

A MEDIUM DURATION HIGH YIELDING RAGI STRAIN CO 12 (*Eleusine coracana* GARTN.) FOR TAMIL NADU

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Ragi is an important cereal crop among the farming community of Tamil Nadu next in the order of priority of Sorghum and Pearl Millet. The strains so far cultivated in Tamil Nadu though high yielding were of shorter duration group and more prone for the infections of blast and had the risk of being trapped in September rains at harvest stage. Hence the necessity, identification and elucidation of an ideal medium duration strain of Ragi viz., Ragi Co 12 (TNAU:9) are discussed in detail in this paper.

Ragi is an important cereal crop grown in Tamil Nadu both under summer and kharif conditions, next in the order of importance to sorghum and pearl millet. An area of 3.20 lakh hectares are covered under this crop. Of which, 43% are under irrigation and the rest under rainfed condition. 66% of the total area are covered in Chengelpat, North Arcot, Coimbatore, Periyar, Salem and Dharmapuri districts. The extent of production ranges upto 5.05 lakh tonnes with an annual productivity of 1510 kg/ha. Hitherto the strains under vogue in Tamil Nadu were mainly of shorter duration ranging between 85 and 100 days namely Co. 7, Co. 10 and Co. 11. Though these strains cater to the needs they had a risk of being caught in the monsoon rains during September when sown in July in Kharif. Hence it was a long-felt necessity that the cropping pattern in Tamil Nadu needed an ideal high yielding medium duration strain endowed with fairly higher level of tolerance to blast.

MATERIALS AND METHODS

With an objective of identifying an ideal medium duration ragi culture with high yield potential, the genetic stocks were screened intensively from 1976 onwards and it was found that a pureline selection TNAU 9 from PR 722 of Peddapuram, Andhra Pradesh had a good scope of further concentration and investigation. The selection was of medium duration ranging from 110-120 days with bolder grains with higher potential and biological yield. This was advanced under rigorous station trials both under Summer and Kharif conditions subsequently. The culture TNAU 9 was also screened with the potential strain in vogue namely Co. 11 in the Regional Research Stations, Multilocation Trial II, All India Co-ordinated trials and Adaptive Research Trials. It was also screened for trend of blast reaction for a period of four years from 1980 to 1983. As a result of such intensive screening, testing and investigation, the selection TNAU 9 was found to perform uni-

formly superior to Co. 11 in the aspects of yield potential and blast tolerance.

RESULTS AND DISCUSSION

The yield performances of the selection TNAU 9 in comparison with the ruling strain Ragi Co. 11 are detailed in Table I as a comparative picture for the trend of performance both under Kharif and Summer conditions in Tamil Nadu. During the Kharif season the selection TNAU 9 recorded an increase of mean yield of 14.6% over Co 11 in the different categories of trials, namely station trials, Regional Station trials, Multilocation trials, Adaptive Research trials and All India Co-ordinated trials. During the summer season a mean increase of 18.6% over the strain Co, 11 was recorded by the selection TNAU 9 under the same categories of trials. In the overall performance under both the seasons an overall mean increase of 16.1% in yield was recorded by TNAU 9 over Co 11. Thus the trend of superiority and stability in the yield potential was quite evident in the case of TNAU 9 when compared to Co 11.

A total number of 202 trials (162 in Kharif and 40 in Summer) were conducted under different categories, as detailed above in which the overall superiority of TNAU 9 was well revealed. During the Kharif season under different categories of trials the increase in yield of TNAU 9 over Co 11 ranged from 6.6% to 24.7% and during Summer season the range was from 10.4% to 32.7%. The overall range of increases in yield of TNAU, 9 was from 11.7% to 27.2% over Co 11 as revealed from Table I.

The potentiality of TNAU 9 in yielding ability was clearly revealed in the different levels of highest yields that it has recorded in comparison with Co. 11 under each category of trial in both the Kharif and Summer conditions. The Table II clearly elucidates that the recorded highest yields during the Kharif season ranged from 15.2% to 100.0%. There has been an incidence where the theoretical or biological yield of 8300 kg (which is 100.0% increase over Co 11) was even achieved in a ryot's holding at Periyar District. During the Summer season the range of highest yields recorded was from 25.7 to 112.5. The trend of highest yields as revealed by Table II indicates clearly that the selection TNAU. 9 is capable of giving maximum potential yield of 5544 kg/ha (an increase of 25.7% over Co 11) and maximum biological yield of 8300 kg ha (an increase of 100.0% over Co 11.)

The trend of blast reaction on the high yielding potential selection TNAU 9 was studied under field condition over a period of four years from 1980 to 1983 on the incidence of leaf, neck and finger blast, the details are presented in Table III which indicate that the overall mean occurrence of blast infection on leaf, neck and finger was for lesser than in the case of Co 11. This gives an indication that the selection TNAU 9 is well endowed with a very high level of field tolerance to the dreaded disease the blast of Ragi.

