

If the indications which have been obtained in the Co-ordinated trials of its wide adaptability for cultivation in Mysore State and Andhra Pradesh and also in the summer cotton area in Tamil Nadu are to be confirmed from the trials that are being conducted now, this new culture will really prove to be an outstanding contribution to cultivators of Mysore and Andhra Pradesh, besides those of Tamil Nadu. Also, with its spread to Mysore and Andhra, India can completely do away with the import of cotton of 1-1/16" to 1-3/16" staple.

This new strain has since been released as Madras Cambodia Uganda-5.

Summary: An account of the development of extra long staple cotton strain EL. 815-3-1 named as Madras MCU. 5 having a staple length of 1-3/16" and spinning capacity of 70s has been given. The extent to which the cultivators in Winter Cambodia area of Tamil Nadu stand to gain through the cultivation of this new strain and also its likely impact on the import of quality cotton from foreign countries have also been discussed.

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High Yielding Groundnut Bunch Cultures with Seed Dormancy

by

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Bunch variety of groundnut is non-dormant in nature and pods sprout in the field if wet weather prevails at the time of maturity. Seed dormancy in groundnut is governed by multiple factors (John *et al.*, 1948). As result a of hybridisation work a partially dormant selection, 'A. h. 6481 (progeny of a cross between 'Gudiyatham Bunch' and 'Native Tanganyika') was evolved in Madras State (Seshadri, 1962). Recently a new bunch strain TMV7 was evolved by pureline selection from "Tennessee White" variety which has seed dormancy besides high yield (Varisai Muhammad *et al.*, unpubl.). Certain promising hybrids were isolated by Ramachandran *et al* (1967) which possess seed dormancy and this character was observed to be partially dominant over non-dormancy. Six out of 206 bunch varieties maintained at Bhavanisagar possess high degree of dormancy (Varisai Muhammad and Stephen Durairai, 1968). High yielding bunch cultures which have seed dormancy were evolved

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by hybridisation at the Regional Research Station, Tindivanam. An account of the yield performance, dormancy and economic attributes of the promising cultures is presented in this paper.

Materials and Methods: Four cultures (Table 1) evolved by hybridization were studied. Yield was assessed in the comparative yield trials. Dormancy was determined by sowing the mature pods immediately after harvest and watering daily 40 days and counting the number of germinated pods. Productivity of the cultures was assessed. The quality characters and oil content were determined. Two promising cultures were tested under five manurial levels to study their response to high fertility. The vegetative growth index was formulated by adding the linear measurements of height of main stem and length of primary and secondary branches

Results and Discussion: The data on yield performance of the four cultures tested in the comparative yield trials for three years are presented in Table 1.

TABLE 1. Yield of dormant bunch cultures in the comparative yield trials

Culture	1964-65		1965-66		1966-67		Mean	
	Pod yield kg/ha	% on TMV 2	Pod yield kg/ha	% on TMV 2	Pod yield kg/ha	% on TMV 2	Pod yield kg/ha	% on TMV 2
A. h. 7604 (A. h. 4218 × Erecta)	547	124.0	1161	99.8	789	169.5	832	120.8
A. h. 7605	561	127.1	1431	123.1	816	175.8	936	135.8
A. h. 7607 (A. h. 3490 × A. h. 477)	861	184.9	1474	126.9	901	194.1	1064	154.5
A. h. 7608	759	172.0	1514	130.2	1074	231.5	1116	161.9
TMV 2 (Standard)	442	100.0	1162	100.0	464	100.0	689	100.0
S. E.	37.8	8.5	70.2	6.0	44.8	9.6	54.8	8.0
Significant (P=0.05)	Yes	—	Yes	—	Yes	—	Yes	—
C. D.	109.0	24.7	202.8	17.5	129.7	27.9	169.0	24.5

Conclusion: 1964-65: A. h. 7607, A. h. 7608, A. h. 7605, A. h. 7604, TMV 2

1965-66: A. h. 7608, A. h. 7607, A. h. 7605, TMV 2, A. h. 7604

1966-67: A. h. 7608, A. h. 7607, A. h. 7605, A. h. 7604, TMV 2

Interaction: A. h. 7608, A. h. 7607, A. h. 7605, A. h. 7604, TMV 2

In yield potentiality, culture A. h. 7608 ranked highest with an increased pod yield of 61.9 per cent over TMV 2. This was followed by A. h. 7607 with an increase of 54.5 %.

Seed dormancy: The results of dormancy test are furnished below:

TABLE 2. *Observation on seed dormancy*

Culture	Percentage of germination after maturity					
	1-15 days	16-20 days	21-25 days	26-30 days	31-35 days	35-40 days
A. h. 7604	12	8	9	21	15	11
A. h. 7605	9	14	16	19	14	8
A. h. 7607	8	6	8	14	12	—
A. h. 7608	2	2	2	12	16	2
TMV. 2	50	8	2	10	1	4

Cultures, A. h. 7607 and A. h. 7608 have high degree of dormancy of 94 and 98 % respectively upto 20 days after maturity of the crop.

Quality attributes: Quality characters such as shelling out-turn, weight of one litre of pods and kernels, number of kernels per kg and oil content are presented below.

