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Research Article

VRI Gn 7 – A high yielding Virginia Bunch variety

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Abstract :
The semi spreading groundnut culture VG 9902 is a hybrid derivative of TMV 1 x JL 24. It is a high yielding semi spreading genotype with rose testa. It matures in 120-125 days. This culture has recorded an overall mean dry pod yield of 1865 kg/ha, with an increase pod yield of 19.0 and 23.3 per cent over TMV 1 and TMV 10, respectively under rainfed condition. The pod and kernel characteristics of this culture are most acceptable to the farmers. The shelling out turn and oil content are 72.0 and 48.0 per cent, respectively. The culture possessed seed dormancy for a period of 45 days.

Key words:
VRIGn 7, Groundnut, semi spreading

Introduction

Groundnut (*Arachis hypogaea* L.) is one of the most important oil seed crops of India. In Tamil Nadu, it was cultivated in an area of 6.1 lakh hectares with a production of 10.9 lakh tones (Anonymous, 2005-06). The productivity was 1775 kg/ha. Majority of the area was under bunch groundnut varieties. However semi-spreading varieties viz., TMV 1 and TMV 10 are still under cultivation at Salem, Erode Namakkal, Dharmapuri, and Perambalur districts of Tamil Nadu. The yield potential of these semi-spreading varieties is far below the state average. Hence with an objective to replace the old varieties, an attempt was made to develop a new variety with desirable agronomic features.

Key words: Semi-spreading, VG 9902

Material and methods

The Virginia bunch groundnut culture VG 9902 was developed by hybridization followed by pedigree selection. It is a hybrid derivative of TMV 1 x JL 24. From the segregating populations, a semi-spreading type was isolated and evaluated for its yield performance. The culture was tested in station trials during 2001. Later, it was evaluated under multi location trial during 2002. Further, the culture was promoted for evaluation under adaptive research trial during 2004 and 2005. The culture was also nominated for evaluation under AICRP trials during 2003 and 2004. The entry was screened for reaction to pests (leaf miner and *Spodoptera*) and diseases (late leaf spot and rust) under field conditions.

Results and Discussion

Performance of the culture VG 9902 was evaluated against TMV 1 and TMV 10 in MLT during Kharif 2002 (Table 1). The culture recorded a mean pod yield of 1585 kg/ha which was 26.7 per cent superior over the check variety TMV 1 and 11.1 per cent higher over the variety TMV 10. Under the ART conducted during Kharif 2004 over 14 locations, the entry VG 9902 registered a mean pod yield of 2110 kg/ha which was 10.1 percent higher than the check TMV 1, 33.0 per cent superior over another check TMV 10 and 5.7 per cent higher over the check CO Gn 5 (Table 2). Another ART was conducted during Kharif 2005 over 21 locations. The mean pod yield of the testing culture was 1901 kg/ha which was 3.7 per cent higher over the best check variety TMV 10 (Table 3).

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Under the All India Co-ordinated Research Project on Groundnut, the culture VG 9902 was evaluated in Zone V which includes Tamil Nadu, parts of Andhra Pradesh and Karnataka. In the IVT-I (Kharif 2003) and IVT-II (Kharif 2004), the culture recorded a mean pod yield of 1830 kg/ha which was 35.4 per cent superior over the best National Check M 335 (Table 4). The morphological description of the groundnut culture is presented in Table 5.

The culture VG 9902 was screened for pests and diseases during Kharif 2004, Kharif 2005 and Kharif 2006 consecutively. The culture was tolerant to foliar diseases *viz*., late leaf spot and rust (Table 6), while it was moderately resistant to leaf miner and *Spodoptera* (Table 7).

Considering the quality characteristics of the culture VG 9902 with TMV 1 and TMV 10, the entry recorded a mean hundred pod weight which was on par with TMV 10 (Table 8), while the hundred kernel weight was higher (56.0 g) than TMV 1. However, the shelling outturn was 72.0 per cent with an oil content of 48.0 per cent.

