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ASD 17 : A SHORT DURATION RED RICE VARIETY FOR TAIL END AREAS OF THAMBIRAPARANI DELTA AND KANYAKUMARI DISTRICT

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ABSTRACT

A new variety of paddy ASD 17 has been released by Tamil Nadu Agricultural University from the Rice Research Station, Ambasamudram for general cultivation. The variety was tested as AS 688 in Kanyakumari district both under semidry and wet conditions and in Nellai Kattabomman district under wet conditions. It recorded a mean grain yield of 5.4 t/ha and straw yield of 9.0 t/ha. It is semidwarf (96 cm) with medium bold grain and red rice which matures in 100 days. Early senescence at maturity is a distinguishing character for this variety. This variety is also specifically suitable to tail end areas of Thambiraparani delta and Kanyakumari district for direct seeding and planting because of its short duration.

KEY WORDS : Rice, Short duration, Direct seeding, ASD 17.

The role of high yielding varieties of paddy in stepping up production has been well recognised. In Kanyakumari district of Tamil Nadu, very often the rice crop raised in about 7000 ha in the tail end areas failed due to vagaries of monsoon and paucity of irrigation water. Hence it is of paramount importance to have a short duration variety which can withstand initial drought experienced during vegetative period and give high grain as well as straw yield with resistance to many pests and diseases. Moreover red rice is a varietal preference of Kanyakumari district. With this objective, breeding work was concentrated which resulted in the evolution of a short duration red rice and high yielding variety.

MATERIALS AND METHODS

The study of a large number of intervarietal crosses in 1977 at the Rice Research Station, Ambasamudram has resulted in the identification of a double cross derivative AS 688 from a cross combination of ADT 31/Ratna/1ASD8/IR 8. Among the parents, IR 8, ADT 31 and Ratna are high yielding varieties with semi tall nature, 115-140 days duration and white rice, while ASD 8 is a moderate yielder, tall type, 85 days duration and red rice. This selection AS 688 was evaluated under various yield trials at Research stations. It was also tested over large number of locations in Kanyakumari and Nellai Kattabomman districts under Adaptive Research trials during *Kannipoo* and *Kar* seasons respectively. Under All India Co-ordinated Rice Improvement project, AS 688 was tested as IET 7272 in preliminary varietal trial (AICRIP, 1981).

RESULTS AND DISCUSSION

The overall performance of the culture AS 688 in comparison with TKM 9 tested at the Rice Research Station, Ambasamudram from 1979 to 1988 is given in Table 1. AS 688 has registered a mean grain yield of 5422 kg/ha as compared to 5078 kg/ha by TKM 9 representing 6.8 percent increase over TKM 9.

The selection AS 688 was tested over 35 locations in Kanyakumari district and 34 locations in Nellai Kattabomman district in Adaptive Research trials along with local checks. It was also tested in 125 locations in Kanyakumari district under observational trials for the past five years. The yield data are furnished in Tables 2,3 and 4 respectively. In Kanyakumari district during 1984 *Kan-*

Table 1. Performance of AS 688 at Rice Research Station, Ambasamudram.

Year	Name of Trial	Grain yield (kg/ha)		C.D. (P=0.05) kg/ha	% increase/ decrease over TKM 9
		AS 688	TKM 9		
1979	ET2	5635	4635	1043	+ 21.6
1979	ET 3 (L)	5361	4899	474	+ 9.4
1979	ET 3 (H)	5816	5136	924	+13.4
1979	ET 3 (L)	5038	4424	911	+ 13.9
1979	ET 3 (H)	5965	4741	1342	+ 25.8
1980	ET 3	5840	5772	1037	+ 1.2
1980	PCT	5377	5247	881	+ 2.5
1980	MLT	5443	5495	927	- 0.9
1981	ET 3	3373	4872	596	- 30.8
1981	PCT	4695	5006	1076	- 6.2
1981	CT	5734	4910	394	+ 16.8
1981	MLT	6269	6504	414	- 3.6
1982	ET 3	6529	5783	919	+ 12.9
1983	ET 3	4316	3997	489	+ 8.0
1983	PCT	5168	5678	1368	- 9.0
1983	IRYN (VE)	6705	6648	1351	+ 0.9
1983	MLT	6616	5117	627	+ 29.3
1984	ET 3	5126	4512	808	+ 13.6
1984	PCT	4283	3747	561	+ 24.3
1984	IRYN (VE)	6067	4592	1318	+ 32.1
1984	RCYT	4798	3794	950	+ 26.5
1984	MLT	5414	4786	588	+ 13.1
1984	Adhoc	4030	4115	595	- 2.1
1985	PCT	5117	5778	868	- 11.4
1986	ET 3	6378	5876	448	+ 8.5
1987	D.P.	5400	4760	-	+ 13.4
1988	D.P.	5925	6296	-	- 5.9
Mean		5422	5078	-	+ 6.8

