

A high yielding red kernel bunch groundnut variety TMV(Gn) 13

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Abstract : The bunch groundnut culture TNAU 325 was a pureline selection from local genotype "Pollachi red". It is a high yielding genotype with small round red kernels. It matures in 100 - 105 days. This culture has recorded an overall mean dry pod yield of 1613 and 2580 kg ha⁻¹ under rainfed and irrigated situations respectively. It represents an increased pod yield of 20.4, 22.4 and 24.0 per cent over VRI 3, TMV 2 and Local Red respectively under rainfed situation. Similarly under irrigated situation this culture out yielded VRI 3, TMV 2 and Local Red by 17.5, 25.8 and 21.8 per cent respectively. The pod and kernel characteristics of this culture are the most acceptable to the farmers. The shelling outturn and oil content are 71.4 and 50.0 percent respectively. In view of its superior performance in respect of pod yield, oil content, good shelling outturn, with round, plumpy red kernels, this culture was released as TMV(Gn) 13 groundnut for commercial cultivation in Tamil Nadu during 2006.

Keywords: *TMV(Gn) 13, groundnut, bunch variety.*

Introduction

Groundnut (*Arachis hypogaea* L.) is one of the important oilseeds in Tamilnadu and grown in an area of 6.2 lakh ha. The annual production is 10 lakh tonnes with a productivity of 1632 kg ha⁻¹ (Annon., 2005). In Tamil Nadu, though many high yielding varieties were released, bunch varieties namely TMV 2 released during 1940 is still very popular among the farmers. This is due to the small seed nature, desirable pod characteristics and moderate drought tolerance. However, this variety is an average yielder. It is necessary to replace the TMV 2 variety with high pod yield with desirable pod and kernel characteristics. With this background, a research programme was initiated at Department of Oilseeds, Tamil Nadu Agricultural University, Coimbatore.

Materials and Methods

The red kernel Spanish bunch culture TNAU 325 was developed at Dept. of Oilseeds, Tamil Nadu Agricultural University, Coimbatore. Pollachi red or Local red is a local variety cultivated in Pollachi, Alangudi and Tiruvannamalai areas of Tamil Nadu. This variety has many variations for pod and kernel characters. Single plant selections were made from the bulk population during 1992 and high yielding progenies were isolated by pure line selection. Promising progenies were tested in station yield trials during 1994-97. The culture was also tested in MLT at various research stations and ART in farmers' holdings of different districts during 1998-99 and 1999-2001 respectively. On Farm Trials were also conducted in farmers' holdings of Tiruvannamalai

Table 1. Over all performance of groundnut culture TNAU 325 in various trials for pod yield (kg ha⁻¹)

Name of the trial	No.of locations	TNAU 325	VRI 2 (c)	VRI 3 (c)	TMV 2 (c)	Local red (c)
<i>Kharif</i>						
Station trials	10	1788	1385	1288	1226	1116
MLT	14	1654	1475	1412	-	-
ART 2000	17	1369	-	1318	1251	1352
OFT 2004	36	1641	-	-	1475	1434
AICORPO (K99-00)*	19	1049		1025 (JL24)		
Mean	77	1613	1430	1339	1317	1301
Oil yield	-	574	490	459	419	410
<i>Rabi/ Summer</i>						
Station trials	11	2684	2162	2150	1781	1642
MLT	13	2304	2068	1957	-	-
ART 1999-00	18	2471	-	2337	2157	2328
ART 2000-01	9	2859	-	2339	2215	2384
Mean	51	2580	2115	2196	2051	2118
Oil yield	-	917	725	753	652	668

* Not considered for mean

district during 2004. Quality parameters and pest and diseases reactions were also estimated.

Result and discussion

In station trials, the culture TNAU 325 recorded 1788 and 2684 kg of pods ha⁻¹ during *kharif* and *rabi/summer* respectively. This represents an increased yield of 29.05 and 24.11 per cent over VRI 2, 38.82 and 24.80 per cent over VRI 3, 45.78 and 50.69 per cent over TMV 2, 60.23 and 63.46 per cent over Local red during *kharif* and *rabi/summer* seasons respectively. In multilocation trials, TNAU 325 recorded 1654 and 2304 kg of pods ha⁻¹ during *kharif* and *rabi/summer*

seasons respectively. It represents an increased yield of 12.13 and 11.44 per cent over VRI 2 and 17.12 and 17.73 per cent over VRI 3 during *kharif* and *rabi/summer* seasons respectively.