The selection TNAU 9 Ragi is an ideal medium duration plant type with an average of 5-7 productive tillers, with a mean of 5-7 fingers with

Table I. Overall Performance of TNAU 9 Ragi

Trial	Mean Yield kg/ha								
	Kharif			Summer			Mean		
	TNAU 9	Co 11	% on Co 11	TNAU 9	Co 11	% on Co 11	TNAU 9	Co 11	% on Co 11
Coimbatore Station Trials	4161	3336	124.7	3705	3356	110.4	3933	3346	117.5
Regional Station Trials	2588	2117	122.2	2514	1895	132.7	2551	2006	127.2
Multilocation trials	2249	1931	161.5	1017	812	125.2	1633	1372	119.0
Adaptive Research Trials	2472	2319	106.6	2758	2365	116.0	2615	2342	111.7
AICMIP Trials (Different Local Checks)	2428	—	—	—	—	—	2428	—	—
Mean	2780	2426	114.6	2449	2107	118.6	2632	2267	116.1

Table II. Trend of Highest Yields of TNAU 9 under Kharif and Summer seasons

Categories of Trials	Yield kg ha					
	Kharif			Summer		
	TNAU 9	Co 11	% on Co 11	TNAU 9	Co 11	% on Co 11
Station Trials	5352	4225	126.7	5544	4409	125.7
Multilocation Trial-1	3480	3020	115.2	4108	2859	143.7
Multilocation Trial-II	4108	3509	117.1	1709	800	212.5
Adaptive Research trials	8300	4150	200.0	4086	2850	413.4

Table III. Blast Reaction of TNAU 9 Ragi

	1980			1981			1982			1983			Mean			
	Leaf	Neck	Finger	Leaf	Neck	Finger	Leaf	Neck	Finger	Leaf	Neck	Finger	Leaf	Neck	Finger	
TNAU 9	2.0	13.8	18.9	0	0	0	0	7.8	1.6	2	8	0	12.1	2.0	9.87	10.87
Co 11	3.5	28.3	15.5	2.0	28.4	4.1	0	14.3	5.2	3	37.0	26.4	3.17	27.00	12.8	

Leaf infection : 1 to 9 scale of disease intensity

Neck infection in % :

Finger infection in % :

thousand seed weight of 2.8 g a holder seeded type than Ragi Co 11. It is a green plant type throughout with fairly incurved fingers capable of yielding a highest potential yield of 5544 kg/ha of grain and 11,000 kg/ha of dry straw. In the aspect of fodder yielding ability TNAU 9 has recorded 36,741 kg/ha of fresh straw as against 28,148 kg/ha recorded by Co 11 (which is an increase of 30.53% over Co 11). Hence the selection TNAU 9 can also be considered as a dual purpose, grain cum fodder strain, ideally suited for Kharif and Summer conditions of Tamil Nadu. The detailed morphological descriptions of the selection TNAU 9 are furnished in the Table IV.

CONCLUSION

In the light of these favourable performances of the selection TNAU 9

Ragi, it was contemplated that it will fit in well as an ideal medium duration strain of ragi especially for the districts of Periyar, Coimbatore, South Arcot North Arcot and Dharmapuri under both Kharif and Summer conditions. In addition to its high yielding ability the selection TNAU 9 ragi is endowed with a high level of field tolerance to ragi blast. The spread of the variety among the farming community of Tamil Nadu has already gained a good momentum. Under these circumstances the long felt necessity of an ideal medium duration strain in ragi has been very well accomplished by this elite selection Ragi TNAU 9 and hence this was released as the strain Ragi Co 12 for the general cultivation under both kharif and Summer conditions in Tamil Nadu.

Table IV. Morphological Description of Co 12 (Ragi TNAU 9)

Origin	: Selection from PR. 722 of Peddapuram, of Andhra Pradesh
Pigmentation	: Green Throughout
Grain colour	: Brown
Plant Height	: 90-110 cm
Earhead shape	: Incurved to listy
Earhead Length	: 5-8 cm
Number of tillers	: 7-10
Number of productive tillers	: 5-7
Duration	: 110 to 120 days
Days to Flowering	: 70-75 days
Weight of 1000 seeds	: 2.8 g
Average yield kg/ha	: 3933 kg/ha
Dry straw yield	: 11000 "
Maximum Grain yield (Station Trial)	: 5544 "
Maximum Grain yield (in Districts)	: 4086 "
Finger Number (Range)	: 5 to 7
Length of Finger (Range)	: 5.3 cm to 8.0 cm