

influenced the the predatory potency of each predator. He has shown that a combination of resistant variety and a predator gave a better control of *S.furcifera* than either of the methods alone. The effectiveness of the wolf spider under field conditions, however, might be less than in these tests when the prey was confined to cages and the choice of food for the predator was limited. The wolf spider is well known for its cannibalistic tendencies as well as its capacity to feed on other beneficial arthropods, thus severely limiting its value as a predator.

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EFFECT OF PLANT DENSITY AND NUTRIENT LEVELS ON NEW COTTON VARIETIES

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ABSTRACT

Experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore during the winter seasons of 1991-92, 1992-93 and 1993-94 to find out the optimum spacing and fertilizer level for the new varieties of cotton. The results revealed that the varieties LRK 516, MCU 11, TCH 1002 and TCH 1028 recorded more seed cotton yield with closer spacings of 75 x 20 cm and 60 x 15 cm with a fertilizer level of 80:40:40 kg NPK ha⁻¹.

KEY WORDS : Cotton varieties, Spacing, Fertilizer Level, Seed Cotton Yield.

Population and geometry varies with plant type, its architecture, soil fertility and soil moisture (Bonde, 1992). To obtain maximum yield of cotton, it is essential to find out the optimum combination

(Nagwekar *et al.*, 1987). Therefore an experiment was conducted to study the effect of spacing (plant population) and fertilizer levels on some new varieties of cotton.

MATERIALS AND METHODS

Field experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore during the winter seasons of 1991-92, 1992-93 and 1993-94 under All India Coordinated Cotton Improvement Project to find out the optimum spacing and fertilizer requirement of new varieties of cotton under irrigated conditions. The treatments comprise of three varieties of cotton during 1991-92 (MCU 11, TCH 1002 and LRK 516) two varieties during 1992-93 (MCU 11 and TCH 1002) and four varieties during 1993-94 (TCH 1002, MCU5, TCH 1028 and TCH 976) and with three spacings during 1991-92 (75 x 30 cm, 75 x 15 cm and 60 x 15 cm) three spacings during 1992-93 (75 x 30 cm, 75 x 20 cm and 75 x 40 cm) and two spacings during 1993-94 (75 x 20 cm and 75 x 40 cm) as the main plot treatments. The sub-plot treatments were two fertilizer levels during 1991-92 (80 : 40 : 40 and 120 : 60 : 60 kg NPK ha⁻¹) and three levels during 1992-93 and 1993-94 (40 : 20 : 20, 80 : 40 : 40 and 120 : 60 : 60 kg NPK ha⁻¹). The experiment was laid out in split plot design with three replications. The soil was clay loam with low, medium and high in available N, P₂O₅ and K₂O respectively in all the years. The crop was sown on 19.7.91, 7.7.92 and 27.7.93 during respective years. Half of N and full dose of P and K were applied as basal dose at the time of sowing as per treatment schedule. Remaining half of N was applied 45 days after sowing as per treatment. Necessary irrigation and need based plant protection were given to the crop.

RESULTS AND DISCUSSION

The results on yield data revealed that during the year 1991-92, variety LRK 516 recorded the highest seed cotton yield of 18.03 ha⁻¹ followed by TCH 1002 (Table 1). During 1992-93 and 1993-94 the varieties tested did not differ among themselves in respect of seed cotton yield. During 1993-94, the seed cotton yield was reduced in all the treatments due to the excess rainfall during boll maturity and boll bursting stages.

Closer spacing increased the seed cotton yield in all the years. During 1991-92, 60 x 15 cm spacing recorded more seed cotton yield and during 1992-93, 75 x 20 cm and 75 x 30 cm produced

Table 1. Effect of plant density and fertilizer level on new varieties of cotton

Treatments	Seed cotton yield (q ha ⁻¹)		
	1991-92	1992-93	1993-94
Varieties (V)			
MCU 11	14.29	16.41	-
TCH 1002	15.98	16.18	9.76
LRK 516	18.03	-	-
MCU 5	-	-	8.91
TCH 1028	-	-	14.55
TCH 976	-	-	12.45
Spacing (S)			
75 x 30 cm	14.54	16.68	-
75 x 15 cm	15.93	-	-
60 x 15 cm	17.83	-	-
75 x 20 cm	-	16.46	13.15
75 x 40 cm	-	15.74	9.69
Fertilizer levels (F) (NPK kg ha ⁻¹)			
40 : 20 : 20	-	15.60	9.78
80 : 40 : 40	16.03	16.72	10.42
120 : 60 : 60	16.16	16.56	14.05
CD (P=0.05)			
V	1.47	NS	NS
S	1.49	0.35	NS
F	NS	0.21	NS
V x S	NS	NS	NS
S x F	NS	NS	NS
V x F	NS	NS	NS

