

## AGRICULTURAL BOTANY

### Madras Cambodia Uganda-5, An Extra Long Staple Strain of Cotton

by

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**Introduction:** The average annual consumption of foreign cotton by textile mills in India during the Third Five-Year Plan period was 7.68 lakh bales involving foreign exchange equivalent to Rs. 53 crores annually. The staple length of the imported cotton was 1-1/16" and over. The consideration of huge drain of foreign exchange itself should be weighty enough. But more important than this is the inexorable fact that no nation can afford to depend upon other countries perpetually for the supply of raw materials required for one of its leading industries. Intense interest is, therefore, being taken to develop extra long staple cotton varieties having staple length of 1-3/16" and above useful for spinning higher counts of over 60s yarns. The cotton research workers in the Tamil Nadu Agricultural Department have been fortunate in evolving a cotton of the desired type. This paper deals with the development of this new strain.

**Materials and Methods:** A cotton breeding scheme was initiated at Coimbatore in 1963 with the financial help by the erstwhile Indian Central Cotton Committee. The object of the scheme was to develop a strain of Cambodia cotton superior in quality to MCU. 1 and MCU. 3, which are currently under cultivation in the Winter Cambodia area of the Tamil Nadu. In this scheme, in addition to the undertaking of large scale hybridisation work, promising cultures obtained from various sources were also tested. EL. 815-3-1 was one such culture and this was obtained from the Extra Long Staple Cotton Scheme which was functioning at Srivilliputhur. This culture was isolated from a cross made in 1959 between 0590-10 and 0892-B. In their turn, the former was a product of the cross MCU. 1 × Gatooma and the latter of MCU. 2 × (MCU. 1 × Scaland). 0590-10 had striking bolling features but its staple quality was not of high order. On the other hand, 0892-B is a long and fine linted type with productivity not so high as 0590-10.

Initial trials conducted in progeny rows at the Cotton Breeding Station, Coimbatore during 1963-64 and 1964-65 gave indication that EL. 815-3-1 might be a culture combining the good features of 0590-10 and 0892-B. Preliminary trial conducted during 1965-66 revealed it to be better than

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MCU. 1 and MCU. 3 in staple length and yield. The results obtained from a concurrent family block test indicated its purity for yield, halo-length and ginning outturn. Following these encouraging results this culture was put to further tests against MCU. 1 and MCU. 3 in main strain trial for three years at the Cotton Breeding Station, Coimbatore from 1965-66 to 1967-68 and in scattered block trials in cultivators' holdings during 1966-67 and 1967-68 in winter seasons. The spinning tests were made at the Technological Laboratory, Bombay, and also in a reputed mill at Bombay.

**Results:** This selection displayed spectacular advance in spinning quality. MCU. 1 and MCU. 3 spin yarns of 45s, but EL. 815-3-1 spins 70s yarn. The testing mill has reported that the tensile properties of 60s yarn spun of 815-3-1 cotton lint was quite comparable with the standard of mill yarns of 60s spun from Sudan, and for 80s count, however, it was slightly below standard. The good tensile properties, the mill adds, are explained by the staple characteristics of the lint and also by the fine micronaire value.

The figures showing the average yields of EL. 815-3-1, MCU. 1 and MCU. 3 obtained in the main strain and scattered block trials have been presented in Table 1.

TABLE 1. Mean yield of kapas in kg/ha

Year	Cotton Breeding Station Coimbatore			Cultivators' holdings in Winter Cambodia area		
	MCU. 5	MCU. 1	MCU. 3	MCU. 5	MCU. 1	MCU. 3
1965-66	1997	1856	1720	—	—	—
1966-67	1965	2051	1845	1670	1732	1592
1967-68	1769	1742	1467	2149	2091	—
Mean	1910	1883	1677	1910	1912	1592

The mean yields obtained in the trials at the Cotton Breeding Station and in cultivators' holdings reveal its superiority over MCU. 3 and its equality with MCU. 1. It may further be of great interest to note that in trials, conducted during 1967-68 under the All India Co-ordinated Research Project on Cotton at Arbhavi representing Kattaprabha area of Mysore State and at Amaravati in Andhra Pradesh, this new strain was found to be outstandingly superior to the local strains, Deviraj and MCU. 2 respectively in staple length. In regard to yield it was on par with both of them. In a trial conducted at Srivilliputhur also its performance was noteworthy in that it proved better than MCU. 4 in yield. It would, therefore, appear to be a variety possessing the much sought quality of wide adaptability.

Its important characteristics compared to those of MCU 1 and MCU 3 are given in Table 2.

TABLE 2. *Characteristics of MCU. 5, MCU. 1 and MCU. 3*

	MCU 5	MCU 1	MCU 3
✓/Kapas yield in kg/ha	1910	1892	1635
✓/Ginning percentage	34	35	36
✓/Lint yield in kg/ha	649	664	589
Boll weight (weight of 100 bolls in gm)	400	410	415
• Lint index	53	60	62
• Seed index	107	110	110
✓/Staple length	1-3/16"	1-1/32"	1-1/16"
✓/Fibre length in inches	1.14	1.01	1.01
✓/Fineness in millitex	126	163	134
✓/Fineness in micronaire unit	3.2	4.2	3.4
✓/Maturity coefficient	0.67	0.73	0.63
✓/Flat bundle strength (0-guage in g/t)	43.2	40.0	38.6
✓/Flat bundle strength P.S I. (lb/mgm)	8.1	7.5	7.2
Evenness	5.3	5.0	5.0
Neps per metre	1.0	0.5	0.5
✓/Highest Standard counts	70s	45s	45s
✓/Finest Standard Tex	8.81	13.9	13.7

**Discussion:** Combodia cotton is cultivated under irrigated condition during winter season in Tamil Nadu over 1.75 lakh acres. MCU 1 and MCU 3. are under cultivation in this area. As may be seen from the above account the new strain EL. 815-3-1 excels MCU 1 and MCU 3 in staple length and spinning capacity. In regard to yield it is equal to MCU 1 but better than MCU 3. In particular, its advancement in regard to spinning quality is spectacular. It spins 70s yarn as compared to yarn of 45s by MCU 1 and MCU 3.

An yield of 2.5 quintals of lint per acre may normally be expected from this new strain under irrigated condition. Thus, a total production amounting to 4.4 lakh quintals of lint or 2.5 lakh bales, may, therefore, be expected from 1.75 lakh acre. Even at a conservative rate, a quintal of lint of this new strain is likely to fetch Rs. 75 more per quintal than MCU 1 and MCU 3. Thus, the irrigated cotton cultivators in Winter Zone will stand to gain annually over Rs. 330 lakh more by the cultivation of EL. 815-3-1 than by MCU 1 and MCU 3.

Of the 7.68 bales imported annually during the third Five-Year Plan period, 3.12 lakh bales of cotton were of staple length group 1-1/16" to 1-3/16". It should, therefore, be clear that through the cultivation of EL. 815-3-1 (MCU 5) not only the cultivators in the Winter Cambodia area stand to gain substantially, but also it will help to reduce the import of foreign cotton by 2.5 lakh bales.

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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