

are smaller and dark green in colour. The pods are medium sized without constriction and with prominent reticulation. The pods are 1-4 seeded, the frequency of 2 and 3 seeded pods being higher. The seeds are packed compactly inside the pods. The kernels are medium sized, round to flat in shape and tan in colour. Thus it could be easily differentiated from other varieties and the genetic purity could be maintained easily.

In view of the superior performance VG 8918 was released as VRI 4 during 1996 by the State Variety Release Committee.

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VRI 3: AN EARLY MATURING BUNCH GROUNDNUT VARIETY

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ABSTRACT

The bunch groundnut variety VRI 3 is early to mature in 90 days. It is derived from the cross J11 X Robut 33-1. It has an average yield of 1668 and 1882 kg/ha under rainfed and irrigated conditions, respectively. It is suitable for cultivation as an intercrop in tapioca, banana and coconut. It has an oil content of 48.7 per cent and shelling out turn of 7 per cent.

KEY WORDS: Bunch Groundnut, VRI 3, Early Maturity, Variety

The bunch groundnut (*Arachis hypogaea* ssp. *fastigiata*) varieties under cultivation in Tamil Nadu take 100-105 days to mature. The early maturing bunch groundnut varieties will be useful in 1) multirelay cropping sequences 2) north-east monsoon conditions under rainfed situations 3) lift or tank-fed areas where water scarcity is likely to occur 4) delayed south-west monsoon conditions 5) growing in the rice fallows, and 6) intercropping

situations. Hence, with the objective of developing early maturing bunch groundnut varieties, hybridisation work was undertaken at the Regional Research station, Vriddhachalam.

MATERIALS AND METHODS

Crosses were effected using chico, Ah 316/S. Gangapuri, EC 21137-1, 91176 and 91776 (early

Table 1. Performance of VG 55 under rainfed conditions

Name of the trial	No. of Trials	Dry pod yield (kg/ha)			
		VG 55	Co 1	Co 2	JL 24
Station Trials	6	2108	1637	1937	2412
Multilocation	5	1270	1338	1379	1398
AICORPO Trials	28	1867	-	-	1782
On Farm Trials	14	1428	1193	-	1553
Mean	-	1668	1389	1658	1786

Culture/variety	Dry pod yield (kg/ha)	Days to maturity	Productivity per day (kg/ha/d)
VG 55	1668	91	18.3
Co 1	1389	105	13.2
Co 2	1658	106	15.6
JL 24	1786	105	17.0

Percentage of increase in per day productivity over

Co 1	: 38.6
Co 2	: 17.3
JL 25	: 7.6

Table 2. Performance of VG 55 under irrigated conditions

Name of the trial	No. of Trials	Dry pod yield (kg/ha)				
		VG 55	Co 1	Co 2	JL 24	JL 11
Station Trials	6	1787	1626	1500	1567	
Multilocation Trials	2	1739	1722	2000	1752	
On Farm Trials	61	1933	1896	1900	1828	
AICORPO Trials	30	2066	-	-	-	1859
Mean		1882	1748	1900	1716	1859

Culture/variety	Dry pod yield (kg/ha)	Days to maturity	Productivity per day (kg/ha/d)
VG 55	1882	90	20.9
Co 1	1748	106	16.5
Co 2	1900	105	18.1
JL 24	1716	101	17.0

Percentage of increase in per day productivity

over	Co 1	: 26.7
	Co 2	: 15.5
	JL 25	: 22.9

maturing bunch genotypes) and Robut 33-1 (early maturing virginia buch genotype) as pollen parents and TMV 2, TMV 7, TMV 12, Co 1, Co 2, J 24, and J 11, the high yielding bunch varieties with normal duration as ovule parents. In the F₂ generation, all the plants were harvested on 90 DAS, and the single plants with well developed and matured pods alone were forwarded to F₃ generation. In the F₃ and F₄ generations, data were recorded on days to 50 per cent flowering and days to maturity. Those plants which matured in 90 days alone were forwarded to subsequent generations. In the F₅ generation, one line bulk *i.e.*, culture VG 55 from the cross JII X Robut 33-1 was identified which possessed early maturity and good pod yield (Manoharan *et al.*, 1985).

The culture was tested vigorously in the Regional Research Station, Vriddhachalam from 1983 to 1989 under both rainfed and irrigated conditions and subsequently in other research stations of TNAU as multilocation trials (MLT) during 1985 and 1986. Based on its superior performance, it was promoted to adaptive research trials (ART) in the farmer's holdings in different groundnut growing areas of Tamil Nadu from 1986

to 1989. It was also evaluated in the rice fallows in Thanjavur and South Arcot districts. It was also tested under the All India Co-ordinated Research Project on Oilseeds throughout India from 1985 to 1989. Its performance as an intercrop in tapioca, banana and coconut was also evaluated.