ET = Evaluation trial; PCT = Promising culture Trial; MLT = Multilocation trial; CT = Composite Trial; IRYN (VE) = International Rice Yield Nursery (very early); DP = Demonstration plot; RCYT = Rice Co-ordinated yield trial

nipoo season, AS 688 has recorded the highest mean grain yield of 3133 kg/ha in 97 days as compared to 3116 kg/ha in 106 days by local kuruval representing 0.5 percent increase over local kuruval. During 1987 *Kannipoo*, AS 688 has recorded 2516 kg of grain per hectare as compared to 2396 kg/ha recorded by Arupatham kuruval representing 5.0 percent increase. During 1988 *Kannipoo*, AS 688 has recorded 4841 kg/ha representing 7.4 percent over the local Annapoorna variety.

In Nellai Kattabomman district, AS 688 has recorded a mean grain yield of 4890 kg/ha as compared to the local check variety ASD 8 which recorded 3561 kg/ha representing 37.3 percent increase over ASD 8. In Kanyakumari district, the perfor-

Table 2. Performance of AS 688 under Adaptive Research Trials in Kanyakumari District.

Year/Season	No.of Trials	Duration (days)	AS 688 Yield (kg/ha) Grain	Straw	Duration (days)	Local checks Yield kg/ha Grain	Straw	Local c
1984 Kannipoo	10	97	3133	4797	106	3116	5228	Local Kuru
1987 Kannipoo	5	100	2516	9200	95	2396	8833	Arupatham
1988 kannipoo	20	102	4841	9001	104	4508	9064	Annapoorn
Per cent increase over Local Kuruvai			+ 0.5	- 8.2				
Per cent increased over Arupatham kuruvai			+ 5.0	+ 4.2				
Per cent increase over Annapoorna			+ 7.4	-0.7				

mance of AS 688 was assessed by conducting 125 observational trials during 1987 and 1988. The mean grain yield and straw yield were 5936 kg/ha and 11617 kg/ha respectively.

The selection AS 688 is semidwarf (96 cm) and matures in 100 days with a range of 95 to 108 days. It is taller than TKM 9 by 9 cm and shorter in duration by 8 days. It

tare by TKM 9 with an increase of 18. cent. It is an efficient user of soil N optimum N dose being 80 kg/ha. senescence at maturity is a distingui character of this variety. Maximum potential of this variety can be obta sc planting younger seedlings of 18 to 2 cr Grain is short bold with red rice, m preferred by people of Southern dist Tamil Nadu. Its rice recovery perc M

Table 3. Performance of AS 688 under Adaptive Research Trials in Tirunelveli district.

Year/Season	No.of Trials	Duration (days)	AS 688 Yield (kg/ha) Grain	Straw	Duration (days)	ASD 8 Yield (kg/ha) Grain	Straw
1987 - 88	20	99	4322	9702	92	3089	7751
1988 kar	14	105	5702	10429	99	4234	10087
Mean	34	101	4890	10001	95	3561	8713
Per cent increase over ASD 8			37.3	14.8			

recorded an overall mean grain yield of 5.4 tonnes per hectare. The increase in yield was 6.8, 7.4 and 37.3 percent over TKM 9, Annapoorna and ASD 8 respectively. It has recorded a mean straw yield of 9.0 tonnes per hectare as against 7.6 tonnes per hec-

(72.6) is comparable to TKM 9 (65.0). T polished rice recovery was also high for A 688 (82.67%) as compared to ASD (80.67%) and TKM 9 (79.19%). Because its high amylose (31.5%), it is high suitable for cold rice also (Table 8).