By virtue of all the above said special features of the newly developed culture VG 9902, it was released by Tamil Nadu Agricultural University as a new variety VRI Gn 7 for general cultivation during 2008.

References

Annonymous, 2005-06. Statistical hand book, Government of Tamil Nadu.

Table 1. Performance of Groundnut Culture VG 9902 in Multilocation Trials during kharif season.

Season/ Location	Dry pod yield (kg/ha)		
	VG 9902	TMV 1	TMV 10
Kharif 2002			
Vriddhachalam	1667	1328	1461
Coimbatore	1011	622	1036
Paiyur	948	840	829
Yethapur	630	1111	889
Aliyarnagar	1156	800	1007
Kumulur	3450	2575	3183
Bhavanisagar	2907	1818	1943
Tindivanam	907	911	1066
Over all Mean	**1585**	**1251**	**1427**
% increase over TMV 1	26.7		
% increase over TMV 10	11.1		

Table 2. Location wise Performance of Groundnut Culture VG 9902 in Adaptive Research Trial during Kharif 2004

District	Location	Dry pod yield (kg/ha)			
		VG 9902	TMV 1	TMV 10	CO Gn 5
Salem	Veerapandi	2550	2537	2445	2462
	Edapaddi	1849	1647	1775	1658
	Mecheri	1475	1450	1500	1575
	Poosaripatti	1875	2270	2041	1563
	Mean	**1937**	**1976**	**1940**	**1815**
Dharmapuri	Nadupatti	1106	1300	531	888
	Palacode	2400	1400	1600	2200
	Uthangarai	1320	1410	1420	1340
	Krishnagiri	1465	1355	1380	1730
	Mean	**1573**	**1366**	**1233**	**1540**
Perambalur	Jayankondam	1725	1525	--	1450
	Kolathur	1800	1613	--	1550
	Thurupaiyur	750	950	--	1120
	Nagamangalam	790	1050	--	1350
	Mean	**1266**	**1285**	--	**1823**
Erode	Odakattur	5185	4444	--	4815
	Poknadavalasu	5250	3875	--	4250
	Mean	**5218**	**4160**	--	**4533**
Overall Mean		**2110**	**1916**	**1586**	**1996**
% increase over TMV 1		10.1			
% increase over TMV 10		33.0			
% increase over CO Gn 5		5.7			

Table 3. Location wise Performance of Groundnut Culture VG 9902 in Adaptive Research Trial during Kharif 2005

District	Location	Dry pod yield (kg/ha)			
		VG 9902	TMV 1	TMV 10	CO Gn 5
Perambalur	Unjinal	2675	1286	2110	1986
	Kattupriyankiyam	2550	1250	2450	1940
	Perumathur	1550	1225	1412	1212
	Puduammapalayam	1460	1215	1360	1570
	Devamangalam	2675	1137	1300	1537
	Mean	**2182**	**1223**	**1725**	**1649**
Salem	Megudanchavadi	1590	1775	1850	1575
	Nangavalli	1500	1750	1700	1500
	Sikkaanampatti	1922	1815	1380	2150
	Mean	**1671**	**1780**	**1643**	**1742**
Namakkal	Sengodampalayam	1363	1275	1550	1800
	Varagur	1888	1800	2075	1725
	Manjavur	1914	2096	2684	3000
	Andachanallur	2116	1845	1920	1948
	Vellapalayam	2250	1875	2100	2075
	Namgiripettai	3488	3131	3317	3193
	Mean	**2170**	**2003**	**2274**	**2290**
Erode	Sathyamangalam	2085	800	1500	1000
	Gopi	1800	1650	1750	2025
	Bhavani	2426	1176	1912	2206
	Kodumudi	1025	875	962	900
	Perundurai	1175	2113	2463	2025
	Mean	**2128**	**1654**	**1709**	**2039**
Dharmapuri	Palacode	1186	1403	1683	933
	Harur	1274	902	989	1102
	Nallampatti		Damaged due to flood		
	Mean	**1230**	**1152**	**1336**	**1017**
Overall Mean		**1901**	**1586**	**1832**	**1781**

