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Cholam TPT. 1 — An economic mutant of Talaivirichan Cholam *(Sorghum roxburghii)*

by

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Introduction : *Talavirichan Cholam (Sorghum roxburghii*, var. *hians*. Stapf) is a major variety of cultivated cholam in Madras State, occupying over five lakhs of acres in the districts of North Arcot, South Arcot, Salem, Chingleput and portions of Tiruchirapalli and Coimbatore. Snowden (1936) has taxonomically classified this variety as *Sorghum roxburghii* under sub-series *Guineensia*. This is mainly a grain crop and the plants grow up to a height of 14 feet with a duration of about five months. The most distinguishing feature of this type is the streaming branches of the earhead. The colour of the grain is white but a further differentiation into chalky white and pearly white is also possible (Rangaswamy Ayyangar et al 1934). White pearly grains are preferred for food and also best suited for popping (Rangaswamy Ayyangar and Sankara Ayyar 1936). Three strains of *Talavirichan Cholam* viz., Co. 2, Co. 3 and Co. 12 evolved at the Millets, Breeding Station, Coimbatore, are under distribution. Since these did not come up well in North Arcot tract, improvement work for the evolution of a high yielding strain was taken up since 1949, at the Regional Millet Station, Tiruppathur, which is the central place of the tract.

Material and Methods : A representative collection of 500 fresh seed samples of *Talavirichan Cholam* collected from the various villages of the central districts and 30 cultures of the same variety obtained from the Millets, Breeding Station, Coimbatore, were examined at Tiruppathur for their suitability to the tract. Promising single plants with a combination of desirable attributes were isolated on the basis of positive deviations for yield from the collections and tested for their purity of yields in compact family blocks (Hutchinson and Panse 1937) and advanced to the final stage of randomized and replicated yield trial. The most economic culture was passed on for confirmatory test in a cultivator's fields at several centres.

Experimental data: Yield trials were conducted with the promising selections along with Co. 3 and Co. 19 during the monsoon seasons of 1951 and 1952. Since Co. 2 fell short of the standard in the earlier stage itself, it was omitted from further trials.

The yield data of the trials are furnished in Tables I and II.

In the first year of trial (1951), the yield differences were found to be statistically significant for both grain and straw yields, A. S. 8006 being the best in both the cases. In the second year of trial (1952), A. S. 8006 once again topped the list in respect of both grain and straw yields, the yield differences being statistically significant. It is evident from the results, that culture A. S. 8006 is outstandingly good, recording consistently higher yields than all the selections compared.

To further confirm the superiority of A. S. 8006, it was compared with the local bulk in cultivators' fields at twenty typical centres in North Arcot and Salem districts. In all the centres of trials, the culture was found to be superior to the local *Talaivirichan Cholam* with an increased grain yield ranging from 20 to 30 per cent and it was similar to the local type in duration, height, plant vigour and grain colour. Since A. S. 8006 was found suitable to this tract, giving higher yields than the local, it was accorded a station number viz., "*Cholam TPT. 1*" and released for distribution as an improved strain for the tract.

Discussion: It is interesting to record that A. S. 8006 was isolated as a mutant with white pearly grains from a bulk population of the white chalky grained strain, Cholam Co. 2, at Coimbatore, in 1941. The performance of this mutant was not found promising at Coimbatore and the strains Co. 2 and Co. 3 continued to be the highest yielders. However A. S. 8006 was one among the 30 cultures sent from Coimbatore to Tiruppathur for study. In the north Arcot tract, it out-yielded not only its original parent (Co. 2) but also the other strains of *Talaivirichan Cholam*, Co. 3 and Co. 19 and other promissing local selections (Table I and II). This gives an indication that culture A. S. 8006 representing the mutation of the "reverse type" in respect of grain colour has also developed a change in its adaptability, as judged by its performance in a new environment.

Summary: The *Talaivirichan Cholam* is one the important Sorghum varieties of the Madras State and crop breeding was taken up in this variety at the Regional Millet Station, Tiruppathur, in 1949, to evolve a high yielding strain suitable for the central districts. Based on the uniformly good performance of culture A. S. 8006, it was released as an improved strain, "*Cholam TPT. 1*" It is of interest to note that A. S. 8006 had its origin as a mutant with white pearly grains, isolated at Coimbatore, in 1941. Under Coimbatore conditions, its performance was not economic but in the North Arcot tract it proved itself to be the most economic culture, outyielding the strains Co. 2, Co. 3 and Co. 19 and other promising local selections. This indicates, that A. S. 8006 which is a mutant in respect of grain colour has also developed a change in its adaptability to a new environment.

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TABLE I

Monsoon Season, 1951.

Particulars	Variants						'Z' test satisfied or not P = 0·05	Critical difference
	A. S. 8006	A. S. 8080	Co. 19	A. S. 8083	Co. 3	Local (Standard)		
Grain yield expressed as a percentage of standard.	177·6	144·1	140·8	135·3	125·8	100	Satisfied	22·6
Straw yield expressed as a percentage of standard.	195·6	152·8	120·6	139·6	128·9	100	Satisfied	24·9

Conclusion: 1. Grain yield A. S. 8006, A. S. 8080, Co. 19, A. S. 8083, Co. 3, Local.

2. Straw yield A. S. 8006, A. S. 8080, A. S. 8083, Co. 3, Co. 19, Local.

TABLE II

Monsoon Season, 1952.

Particulars	Variants							'Z' test satisfied or not P = 0·05	Critical differences
	A. S. 8006	Co. 19	A. S. 8080	T. S. 29	Co. 3 (Standard)	T. S. 25	T. S. 21		
Grain yield expressed as a percentage of standard.	160·6	149·9	145·7	120·1	100·0	97·2	93·8	Satisfied	51·4
Straw yield expressed as a percentage of standard.	123·6	122·9	118·9	107·7	100·0	81·6	90·6	Satisfied	19·3

Conclusion: 1. Grain yield A. S. 8006, Co. 19 A. S. 8080, T. S. 29, Co. 3, T. S. 25, T. S. 21.

2. Straw yield A. S. 8006, Co. 19, A. S. 8080, T. S. 29, Co. 3, T. S. 21, T. S. 25.