

## TMV 7 - A New Bunch Groundnut Strain

Single plant selections were made in a bunch variety, "Tennessee White" from U.S.A. with good pod set, kernel size and seed dormancy as criteria and was compared with TMV 2. Data were collected on flowering duration, flower production and fertility. The time interval between flower initiation and cessation was reckoned by Bartlett's index. Yield of pods and kernels was assessed in preliminary yield trials, comparative yield trials and scattered block trials. Dormancy was evaluated from 12 observations and expressed as percentage by weight of sprouted pods over total pod weight per plot. The material was subjected to quality test. Oil content was estimated by Soxhlet method. General observations on susceptibility to pests and diseases were also made.

The mean data on flower, peg and pod production collected for three years (1964-65 to 1966-67 rainfed seasons) are presented in Table 1.

TABLE 1. *Reproductive efficiency in TMV7 and TMV2*

Particulars	TMV 7 (A.h. 7478)	TMV 2
Number of flowers produced	74.7 ± 22.6	65.2 ± 18.4
Flowering duration (days)	35.0 ± 7.0	30.0 ± 5.0
Number of fertilized flowers	19.6 ± 2.3	13.8 ± 3.4
Percentage of fertilized flowers	26.2 ± 4.8	21.2 ± 3.1
Number of pegs	2.5 ± 0.9	2.0 ± 0.6
Number of tender pods	1.8 ± 0.6	1.7 ± 0.4
Number of immature pods	2.7 ± 0.8	1.9 ± 0.6
Number of mature pods	12.6 ± 3.8	8.2 ± 2.3
Percentage of mature pods to total flower production	14.2 ± 2.1	12.6 ± 1.5
Fertility co-efficient of flowers per pod	7.0 ± 1.6	8.0 ± 1.2

Strain TMV 7 commenced flowering on 26.7 days after sowing and flowering ceased on 58.8 days after sowing. The new strain has a slightly longer flowering duration over TMV 2 by five days even though both the strains have the same duration of 105 days. There is increased number of flower production and number of fertilized flowers per plant by 9.5 and 5.8, respectively. The new strain has given higher value in the case of number of pegs also. The number of mature pods is higher in TMV 7 than that of TMV 2. The percentage of mature pods to total flower production per plant is 14.2 in TMV 7 as against 12.6 in TMV 2 and 13.5 reported by Smith (1956). The fertility co-efficient expressed as number of flowers per pod is lower in TMV 7 indicating its greater reproductive efficiency.

Pod and kernel yield of the new strain is significantly higher in the comparative yield trials (except for one year), and scattered block trials (Vide Table 2). Increased percentage for pods ranged between 8.6 and 46.2

TABLE 2. *Performance of TMV 7 (A.h. 7478) Yield/ha (kg)*

Particulars	1962-63				Comparative yield trials 1963-64				1964-65				Mean of 3 years of com- parative yield trials				Scattered block trial (Mean of 3 years)			
	A.h. 7478		Per- centage on TMV2		A.h. 7478		Per- centage on TMV2		A.h. 7478		Per- centage on TMV2		A.h. 7478		Per- centage on TMV2		A.h. 7478		Per- centage on TMV2	
	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—	TMV2	—
Pod yield	632	546	119.4	1760	1620	108.6	1002	685	146.2	1138	949	119.8	1907	1453	131.2					
Kernel yield	492	419	117.4	1359	1243	109.3	756	525	144.0	869	729	119.2	1434	1106	129.7					
Oil yield	244	202	120.8	674	600	112.3	375	254	147.7	431	352	122.5	711	534	133.2					
S.E. (Pod yield)	26.9	—	4.9	41.0	—	2.5	37.2	—	5.4	—	—	—	62.8	—	4.3					
Significance for 'F' test $P=0.05$	Yes				No				Yes				—		—		Yes		—	
C.D.	74.1	—	13.6	—	—	—	108.9	—	15.9	—	—	—	177.8	—	12.2					

with a mean value of 19.8. The range of increase in kernel yield was between 9.3 and 44.0% with a mean of 19.2%. The yield of oil per hectare was also higher than TMV 2 by 12.3 to 47.7%, the mean value being 22.5%. It was tried at twelve centres in the scattered block trials for three years. Far higher values were obtained in the scattered block trials for pod (31.2%), kernel (29.7%) and oil (33.2%) attaining statistical significance. Evaluation of dormancy has also brought out the superiority of the new strain (93.7%) over TMV 2 (66.2%) (Vide Table 3).

