-1} and K_2O 278 kg ha^{-1}. Nitrogen, P_2O_5 and K_2O was applied as basal dressing @ 15, 30, and 45 kg ha^{-1}in pigeon pea and @ 60, 30, and 30 kg ha^{-1}in mesta. The treatments tested were T_1- Mesta sole crop, T_2- Pigeon pea sole crop, T_3- Mesta + Pigeon pea in 2 :1 ratio, T_4- Mesta + Pigeon pea in 4 :1 ratio and T_5- Mesta + Pigeon pea in 4 :2 ratio. The seed rate used for component crop in intercropping situations was based on their ratios of land use. The crop was sown on 25th June both the seasons. All agricultural practices were done in main and intercropped according to need of crop. Crops were harvested at maturity and proper growth. Yield attributing characters were recorded before harvesting of crop and yield was recorded after harvesting of crop. Economics of each treatment weas calculated on nearest market price of produce.

RESULTS AND DISCUSSION

Yield Components: The maximum basal diameter of mesta stem was recorded from T_1 (2.16 cm) as well as T_3 (2.16) which were non significant at par with all the treatments. The tallest plants were harvested under T_1 and it was significantly higher than all other treatments. The height of mesta plant was significantly lower when it was intercropped with pigeon pea (T_3, T_4 and T_5).

Table 1: Effect of intercropping on growth and yield of main crop and intercrop (Pooled data)

Treatments	Plant height (cm)	Plant diameter (cm)	Fibre yield (q ha^{-1})	Pods /branch	Seed/ pods	1000 seed wt. (g)	Seed yield (q ha^{-1})	Mesta equivalent yield (q ha^{-1})	Net profit (Rs.ha^{-1})	C:B ratio
T_1- Mesta sole crop	316.75	2.16	21.03	-	-	-	-	21.03	22000	2.46
T_2- Pigeon pea sole crop	-	-	-	417.0	4.5	40.72	13.19	27.99	29000	2.61
T_3- Mesta + Pigeon pea in 2 :1 ratio	308.00	2.16	14.02	472.0	5.2	42.60	7.69	26.21	34000	3.06
T_4- Mesta + Pigeon pea in 4 :1 ratio	302.25	2.13	13.86	469.0	4.7	40.40	4.6	25.89	28500	2.72
T_5- Mesta + Pigeon pea in 4 :2 ratio	302.50	2.08	16.69	489.5	5.5	42.56	8.69	29.25	35000	3.12
CD (P=0.05%)	3.27	NS	0.56	9.9	0.42	NS	1.46	1.07	450	0.85

Mesta fibre Yield: Sole crop of mesta (T_1) significantly produced the highest amount (21.03 q ha^{-1}) of fibre as compared to intercropped with component crop pigeon pea in view of the highest plant population compared with the intercropped ones. Among the different intercropping system the highest fibre yield (16.69 q ha^{-1}) was recorded by (T_5). Same finding was reported in different intercrop by Mandal *et al.* (1987, 1990) and Mandal and Majumdar (2010). The sole crop of pigeonpea (T_2) recorded the highest seed yield compared with its intercropping with mesta. The highest value of mesta equivalent yield (29.25 q ha^{-1}) was recorded from mesta + pigeonpea intercropping in row ratio 4:2 (T_5) during both the years, while the lowest equivalent yield (21.03 q ha^{-1}) was recorded in sole crop of mesta (T_1).

Pigeonpea: Mesta + pigeonpea in 4:2 ratio (T_5) produced significantly higher number of pods per branch compared with T_2, T_3 and T_4. Number of seeds per pod were also recorded highest under same treatment while seed weight did not differ significantly but even in sole and intercropped mesta.

Economics: The highest net income of Rs 35000 ha^{-1} was recorded under T_5 due to higher produce under same treatment. While low net income (Rs. 22000 ha^{-1}) was noticed under sole crop of mesta, which may be due to lower production of mesta crop. C: B ratio was also higher under T_5.

REFERCNCES

Chaterjee, B. N and Mandal, B. K. (1992) Present trends in research on intercropping (Research review). *Indian Journal Agricultural Sci*ences 62 (8): 507-518.

Mandal B. K. and Mahaptra, S.K (1990) Barley, lentil and flax yield under different intercropping systems. *Agronomy Journal* 83 (6): 1066-1068.

Mandal B. K., Ghosh, R.K., Das N. C. and Somchoudhary, A. K. (1987) Studies on cotton-based multiple cropping. *Experiments in Agriculture* 23: 443-449.

Mandal, B. K., and Majumdar, A. (2010) Studies on intercropping systems with jute in rainfed upland. In: *Jute and Allied Fibres Production, Utilization and Marketing*. Palit. P, Sinha M.K., Meshram, Mitra, S., Laha, S.K. Saha, A.R, and Mahapatra, B.S. (Eds) Indian Fibre Society Eastern Region, Kolkata pp. 235-243, (ISBN: 978-81-901054-4-6).