RESULTS AND DISCUSSION

The performance of culture VG 55 under rainfed conditions is furnished in Table 1. A total number of 53 trials was conducted under different categories. Culture VG 55 registered a mean pod yield of 1668 kg/ha compared to 1389, 1658, and 1786 kg/ha of Co 1, Co 2 and JL 24 respectively. The per day productivity of VG 55 was 18.3 kg/ha which was 38.6, 17.3 and 7.6 percents higher than Co 1, Co 2 and JL 24. Similarly under irrigated conditions, VG 55 was evaluated in 99 trials, the results of which are presented in Table 2. Culture VG 55 recorded a mean pod yield of 1882 kg/ha while the check varieties Co 1, Co 2, JL 24 and J 11 yielded 1748, 1900, 1716 and 1859 kg/ha respectively. The per day productivity of VG 55 was 20.9 kg/ha which was 26.7, 15.5 and 22.9 percents higher than these varieties. Culture VG 55 has an yield potentiality as high as 3935 kg/ha under good management conditions. Under rice fallow conditions in Thanjavur district, VG 55 has registered a pod yield of 1933 kg/ha. VG 55 has a shelling percentage of 75.0 and oil content of 48.7 per cent. The performance of VG 55 as an in

Table 3. Performance of VG 55 as an intercrop

Main crop	Pod yield of VG 55 as an intercrop (kg/ha)
Tapioca	1793
Banana	1325
Coconut (4 year old plantation)	1170

Table 4. MORPHOLOGICAL DESCRIPTION OF VARIETY 3

Botanical type	: Spanish Bunch
Branching type	: Sequentially branching
Habit	: Bunch
Days to 50% flowering	: 24-26 days
Days to maturity	: 90 days
Stem	: Medium thick, light green in colour
Leaf	: Medium size, light green foliage, Oblong-elliptic
Flower	: Standard orange coloured
Peg thickness	: Medium
Number of seeds per pod	: 1-3 seeded; mostly 2 seeded
Pod beak	: Non to little
Pod constriction	: Moderate
Shell thickness	: Thin
Kernel size	: Small
Seed coat colour	: Light rose
100-kernel weight	: 30.35 g
100-pod weight	: 79 g
Oil percentage	: 48.7
Shelling percentage	: 75

(Table 3). As an intercrop in tapioca and banana, VG 55 has yielded 1793 and 1325 kg/ha respectively. In the 4 and 27 year old plantations of coconut VG 55 has yielded 1170 and 1690 kg/ha. In the light of its early maturity (90 days) and higher productivity per day, VG 55 was released as VRI 3 during January 1990 by the Tamil Nadu State Variety Release Committee. The variety is already spreading faster among the farming community.

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RESEARCH NOTES

CYTOLOGICAL STUDIES ON INTERSPECIFIC HYBRIDS BETWEEN *Vigna radiata* and *V.mungo*

The experimental materials were raised during *rabi* 1992 at the Agricultural College and Research Institute, Madurai. Seven parents and four hybrids [F₁] were raised in the field for collecting the experimental data [Table 1]

The flower buds 1 to 2mm in size were fixed between 07.45 AM and 08.00 AM (choudhury and chodhury, 1974) for meiotic studies. The materials were kept in a fixative for 24 h at 10-15°C. Afterwards, the buds were washed and preserved in 70 per cent alcohol for preparing slides. The anthers were washed and stained with 1 per cent aceto-

DISTINGUISHING MORPHOLOGICAL CHARACTERS

The days taken to 50 per cent flowering of this variety is 2-3 days earlier as compared to other bunch groundnut varieties under cultivation. Under normal conditions, the variety attains full maturity in 90 days. The pods and kernels are smaller (100 kernel weight is around 30-35 g). The pods have moderate constriction and reticulation with little or no break. The pods are 1-3 seeded, mostly 2 seeded. The testa colour is rose. The morphological description of VRI 3 is furnished in Table 4.

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carmine and the slides were slightly warmed and gently pressed, in between the blotting paper to remove excess stains and observed under light microscope.

The chromosome association at meiosis was studied for the hybrids KM2 x T 9, KM 2 x COBC 305, Paiyur 1 x ADT 5 and CO 5 x TMV 1 and their parents. All the cytological studies were made through the Meopta light microscope at the Department of Agricultural Botany, Agricultural College and Research Institute, Madurai.