In Adaptive Research trails, the culture TNAU 325 recorded 1505 and 2665 kg ha⁻¹ of dry pod yield during *kharif* and *rabi/summer* seasons respectively. This increase was 14.2 and 14.0 per cent over VRI 3, 10.4 and 21.9 per cent over TMV 2, 8.0 and 13.1 per cent over Local red during *kharif* and *rabi/summer* seasons respectively. In On Farm Trials also this culture recorded an

Table 2. District wise performance of groundnut culture TNAU 325 in Adaptive Research Trial during 1999-2001 - Mean pod yield (kg ha⁻¹)

District	Location	TNAU 325	VRI 3 (c)	TMV 2 (c)	Local red (c)
<i>Kharif 2000</i>					
Pudukkottai	2	1070	1127	1138	-
Thanjavur	2	1085	974	932	845
Dharmapuri	1	1500	1188	-	1375
Thiruvallur	2	1650	1755	1625	2033
Perambalur	2	841	911	813	740
Trichy	2	1736	1325	1454	1556
Erode	2	882	1013	1082	-
Villupuram	2	1934	1650	1413	1475
Thiruvannamalai	2	1746	1962	1525	1546
Vellore	2	1250	1275	1278	1245
Mean	17	1369	1318	1251	1352
<i>Rabi / Summer 1999-2000</i>					
Kancheepuram	2	2335	2285	2225	2175
Cuddalore	2	3263	3275	1738	3225
Perambalur	2	2959	1957	1697	2472
Pudukkottai	2	2700	2375	2513	2550
Vellore	2	2288	1688	2563	2250
Tanjore	2	1879	1970	1918	1700
Thiruvalur	2	3525	4413	3725	3344
Thiruvannamalai	2	1438	1188	1266	1543
Villupuram	2	1852	1878	1767	1692
Mean	18	2471	2337	2157	2328
<i>Rabi / Summer 2000-01</i>					
Vellore	2	2719	2400	2438	2188
Cuddalore	2	3109	2571	2223	2506
Pudukkottai	2	3438	1941	1938	2438
Thiruvannamalai	1	1510	1560	1310	1560
Thanjavur	2	3521	3225	3167	3229
Mean	9	2859	2339	2215	2384

Table 3. Morphological and quality description of groundnut culture TNAU 325

Pedigree	:	Selection from "Pollachi red local"
Duration	:	100-105 days
Maturity group	:	Medium
Botanical group	:	Spanish bunch
Plant height (cm)	:	25-40
Primary branches	:	4-5
Secondary branches	:	Available
Leaves	:	Dark green, medium sized leaves, basal leaves obovate, upper leaves elliptic - oblong.
Pods	:	One - two seeded. Basal setting. Small - medium sized pods, Less prominent beak, less constriction, moderate pod reticulation.
Testa colour	:	Red testa
100-pod weight (g)	:	121.3
Shelling outturn (%)	:	71.3
100-seed weight (g)	:	40.0 to 42.0
Oil content (%)	:	50.0 to 51.0
O/L ratio	:	1.09
Protein content (%)	:	22.49

average pod yield of 1641 kg ha⁻¹ which is 11.2 and 14.4 per cent increased yield over TMV 2(1475 kg ha⁻¹) and Local Red (1434 kg ha⁻¹) respectively.

The groundnut culture TNAU 325 has recorded higher pod yield in all the trials and seasons of the study. This culture has recorded an overall mean dry pod yield of 1613 and 2580 kg ha⁻¹ under rainfed and irrigated situations respectively. The increase in pod yield was 20.4, 22.4, and 24.0 per cent over VRI 3, TMV 2 and Local red respectively in rainfed situation. Similarly under irrigated situation this culture

out yielded VRI 3, TMV 2 and Local red by 17.5, 25.8 and 21.8 per cent respectively. The computed oil yield of this culture during rainfed and irrigated seasons was 574 and 917 kg ha⁻¹ respectively.

With regard to pest and disease reactions, the groundnut culture TNAU 325 recorded moderate resistance reaction to late leaf spot and rust while the check varieties TMV 2 and Local Red recorded susceptible reaction under field conditions. The culture TNAU 325 (2%) also recorded low incidence of bud necrosis when compared to check varieties TMV 2 (12%) and Local red (3%).

The morphological characters are presented in Table 2. The culture TNAU 325 has 25-40 cm as plant height, 4-5 primaries with few secondaries. The pods have 1-2 seeds with less prominent beak, less constriction and moderate pod reticulation. The kernels are having red testa with 100-kernel weight of 40-42 g. The culture TNAU 325 recorded 50.0 percent oil content while the check varieties *viz.*, TMV 2, TMV 7 and Local red had 48.6, 48.0 and 47.8 per cent respectively. The O/L ratio of TNAU 325 is 1.09 which is comparable to the check varieties namely TMV 2 (1.05) and TMV 7 (1.04).

In view of its superior performance in respect of pod yield, oil content, shelling outturn, round and plumpy red kernels, this culture was approved by State Variety Release Committee as TMV(Gn) 13 groundnut for commercial cultivation in Tamil Nadu during 2006.

References

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