Table 4 Mean Performance of Groundnut Culture VG 9902 in AICRP Trials IVT conducted during Kharif 2002 and 2003 - Pod Yield (Kg/ha)

Zone	Location	VG 9902	Kaushal (N.C)	M 335 (N.C)	Somnath (Z.C)
Zone V	Aliyarnagar	2221	1509	1736	1509
	Chinthamani	1468	1039	841	935
	Digraj	1653	1330	1360	1308
	Jagital	1624	1067	1577	1585
	Raichur	2374	2206	2230	1955
	Kayankulam	3001	1621	1500	1334
	Vriddhachalam	1318	907	1154	989
	Dharwad	1901	1707	1229	1666
	Kadiri	906	625	543	790
	Mean (9)	**1830**	**1335**	**1352**	**1341**
	% increase over Kaushal	37.1%			
	% increase over M 335	35.4%			
	% increase over Somnath	36.5%			

Table. 5. Description of variety

a.	Plant height (cm)	:	25-40
b.	Distinguishing morphological characters (as in crop production guide)		
i.	Primaries (nos.)	:	4-5
ii.	Secondaries	:	Present
iii.	Branching	:	Alternate branching type
iv.	Stem	:	Medium thick, light green in colour.
v.	Leaves	:	Dark green leaves. Ovate, Leaflets are almost pubescent mainly on the abaxial surface and on the margin. Most often hairs are found on the midrib also. Leaf margin entire with acute leaf tip.
vi.	Flower	:	Inflorescence simple. Standard petal orange-yellow colour. It has crescent at the base from which mild orange streaks radiate.
vii.	Peg thickness	:	Medium
viii.	Pod size	:	Medium
ix.	Number of seeds per pod	:	1-3 seeded. Mostly two seeded. The frequency will be 2:1:3
x.	Pod beak	:	Moderate
xi.	Pod constriction	:	Moderate
xii.	Pod reticulation	:	Moderate
xiii.	Shell thickness	:	Medium
xiv.	Kernel size	:	Medium
xv.	Seed Coat colour	:	Rose
xvi.	100 pod weight (g)	:	123.0
xvii.	100 kernel weight (g)	:	56.0
xviii	Oil content (%)	:	48.0
xix	Shelling (%)	:	72.0
c.	Maturity (range in no. of days) seeding / transplanting to flowering, seed to seed	:	120-125 days (Seed to seed)

Table 6. Disease reaction to foliar diseases of groundnut

Sl. No	Season	Disease incidence in 1-9 scale					
		VG 9902		TMV 10		TMV 1	
		LLS	Rust	LLS	Rust	LLS	Rust
1	Kharif 2004	3.1	3.0	4.4	4.3	5.3	5.4
2	Kharif 2005	3.3	3.2	4.5	4.3	5.5	4.9
3	Kharif 2006	3.1	3.1	4.2	4.3	4.4	4.5
	Mean	**3.17**	**3.1**	**4.37**	**4.3**	**5.07**	**4.93**

Table 7. Reaction of VG 9902 to Leaf miner and *Spodoptera* at Regional Research Station, Vriddhachalam

Sl. No	Seasons	VG 9902		TMV 1	
		Leaf miner *(%)*	***S. litura (%)***	**Leaf miner *(%)***	***S. litura (%)***
1	Kharif 2004	18.4	6.4	32.1	13.5
2	Kharif 2005	21.0	--	48.9	--
3	Kharif 2007	22.6	5.4	--	--
	Mean	**20.67**	**5.9**	**40.5**	**13.5**

Table 8. Quality Characters of Groundnut Culture VG 9902

Characters	VG 9902	TMV 1	TMV 10
100 pod weight (g)	123.0	112.0	123.0
100 kernel weight (g)	56.0	39.0	34.0
Shelling (%)	72.0	72.0	74.0
Oil content (%)	48.0	48.0	54.0
Kernel yield (kg/ha)	1343	1128	1119
Oil yield (kg/ha)	645	541	604