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## Research Note

### Groundnut TMV 14 – A new high yielding Spanish bunch groundnut variety

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#### Abstract

Groundnut TMV 14 is high yielding Spanish bunch genotype. It is the cross derivative of VRI 6 x R 2001-(2) through pedigree method of breeding Groundnut TMV 14 (2124 kg/ha) has given higher pod yield over the check varieties; 11.5 % increase over VRI (Gn) 6 (1904kg/ha); 15.2 % over check variety TMV Gn 13 (1844 kg/ha) during Kharif season. Groundnut TMV 14 (2286 kg/ha) has given higher pod yield over the check varieties; 29.7 % increase over VRI(Gn)6 (1762kg/ha); 32.3 % over check variety TMV Gn 13 (1727kg/ha) during rabi season under irrigated condition. For oil yield during Kharif season (720 kg/ha), variety TMV 14 gave 14.6%(720kg/ha)increase over VRI(Gn)6 (628kg/ha); 10.7 % over TMV Gn 13 (650 kg/ha) during Kharif season. Similarly for oil yield during rabi season under irrigated condition(775 kg/ha), variety TMV 14 gave 33.3% increase over VRI(Gn)6 (581 kg/ha); 27.2 % over TMV Gn 13 (609 kg/ha). For dry haulm yield (3640 kg/ha), variety TMV 14 gave 12.3% increase over VRI(Gn)6 (3240kg/ha); 22.6 % over TMV Gn 13 (2970 kg/ha) during Kharif season. For dry haulm yield (3758 kg/ha) the variety TMV 14 gave 13.02% increase over VRI(Gn)6 (3326kg/ha); 4.03 % over TMV Gn 13 (3604 kg/ha) during rabi under irrigated condition. Shelling turnover of TMV 14 (70.6%) comparable with VRI(Gn)6 (68%). Sound Mature Kernels are more in TMV 14 (93.9%) compared to VRI(Gn)6 (92%). 100 kernel weight are more in TMV 14 (38g) compared to VRI(Gn)6 (35.0) and TMV Gn 13( 34.6).The variety TMV 14 matures early in 95-100days. For Late leaf spot and rust diseases, variety TMV 14 has shown moderated resistance incidence compared to check varieties. TMV 14 has shown tolerance against *Spodoptera litura*, thrips and *Heliathis armigera* and leaf miner.

#### Key words

Groundnut, TMV 14, seed yield

Groundnut is one of the principal oilseed crops in the world. It is cultivated in 25.9 million ha with a total production of 34.5 million t and an average productivity of 1.33 t ha<sup>-1</sup>(Annual Report of AICRP (G), Kharif 2017). Developing countries, where groundnut is grown mostly under rainfed conditions, account for 96.9% of the world groundnut area and 93.8% of total production (FAOSTAT, 2002). The area and yield of groundnut crop is gradually reduced year by year due to several reasons such as failure of monsoon, occurrence of monsoon at the time of harvest, non availability of seed in time, high seed cost and non availability of labour and susceptible to pest and disease. In Tamil Nadu, the 92% groundnut farmers are growing bunch type during rainfed situation Kharif in larger area (2.36 lakh ha). The existing groundnut varieties are longer in duration (More than 115 days) and the yield of crop was reduced due to occurrence of monsoon at the time of harvest. Hence it is very much essential that a bunch groundnut variety which give higher in yield, early in maturity and resistant / tolerant to disease and pest for Kharif and rabi, is developed.

The groundnut variety TMV 14 was developed by hybridization between VRI(Gn)6x R 2001-(2) during 2008 followed by pedigree selection. From the segregating populations, bunch type was isolated and evaluated for its yield and yield contributing characters. The culture was tested in station trials during 2011-2012. Later, it was evaluated under multi-location trials during Kharif 2013, Kharif 2014, Kharif 2015 under rainfed situation and rabi 12-13, rabi 13-14 and rabi 14-15 under irrigated conditions. Further, this culture was promoted for evaluation under adaptive research trials during Kharif 2015, Kharif 2016 under rainfed and rabi 2015-16 and rabi 2016-17 under irrigated conditions. This culture was also nominated for evaluation under AICORP (Groundnut) trials during Kharif 2013 and rabi 13-14. The entry was screened for diseases viz., powdery mildew, and rust and thrips, *spodoptera* and leaf minor.