TABLE 3. *Quality attributes of dormant bunch cultures (Average of 3 years)*

Culture	Shelling %	Natural test weight of one litre of		No. of kernels per kg	% of oil content	Kernel yield (kg/ha)	Oil yield (kg/ha)
		Pods (g)	Kernels (g)				
A. h. 7604	74.1	309	678	3236	48.74	616	300
A. h. 7605	76.2	299	682	2647	47.92	713	341
A. h. 7607	75.4	294	677	2966	50.80	802	407
A. h. 7608	75.6	294	614	3196	48.97	843	412
TMV. 2	77.2	299	671	3184	48.40	531	256

Though cultures, A. h. 7607 and 7608 have 1.8 and 1.6 % lesser shelling out-turn than TMV2, they gave superior oil yield of 407 and 412 kg per hectare as against 256 kg of TMV2 which is 59 and 61 % higher than the standards.

Response to high fertility: The high yielding cultures, A. h. 7607 and A. h. 7608 were tested under irrigated conditions in the following five manurial levels and two spacings with strains TMV2 and TMV7 (new bunch strain) under two spacing of 9"×6" and 18"×3". Manurial treatments: T1: compost at 6.3 tonnes per hectare. T2: 6.3 tonnes of compost plus 11.23 kg N, 22.46 kg P₂O₅ and 33.70 kg K₂O (1.0 doses) per hectare. T3: 6.3 tonnes of compost plus 16.85 kg N, 33.70 kg P₂O₅ and 50.55 kg K₂O (1.5 doses) per hectare.

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T4: 6.3 tonnes of compost plus 22.46 kg N, 44.92 kg P₂O₅ and 67.38 kg K₂O (2.0 doses) per hectare. T5: 6.3 tonnes of compost plus 28.08 kg N, 56.16 kg P₂O₅ and 84.25 kg K₂O (2.5 doses) per hectare.

The vegetative growth index of the cultures A. h. 7607 and 7608 as compared with strains TMV2 and TMV7 is furnished in the Table 4.

TABLE 4. *Vegetative growth index of dormant bunch cultures*

Culture	Spacing	Manurial treatment				
		T1	T2	T3	T4	T5
A. h. 7607	9"×6"	76.8	177.2	243.8	183.5	215.3
A. h. 7608	"	95.0	149.4	165.8	189.7	243.2
TMV 7 (Standard)	"	85.8	149.0	186.6	231.7	184.3
TMV 2	"	113.6	88.0	120.6	169.3	296.2
A. h. 7607	18"×3"	159.3	197.0	228.5	147.5	230.0
A. h. 7608	"	112.7	115.8	133.0	159.7	217.3
TMV 7 (Standard)	"	95.0	120.0	126.5	133.0	153.3
TMV 2	"	116.8	161.8	236.6	210.0	216.1

The vegetative growth of A. h. 7607 was on the increase from T1 to T3, and after a decline in T4 it again showed an upward trend in T5 in both the spacings. The decline in growth at T4 manurial level may be due to the imbalance in nutritional uptake. Culture A. h. 7608 exhibited enhanced vegetative growth as the manurial level is increased attaining the maximum growth at T5 level. This trend is maintained irrespective of the spacings adopted. Thus A. h. 7607 differs from A. h. 7608 in the utilisation of plant food as evidenced by the vegetative growth.

The yield data of cultures A. h. 7607 and A. h. 7608 along with that of standard strains of TMV2 and TMV7 under five levels of manuring are presented in table 5.

TABLE 5. *Pod yield of dormant bunch cultures under five levels of manuring*

CULTURE	Pod yield per hectare in kg (1968 Summer)					Percentage of increase over T1
	T1	T2	T3	T4	T5	
<i>9" × 6" spacing :</i>						
A.h. 7607	1897	2207	2419	2603	1983	37.2
A.h. 7608	1849	1839	2073	2375	2249	28.4
TMV 7	2289	2513	2334	2419	2144	9.8
TMV 2	1987	2293	2128	2219	2103	11.5
<i>18" × 3" spacing :</i>						
A.h. 7607	1408	1770	1867	1923	1785	36.6
A.h. 7608	1299	1823	1897	1867	1904	46.6
TMV 7	1852	1002	1793	2548	2286	37.5
TMV 2	2024	1882	2065	2516	2017	14.4

Culture A. h. 7607 was gave maximum yield in T4 manurial level, the increased yield over T1 being 37.2 and 36.6 % under 9"×6" and 18"×3" spacings respectively. While culture A. h. 7608 showed 28.4% enhanced yield at T4 over T1 in 9"×6" spacing, yield increase of 46.6 % was obtained at T5 level compared to T1 under 18"×3" spacing. Thus cultures A. h. 7607 and A. h. 7608 differ in their response to fertility.

Summary and Conclusion: As a result of hybridization work, four groundnut bunch cultures having seed dormancy were evolved at the Regional Research Station, Tindivanam. Of these, two cultures, viz. A. h. 7607 and A. h. 7608 (progenies of cross between A. h. 3490 (Bromie 3) and A. H. 477 (Bassi) were outstanding with 54.5 and 61.9 % average increased yield over TMV2. They also gave higher yield than TMV7, the best bunch strain. They possess high degree of dormancy of 94 and 98 % respectively. Both the cultures have good response to high fertility. Culture A. h. 7607 gave maximum yield in T4 (application of 6.3 tonnes of compost plus 22.46 kg N, 44.92 kg P₂O₅ and 67.38 kg K₂O per hectare the increased yield over T1 being 37.2 and 36.6 % in 9"×6" and 18"×3" spacings respectively. Whereas A. h. 7608 exhibited 28.4 and 46.6 % higher yield over T1 in T4 and T5 under 9"×6" and 18"×3" spacings respectively.

The high yielding potentiality of culture A.h. 7608 combined with economic traits of dormant seeds and response to high fertility indicates the possibility of its release for wider cultivation after further extensive trials.

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