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STUDIES ON YIELD AND BRANCHING AT VARIOUS GROWTH STAGES IN *RABI* GROUNDNUT

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ABSTRACT

Field experiment conducted in the *rabi* season showed that the branching in groundnut was significantly higher under the improved package of practices as recommended by ICRISAT, when compared with the recommended package of practices of the Department of Agriculture, Maharashtra State, Pune at all the stages of crop growth. In general, groundnut CV. ICGS 11 and ICGS 44 recorded more number of branches/plant while CV. SB X1 and ICGS 21 had lower branches. Dry pod yield /ha was significantly higher in ICRISAT recommendation . CVICGS 11 and ICGS 44 were equally efficient and significantly superior in producing dry pod yield/ha. However, dry haulm yield/ha was not significantly influenced either by the different package of practices or varieties.

KEY WORDS : Groundnut, Package of Practice, Branching Influence.

Branching in groundnut is important as it is related to yield. Gosh and Dasgupta (1975) found that variation in yield due to different sowing times or genotypes was directly proportional to the relative height, branches and dry weight per plant. In view of this, it is worthwhile to develop

Table 1. Field operations done and inputs used in the different packages of practices

Field operations/inputs	ICRISAT package of practices (P_1)	State Department package of practices (P_2)
Preparatory tillage	2 ploughings, 2 harrowings, clod crushings, clod crushing and stubble collection	Similer to P_1
Seedbed	2- rows narrow bed and furrow	Plat bed (Check basin)
Basal dose of manure and fertlizers/ha		
Farm yard manure	10 t	10 t
Single super phosphate	550 kg	Nil
Ammonium sulphate	25 kg	Nil
Zinc sulphate	10 kg	Nil
Di-ammonium phosphate	Nil	100 kg
Top dressing/foliar application		
Ferrous sulphate 2.5 kg + urea 5 kg in 500 l water.	Applied twice, 30 and 50 days after emergence	Nil
Gypsum @ 400 kg/ha at flowering	Applied	Nil
Seeds and sowing		
Spacing and method of sowing	Hand dibbling at 30 x 10 cm^2	Similar to P_1
Seedrate (kernela, kg/ha)	100-105	125-130
Seed treatment	Thiram @ 3 g/kg of kernels	Thiram @ 5 g/kg of kernels *Rhizobium*
Seed inoculation with *Rhizobium*	Nil	250 g/10- kg of kernels
After care		
Weedicide 'Stomp' pre-emergence	3.5 l/ha	Nil
Gap filling	Once	Once
Weeding	Once	Twice
Light earthing up	Nil	Once
Uprooting big weeds	Once	Once
Other	Deepening of furrows thrice (5)	Hoeing twice
Plant protection		
Dimethoate	660 ml/ha/spray, once	500 ml/ha/spray in *rabi*
Monocrotophos	1 litre/ha one spray	700 ml/ha, one spray
Carbendazim	250 g/ha one spray	250 g/ha, one spray
Carbendazim + tride morph.	250g+350ml/ha respectively one spray	Similar to P_1
Irrigation (No.)	8 in *rabi*	8 in *rabi*
Harvesting	By pulling the plants	By pulling the plants.
Stripping, drying and cleaning the pods and storing	By manual labour	By manual labour

Table 2. Number of branches/plant and dry pod and haulm yields (Q/ha) during *rabi* season

Treatments	Number of branches/plant (days after sowing)							Dry pod yield (Q/ha)	Dry haulm (Q/ha)
	30	50	70	90	110	130	At harvest		
Package of practices									
P1	2.80	5.18	6.48	7.50	8.88	9.30	9.30	36.69	43.92
P2	2.55	4.63	5.72	6.52	7.28	7.42	7.42	27.57	39.64
SE±	0.04	0.16	0.21	0.27	0.24	0.25	0.25	0.90	1.66
CD at 5%	0.13	0.49	0.62	0.84	0.72	0.75	0.75	2.74	NS
Varieties									
V1	2.77	5.13	6.23	7.10	8.60	8.78	8.78	34.96	44.82
V2	2.80	4.97	6.33	7.13	7.77	7.98	7.98	33.88	41.07
V3	2.63	5.23	6.63	7.53	9.17	9.60	9.60	37.63	45.09
V4	2.50	4.30	5.23	6.27	6.77	7.07	7.07	22.05	36.14
SE±	0.06	0.23	0.29	0.39	0.33	0.35	0.35	1.28	2.34
CD at 5%	0.19	0.70	0.88	NS	1.02	1.06	1.06	3.87	NS
Interaction P x V									
SE±	0.09	0.32	0.41	0.55	0.47	0.49	0.49	1.81	3.31
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS
G. Mean	2.67	4.91	6.10	7.01	8.08	8.36	8.36	32.13	41.78

methods to initiate early branching and their good growth. The present investigations were undertaken to study the branching in groundnut varieties cultivated during *rabi* season under different package of practices.