Groundnut culture TVG 0856 was tested from 2011 to 2015 during Kharif recorded mean pod yield of 2124 Kg /ha through various trials. This is an



increased yield of 11.5 and 15.2 per cent over VRI(Gn)6 and TMV Gn 13 respectively ( Table 1). Similarly this culture has recorded 2213 kg of pods/ha during *Rabi* season represents an increased yield of 29.7 per cent on VRI(Gn)6 and 32.3 percent increased yield over TMV Gn 13(Table 2).

Groundnut culture TVG 0856 recorded 2040 and 2484 Kg of pods/ha during *Kharif* and *Rabi* season respectively in the station trials. This is an increased yield of 16.4 and 27.5 and per cent during *Kharif* and 38.0 and 25.0 per cent during over VRI(Gn)6 and TMV Gn 13 respectively in station trials. This culture has recorded 2085 and 1775 kg of pods/ha during *Kharif* and *Rabi* seasons respectively in multilocation trial. It represented an represents an increased yield of 16.2 per cent over VRI(Gn)6 during *Kharif* and 4.7 and 13.3 percent increased yield over VRI(Gn)6 and TMV Gn 13 respectively during *Rabi* season respectively in Multilocation trial. The descriptor for this culture is given in the table 3.

The groundnut culture TVG 0856 recorded 2370 and 2002 kg/ha of dry pod yield during *Kharif* 2015 and *Kharif* 2016 seasons respectively in Adoptive research trial. The culture recorded higher pod yield of 1.19 per cent during *Kharif* 2015 and 15.79 per cent over VRI(Gn)6 during *Kharif* 2016 seasons respectively in Adoptive research trial. The culture TVG 0856 has recorded 2076 kg/ ha during *Rabi* season which is 39.16 per cent superior yield over TMV Gn 13 respectively in Adoptive research trial. The culture TVG 0856 has recorded 2808 kg/ ha during *Rabi* season which is 56.8 per cent superior yield over TMV Gn 13 respectively in On farm trial.

In AICRP (G) trial the culture TVG 0856 recorded medium resistant reaction to leaf spot (Score: 6.0) when compare with check varieties VRI 2, CO 2, JL 24 and TMV 2 recorded the score of 9.0, 9.0, 9.0 and 8.0 respectively (Table 4a). The culture TVG 0856 recorded moderate resistant to rust (Score 3.25) while the susceptible check varieties VRI 2, CO 2 and GPBD 5 recorded the score of 7.0, 9.0, and 7.0 respectively in AICRP (G) trial ( Table 4b).

The groundnut culture TVG 0856 recorded less pest incidence (*Spodoptera*, Thrips and leaf miner) than the check varieties namely VRI(Gn)6 and TMV Gn 13 (Table 5). The groundnut culture TVG 0856 with more shelling percentage (70.6%), more sound mature kernel percentage (93.9%), more 100 kernel weight (38g) and early in maturity when compared with VRI Gn 6 and TMV Gn 13 ( Table 6). With all the above mentioned special futures of the newly developed groundnut culture TVG 0856, it was released by Tamil Nadu Agricultural University as a new variety groundnut TMV 14 for general cultivation for groundnut growing areas of Tamil Nadu for all seasons during 2018.

## References

- FAO statistics, 2002  
Annual Report (Kharif ), 2017 of Annual Groundnut Workshop conducted by All India Coordinated Research Project on Groundnut, ICAR, DGR, Junagadh held at PJTSAU, Hyderabad from April 18-20, 2018 Season and crop report of Tamil Nadu 2012



**Table 1. Overall performance of groundnut culture TVG 0856 in various trials for dry pod yield (kg/ha) during *Khari* and *Rabi* Seasons**

Name of the trial	No. of locations	Year	TVG 0856	VRI(Gn)6	TMV Gn 13
Station trials	2	2011, 2012	2040	1753	1600
Multi Location Trials	17	2013, 2014, 2015	2085	1794	1534
ART -K	30	2015	2370	2342	2269
ART- K	26	2016	2002	1729	1975
AICRP –G *	48	2014, 2015	2246	-	-
Mean	123		2124	1904	1844
% over VRI(Gn)6			11.5		
% over TMV Gn 13			15.2		

**Table 2. Over all performance of groundnut culture TVG 0856 in various trials for dry pod yield (kg/ha) during *Rabi* Seasons**

Name of the trial	No. of locations	Year	TVG 0856	VRI(Gn)6	TMV Gn 13
Station trials	2	2011-12, 2012-13	2484	1800	1987
Multi Location Trials	12	2013-14, 2015-16	1775	1696	1567
ART -R	12	2016-17	2076		1492
OFT -R	2	2015-16, 2016-17	2808	1790	1863
AICRP G*	42	2013-14, 2014-15	2213	-	-
Mean	70		2286	1762	1727
% over VRI(Gn)6			29.7		
% over TMV Gn 13			32.3		