TABLE 3. Observation on dormancy 15 days after maturity

Strains	Weight of pods (g)	Mean of twelve observations		Dormancy percentage
		Weight of germinated pods (g)	Percentage of germinated pods	
TMV 7	2787 $\pm$ 224	186 $\pm$ 38.7	6.3 $\pm$ 1.0	93.7
TMV 2	1712 $\pm$ 355	622 $\pm$ 139	33.8 $\pm$ 4.0	66.2

Quality characters of TMV 7 was compared with TMV 2 and the data are presented in Table 4.

TABLE 4. Quality attributes of TMV 7 (Mean of five years)

Particulars	TMV 7 (A.h. 7478)	TMV 2
Natural test weight (g/litre) pods	313 $\pm$ 13.9	308 $\pm$ 11.8
-do-    kernels	674 $\pm$ 11.3	673 $\pm$ 9.5
Shelling out-turn (percent)	75.2 $\pm$ 0.4	76.1 $\pm$ 0.5
Number of kernels/kg	2981 $\pm$ 98	3345 $\pm$ 82
Oil content (percent)	49.6 $\pm$ 0.4	48.3 $\pm$ 0.3
100 pod weight (g)	102 $\pm$ 18	80 $\pm$ 14
100 kernel weight (g)	42 $\pm$ 8	33 $\pm$ 6

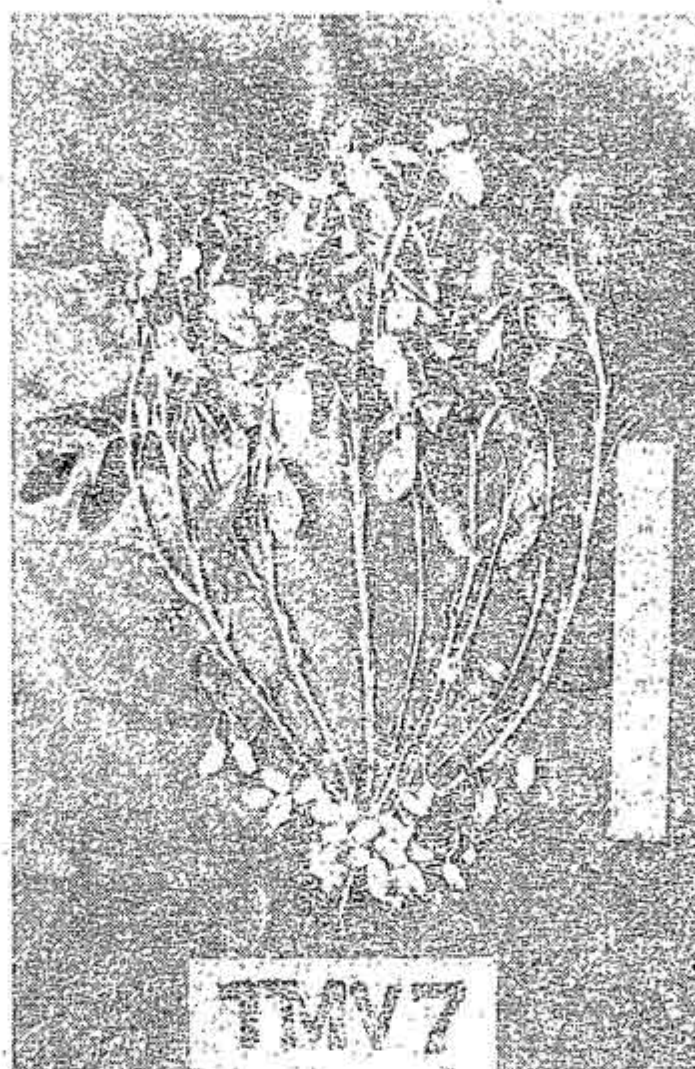
The new strain has a higher natural test weight for pods but the shelling out-turn is lesser than TMV 2 by one per cent. The size of the kernel is apparently bold. The pod weight is also high. The oil content is 1.3% higher than TMV 2. With a higher oil content and other favourable features of kernel quality, the new strain is superior notwithstanding a slightly lower shelling out-turn.