MATERIALS AND METHODS

The field experiment was conducted during the *rabi* season of 1988-89 in a factorial randomised block design with three replications. A combination of two package of practices (P1=ICRISAT, Patancheru, Andhra Pradesh; P2= Department of Agriculture, Maharashtra State, Pune) and four varieties of groundnut (V1=ICGS 11, V2 = ICGS 21, V3 = ICGS 44 and V4=SB X1) comprised eight treatments. The details of field operations done and inputs used in the different package of practices are furnished in Table 1. In P1, two rows of groundnut were grown on a raised bed of 50 cm width. After every bed, a furrow of 30 cm width and 15 cm depth was opened which served the purpose of letting irrigation water to the crop. In P2, groundnut was grown in a flat check-basin seedbed. Observation on number of total branches was recorded on five randomly selected plants from each net plot.

RESULTS AND DISCUSSION

Number of branches/plant

Data (Table 2) indicated that total number of branches/plant increased upto 130th day and thereafter, remained constant up to harvest. Branching significantly improved with P1 compared to P2 at all the stages of crop growth. Reid and York (1958) observed reduced reproductive branching when zinc was absent in nutrient solutions. At 30th day, V2 and V1 were better in branching while V4 and V3 produced less number of branches/plant. At 50th day, V3 and V1 produced more number of branches while at 70th day, V1,V2 and V3 were equally efficient and produced significantly remained unaltered at 90th day in all the varieties studied. From 110th day till harvest, highest number of branches/plant recorded in V3 was on par with V1 and superior to V2 and V4. However, V4 and V2; V1 and V2 were at par with each other. V1 was superior to V4.

Dry pod and haulm yields (Q/ha)

Dry pod yield/ha was significantly higher in P1 than P2 (Table 2). V1, V2 and V3 were equally efficient and significantly superior over V4 in producing dry pod yield. However, neither the different package of practices nor the varieties significantly influenced dry haulm yields. Significant positive correlations between pod yield/plant and number of branches per plant have been reported earlier by Barlawat (1985) and Tekale *et al* (1988).

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NODULATION IN GROUNDNUT CULTIVARS DURING *KHARIF* UNDER DIFFERENT PACKAGES OF PRACTICES

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ABSTRACT

Field experiment conducted in the *kharif* season of 1989-90 showed that the number of nodules/plant and the dry pod and haulm yields of groundnut crop were significantly higher under the package of practices recommended by ICRISAT, when compared with the recommended package of practices of the Department of Agriculture, Pune, In general, groundnut CV. ICGS 11, ICGS 21 and ICGS 44 produced higher number of nodules plant over CV. SB IX. These varieties behaved similarly in respect of the traits dry pod and haulm yield/ha.

KEY WORDS : Groundnut, Nodulation, Package of Practices, Rhizobia, Economic yield.

Groundnut is a leguminous plant which fixes atmospheric nitrogen in the root nodules. The amount of nitrogen fixed symbiotically depends mainly on the rhizobial strain, the genotype of the host plant and elements of external environment including soil moisture and temperature, light intensity, day length and availability of plant nutrients. It would be worthwhile to develop better package of practices for groundnut cultivation and responding genotypes that are capable of efficient nitrogen fixation in symbiosis with native rhizobia. Keeping this in view, the present investigation was under taken to study the nodulation in various genotypes of groundnut during *kharif* (monsoon/rainy) season grown under the different package of practices.

MATERIALS AND METHODS

The field experiment was conducted during *kharif* 1989-90 in a factorial randomised block design with three replications. A combination of two package of practices (P_1 = ICRISAT, Patancheru, Andhra Pradesh, India., P_2= Department of Agriculture, Maharashtra State, Pune, India) and four varieties of groundnut (V_1= ICGS 11, V_2= ICGS 21, V_3 = ICGS 44 and V_4=SB XI) comprised eight treatments. The details of field operations done and inputs used under different package of practices are given in Table 1. In P_1, two rows of groundnut were grown on raised beds of 50 cm width. After every bed, a furrow of 30 cm width and 15 cm depth was opened. In P_2, the crop was cultivated on a flat check-basin seed bed. Two randomly selected plants from each net plot were