NS : Not-significant

higher seed cotton yield. During 1993-94, closer spacing of 75 x 20 cm produced higher seed cotton yield. However, the yields did not differ much. Fertilizer level of 80 : 40 : 40 kg NPK ha⁻¹ recorded higher seed cotton yield during 1991-92 and 1992-93. During 1993-94, though higher level (120:60:60) recorded higher seed cotton yield, the yield is not considerably different from those of other levels. The interaction effects were not significant. It can be concluded that the varieties LRK 516, MCU 11, TCH 1002 and TCH 1028 can be suggested with a closer spacings of 60 x 15 cm and 75 x 20 cm with a fertilizer level of 80 : 40 : 40 kg NPK ha⁻¹ for better seed cotton yield.

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EVALUATION OF COTTON BASED CROPPING SYSTEMS UNDER COIMBATORE CONDITIONS

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ABSTRACT

Field experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore during 1991-92 and 1992-93 under irrigated conditions to identify suitable cotton based cropping system under Coimbatore conditions. Results revealed that cotton (MCU 5)-tomato (Co 3) gave a maximum net income of Rs.26,900 and Rs.33, 150 during 1991-92 and 1992-93 respectively. Cotton (MCU 5)- soybean (Co 1) and cotton (MCU 5) - maize (Co1) systems also recorded more net income next to the cotton-tomato cropping system.

KEY WORDS : Cotton, Cropping System, Net Return Cotton is grown as a winter crop from August to February in black soil areas of Coimbatore, Tamil Nadu under irrigated conditions. After the harvest of cotton crop, the field is kept vacant or an uneconomical crop is raised till next August. With the aim of increasing the cropping intensity and to identify on suitable cropping system, an experiment was conducted to find out the most suitable crop that can be grown profitably after the harvest of winter combodia cotton

MATERIALS AND METHODS

Field experiments were conducted at the Tamil Nadu Agricultural University, Coimbatore under All India Coordinated Cotton Improvement Project during 1991-92 and 1992-93 to find out the suitable cotton based cropping system under Coimbatore conditions. The soil was clay loam with low, medium and high in available N, P and K in both the years. During the winter season, cotton variety MCU 5 was sown in both the years. The cotton crop was sown on 27.7.91 and 17.7.92 during 1991-92 and 1992-93 respectively. After the harvest of cotton crop, five crops, viz., sorghum (Co 26), maize (Co 1), sunflower (Co 1) soybean (Co 1), and tomato (Co 3) were sown during 1991-92. In the year 1992-93, gingelly (Co2) was included in addition to five crops tested during the first year. The crops were sown / planted on 9.2.92 and 9.2.93 during the respective years. The experiment was laid out in randomised block design with three replications. Necessary irrigation and need based plant protection were given to all the crops. After the harvest, the yields were recorded and the

RESULTS AND DISCUSSION

The results revealed that the yield of cotton MCU 5 was normal in both the years (Table 1). Among the succeeding crops, tomato (Co3) recorded a fruit yield of 267 and 245 q ha⁻¹ during 1991-92 and 1992-93 respectively. The seed cotton yield equivalents to tomato were 28.7 and 36.7 q ha⁻¹ which were highest among all other succeeding crops. Next to tomato, soybean (Co 1) and maize (Co 1) produced more seed cotton yield equivalents in both the years. Among other crops tested, performance of gingelly (Co2) and sunflower (Co 1) was poor. Among various crops tested, gingelly (Co2) and sunflower (Co 1) recorded the lowest yield and seed cotton yield equivalent. This is inconfirmation of the findings of Chareau (1975) and Bonde (1992) who reported that maize and sorghum grow well after the cotton crop.

The economics of the different systems revealed that cotton (MCU) 5 - tomato (Co3) sequential cropping system gave a maximum net income of Rs.26,900 and Rs.33,150 during 1991-92 and 1992-93 respectively. The second best system