- Not included for mean calculation

**Table 3. Descriptor of groundnut culture TVG 0856 (TMV 14)**

Sl.No	Characteristics	States
1	Name of the culture/ variety	TVG 0856 ( TMV 14)
2	Parentage	VRI(Gn)6 x R 2001-2
3	Origin (Name of the institute)	Oilseeds Research Station, Tindivanam- 604 002
4	Plant height	40.0- 45.0 cm
5	Growth habit	Erect (Spanish bunch)
6	Leaf shape	Elliptic
7	Leaflet size ( Fully developed basal leaf let)	Medium ( 5.0cm
8	Leaf colour	Green
9	Stem pubescence	Absent
10	Flower presence on main axis	Present
11	Flower arrangement on side branches	Sequential
12	Inflorescence	Compound
13	Time of maturity	Early ( 95-100 days)
14	Pod constriction	Shallow
15	Pod reticulation	Medium
16	Number of kernel per pod	>60% 2 seeded
17	Presence of pod beak	Absent
18	Pod Shelling out-turn (%)	70.6 (Medium)
19	Testacolour	Uniform
20	Kernel: Colour of Testa	Rose (Grayish red)
21	Kernel size	Medium
22	Kernel shape	Spheroid
23	Kernel test weight (g)	38.0 (Medium)
24	Kernel: Oil content (%)	48.0
25	SMK (%)	93.9

**Table 4a. Reaction to diseases- AICRP – G trials (Kharif)**

S. No.	Disease	Centre	Year of testing	Proposed entry		Susceptible Check entry			
				TVG 0856	VRI 2	CO 2	JL 24	GPBD 5	TMV 2
1	Rust (1-9 scale)	Vriddhachalam	<i>Kharif</i> 2014	4.0	7.0				
			<i>Kharif</i> 2015	3.0	7.0				
			<b>Mean</b>	3.5	7.0				
		Aliyarnagar	<i>Kharif</i> 2014	2.0		9.0			
			<i>Kharif</i> 2015	4.0		-	5.0	7.0	4.0
			<b>Mean</b>	3.0	-	9.0	5.0	7.0	4.0
		<b>Over all mean</b>	<b>3.25</b>	<b>7.0</b>	<b>9.0</b>	<b>5.0</b>	<b>7.0</b>	<b>4.0</b>	
2	Late leaf spot (0-9 scale)	Vriddhachalam	<i>Kharif</i> 2014	6.0	9.0				
			<i>Kharif</i> 2015	7.0	9.0				
			<b>Mean</b>	6.5	9.0				
		Aliyarnagar	<i>Kharif</i> 2014	4.0		9.0			
			<i>Kharif</i> 2015	7.0			9.0	4.0	8.0
<b>Mean</b>	5.5		9.0	9.0	4.0	8.0			
<b>Over all mean</b>	<b>6.0</b>	<b>9.0</b>	<b>9.0</b>	<b>9.0</b>	<b>4.0</b>	<b>8.0</b>			



**Table4b. Reaction to diseases- AICRP – G trials (Rabi)**

S. No.	Disease	Centre	Year of testing	Proposed entry	Susceptible
				TVG 0856	Check entry VRI 2
1	Rust (1 – 9 scale)	Vriddhachalam	Rabi 2014-15	4.0	4.0
		Aliyarnagar	Rabi 2013-14	7.0	-
		<b>Over all mean</b>		<b>3.5</b>	<b>4.0</b>
2	Late leaf spot (0 -9 scale)	Vriddhachalam	Rabi 2014-15	7.0	9.0
		Aliyarnagar	Rabi 2013-14	7.0	
		<b>Over all mean</b>		<b>7.0</b>	<b>9.0</b>

**Table 5. Reaction of groundnut culture TVG 0856 to pests**

Pest	TVG 0856	VRI(Gn)6	TMV Gn 13
Thrips (No./Plant)	3.0	3.7	5.0
Leaf miner (% damage)	3.6	6.6	9.0
Spodoptera (% damage)	No damage	10.5	4.0

**Table 6.Pod, kernel characters and duration of groundnut culture TVG 0856**

Characters	TVG 0856	VRI Gn 6	TMV Gn 13
100 pod weight (g)	91.5	87.8	82.5
Shelling (%)	70.6	68.0	70.5
Sound mature kernel (%)	93.9	92.0	93.0
100 kernel weight (g)	38.0	35.0	34.6
Days to maturity (days)	100	105	110