While both the strains TMV 7 and TMV 2 are equally affected by 'Surul poochi', *Stemopteryx subsecivella* (20.3 and 20.1%), results of observation on 'Tikka' leaf spot disease caused by *Cercospora personata* indicated that the new strain is less susceptible (10.4%) than TMV 2 (24.3%). Regarding the infection of root-rot disease caused by *Rhizoctonia bataticola*, it was to the extent of 0.1% compared to 0.3% in TMV 2. Increased resistance to disease is an additional feature of TMV 7 and holds promise with distinct superiority over TMV 2, the bunch strain under cultivation.

Studies on fertilizer response are underway. Character dormancy of this strain offers scope in hybridization for evolving higher yielding bunch strain.

The description of TMV 7 is presented below :

TMV 7 (A.h.7478-Tennessee white-U.S.A.)



Annual, duration 100-110 days, bunch, main stem erect, 19-42 CM. high, rounded at the base and above, lower portion purple, hairy, non-branching under rainfed condition and moderately branching under irrigation, primary branches 4-8, 23.5-56.4 cm long, secondary branches 1-9. Leaflet large  $4.5 \times 2.1$  cm- $5.6 \times 2.8$  cm, oblong elliptic, green. Flower axillary, occur in clusters of 3-5, condensed spike, confined to the basal nodes, occasionally occurring on the middle and top nodes of the stem; standards medium,  $1.0 \times 1.3$  cm- $1.4 \times 1.8$  cm, broader than long, orange yellow, grade II, Crescent grade II, peg short, light purple, thick. Pod medium to big  $2.24 \times 1.27$  cm- $2.86 \times 1.34$ , 1-2 seeded, beak slightly prominent, constriction predominantly shallow and occasionally medium to deep, reticulation slightly prominent,



shell medium thick. Kernel medium to big  $1.12 \times 0.83$  cm– $1.37 \times 0.91$  cm, round and plumpy, testa rose.

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### Effect of Superphosphate and Farm Yard Manure on Available Manganese in Two Soil Types of Madhya Pradesh

An attempt has been made to study the availability of Mn on the addition of farmyard manure and superphosphate in two Madhya Pradesh soils.

Experiments were conducted in laboratory with surface (0–23 cm) medium black and alluvial soil, collected from Agriculture College farm, Indore and Agriculture Research Institute farm, Gwalior respectively.

The bulk soil samples were ground and passed through 2 mm sieve and four hundred grams of soil from each type were filled in individual earthen pots. Superphosphate and farm yard manure (FYM) were mixed with soils before filling the pots. Superphosphate and FYM were applied at the rate of 30 lb  $P_2O_5$  and 450 lb and 900 lb, respectively. Moisture was maintained at 20% level every day in all cases. There were four replications of each treatment. Pots were kept at room temperature. The samples were drawn at the intervals of 30, 60 and 90 days for the estimation of available Mn and pH.

Soil reaction was determined according to the procedure given by Piper (1950). Available soil Mn was determined with spectrophotometer UNICAM Sp 600 model as per procedure described by Piper (1950).

Results indicating the available Mn content and pH changes due to application of superphosphate and FYM at different intervals for medium black soil and alluvial soil are presented in the Table.