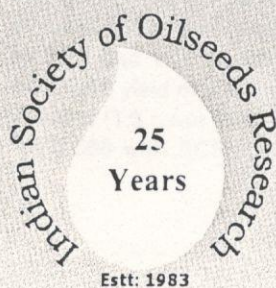


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CA 221

Journal of Oilseeds Research

Volume 26
(Special Issue)
2009
ISSN 0970-2776



Indian Society of Oilseeds Research
Directorate of Oilseeds Research
Rajendranagar, Hyderabad-500 030, India

The protein content of groundnut kernels were not significantly influenced by various treatments, while oil content of groundnut kernel was significantly influenced by various treatments. The highest protein content (29.9%) was observed in 150% RDF while the lowest value (24.1%) of protein was noticed in Absolute control. The highest oil content (47.9%) was found in 150% RDF and was at par with 5 t FYM + 50% RDF + NC + BF. The lowest oil content (46.27%) was found in control (Table 2).

In view of the above, it may be concluded that application of 5 t FYM/ha + 50% RDF + 500kg/ha Neem cake + Bio-fertilizers was found to be beneficial in improving productivity of confectionary groundnut and its quality and soil health.

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Sustainable production of rainfed oilseeds through intercropping in Kachchh region of Gujarat

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Abstract

Sole crop yields of the major rainfed oilseed crops namely, groundnut, castor and sesame are low and had very high yield fluctuation due to erratic rainfall in arid region of Gujarat. Intercropping of these oilseeds not only stabilized the production but also gave consistently higher net monetary returns as compared to their sole crops.

Key words: Sole cropping, castor, groundnut, sesame, clusterbean

Introduction

The Kachchh region of Gujarat, the largest district of the state, is characterized by deficient and erratic rainfall (average rainfall of 326 mm in 8 rainy days), less ground water with poor quality and sandy to sandy loam soil having low organic carbon. As such, the productivity of rainfed crops is low with a very high coefficient of variation. The major rainfed oilseed crops grown in the region are *kharif* groundnut, castor and sesame with an average area (000 ha) and production (000 t) of 62.6 and 88.2; 53.9 and 86.8, and 31.0 and 14.3, respectively. However, the production of these oilseed crops fluctuates vigorously with Coefficient of Variation of 45.8% in *kharif* groundnut, 36.5% in castor and 53.2% in sesame (over the years of 2000 to 2006). To stabilize the production in these constraints environments, intercropping seems to be better option than for sole cropping prevalent in the region. Therefore, the field investigations were carried out on intercropping involving the major oilseeds grown in the region.

Materials and methods

The field experiments were conducted at the Central Arid Zone Research Institute, RRS, Bhuj during 2003 to 2007. The studies on intercropping of castor (cv GCH 4) with sesame (GT 2) and with groundnut (cv GG2) with different row ratios were conducted during 2003-04. In another experiment, intercropping of sesame (cv GT 2) with cluster bean (cv RGC-936), an ~~and~~ legume, with different row ratios (1:1, 1:2 and 2:1) and nutrient management levels were conducted during 2005-2007. In all the experiments, sole crop treatments were included for comparison. The soil of the experimental site was gravelly-sand to loamy-sand with shallow depth (15-25 cm), EC value ranging from 2 to 6.38 dS/m and pH from 8.4 to 9.2. The soil contained 0.25 % organic carbon, 7.35 kg P₂O₅ and 215 kg K₂O/ha. The total rainfall received during the crop period was 993.4 mm in 2003, 253.9 mm in 2004, 238.2 mm in 2005, 689.4 mm in 2006 and 701.8 mm in 2007. The data on yield and yield attributing parameters were recorded and economics were computed based on the prevailing market price.

Results and discussion

The pooled results over two years on castor+sesame intercropping indicated that castor and sesame as sole crop produced 635 and 324 kg grain yield/ha, respectively. Though the adoption of intercropping in the row ratio of 1:3 decreased the yield by 27.4 and 17.3% over sole crops of castor and sesame, respectively, it was more than compensated by producing additional yield of intercrops (castor 461 kg/ha and sesame 268 kg/ha) in the system. Thus, the intercropping of castor+sesame (1:3 ratio) gave the gross returns of Rs 16897 /ha with BCR of 1.40 as against Rs 12,382 with BCR of 1.37 and Rs 9,558 with BCR of 1.39 by sole crops of castor and sesame, respectively. Meena *et al.* (2008) observed that

intercropping sesame with other rainfed crops was more profitable than sole sesame under arid region of Gujarat. The data on Intercropping of castor with groundnut revealed that sole crops of castor and groundnut produced an average yield of 570 and 150 kg/ha, respectively. The pod yield of groundnut reduced significantly due to deficient rainfall particularly during the reproductive stage (in September only 6.3 mm rainfall).

The grain yield under intercropping was found to be reduced by 31.9% in castor and 16.6% in groundnut as compared to their sole crop treatments. However, considering the economics of the system, intercropping of castor + groundnut (1:3) gave gross return of Rs 11,566/ha which was higher by Rs 1451/ha over the sole castor and by Rs 8,026/ha over the sole groundnut. Solanki *et al.* (2006) also reported higher profitability of castor+ groundnut intercropping than sole cropping.

Pooled results over three year on intercropping of sesame + cluster bean indicated that grain yield under intercropping system reduced by 28.8% in cluster bean and 40.4% in sesame as compared to their sole treatments. However considering the net returns and BCR, intercropping of sesame with cluster bean (1:2) gave the maximum net returns of Rs 7,440/ha along with BCR of 1.80 compared with Rs 5,945/ha and BCR of 1.68 in sole cluster bean and Rs 2,851/ha and BCR of 1.37 in sole sesame. The Sustainable Yield Index (0.74) and Sustainable Value index (0.76) were also higher in intercropping of sesame+cluster bean (1:2) than that recorded by sole sesame (0.73 and 0.73) and sole cluster bean (0.71 and 0.72). Singh *et al.* (2003) and Meena *et al.* (2008) reported that intercropping involving cluster bean and sesame was more profitable and sustainable than sole cropping.

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Bullock drawn multipurpose implement for efficient sowing under dryland conditions

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Abstract

At present for different crops and farm operations, farmers need different implements, which are costly as well as difficulty in maintenance and repairs. Skilled persons availability for sowing are low which affects the timely sowing of crops. On the basis of these considerations/requirements the centre has designed and developed bullock drawn multipurpose implement to perform different operations such as harrowing, tilling, preparation of ridges and furrows and sowing. The results of the field trials conducted for sowing of groundnut, safflower and sunflower revealed that effective field capacity was 1.66 to 2.22/ha/day, field efficiency ranged from 63.6 to 70.9% and the average cost of operation was Rs. 212.50/ha.

Keywords : Effective field capacity, sowing, multipurpose implement

Introduction

In the rainfed agro eco zone the bullock drawn single bowl and two bowl seed drills are used for sowing of the crops. The two bowl ferti-seed drill developed by ZARS, Solapur, is popular amongst the farmers in the region. However, the distribution of seed and fertilizer is manual and uneven. In the manual sowing skilled person is required for maintaining plant population. Now a days skilled persons availability for sowing are very low which affects the timely sowing of crops. Various types of planters and seeding machines are available for sowing of different crops. However, due to high cost of the machines, it is not affordable to the farmers for single operation. Also, the draft requirement of these machines is more. At present the farmers are demanding one implement for different crops and different operations with affordable cost. Hence, on the basis