Table 4. Performance of AS 688 under Observational trials is Kanyakumari district.

Location	No.of Trials	Duration (days)	Yield of grains (kg/ha)	Yield of Straw (kg/ha)
I. 1987 (Kannipoo season)				
Nagarcoil	5	99	4876	6050
II. 1988 (Kannipoo season)				
Nagarcoil	17	101	5878	10870
Kuzhithurai	36	102	5620	10400
Thakkalai	67	106	6200	12875
Mean		104	5936	11617

Table 5. Screening of AS 688 for resistance to gall midge, Leaf folder, Stemborer, Brown Plant Hoppper and white Backed Plant Hopper under artificial condition at coimbatore.

Culture / Variety	Damage rating in grades				
	Gall midge	Stemborer	Leaf folder	BPH	WBPH
AS 688	5	5	5	3	5
TKM 9	5	5	5	5	3
IR 50	5	5	7	7	5

Grades : 3 - Moderately resistant
5 - Moderatly susceptible
7 - Susceptible

The culture AS 688 along with the cks *viz.*, TKM 9, IR 50 and ADT 31 were ed for their reaction to major pests and ases both under field and artificial conons, and the results are presented in es 5,6 and 7. AS 688 was found to be derately resistant to BPH and sheath rot der artificial condition. Under field condions at Rice Research Station, Ambasamudram, there was no incidence of leaf last on AS 688 when compared to 22.2 per ent in TKM 9 and 53.3 per cent in IR 50.

Table 6. Reaction of AS 688 to Brown spot, Bacterial leaf blight, Sheath rot and Sheath blight under artificial conditions at Coimbatore.

Culture / Variety	Grades			
	Brown spot	Bacterial leaf blight	Sheath rot	Sheath blight
AS 688	5	5	3	5
TKM 9	5	5	5	5
ADT 31	5	5	7	5

Grades : 3 - Moderately resistant
5 - Moderatly susceptible
7 - Susceptible

The district technical committee of anyakumari district recommended the election AS 688 for cultivation in Kanyakumari district in view of its good performance in tail end area besides showing high resistance to most of the pests and diseases. This culture has field tolerance to RTV and Blast and moderate resistance to BPH and sheath rot. In view of its outstanding performance, the state variety release commitee approved its release as ASD 17 for cultivation in Kanyakumari, Nellai Kattabomman and V.O.Chithambaranar districts. This variety is expected to replace the local varieties like Annapoorna and Arupatham Kuruvai in Kanyakumari district and Thuyamalli and Avasara samba in Nellai Kattabomman district and V.O.Chithambaranar districts.

Table 7. Reaction of culture AS 688 to RTV and Blast disease Under field condition at Ambasamudram.

S.No	Culture/Variety	RTV	Blast incidence (Per cent / Grade)	
			Leaf Blast	Neck Blast
1.	AS 688	5	Nil / 0	19.5 / 5
2.	TKM 9	9	22.2 / 6	41.0 / 7
3.	IR 50	5	53.3 / 8	58.3 / 9

Grades : 5&6 Moderately susceptible
7 - Susceptible
8 & 9 - Highly susceptable

Table 6. Physical and Chemical characteristics of AS 688

S.No	Details of characteristics	AS 688	ASD 8	TK
1.	Milling	72.6	75.6	6
	a) Endosperm (%)	26.8	24.2	3
	b) Husk (%)	0.40	0.14	0
	c) Premature grain (%)			
2.	Polishing			
	a) White rice (%)	82.67	80.67	79
	b) Bran (%)	14.93	18.02	19
	c) Broken rice (%)	2.40	1.30	1.8
3.	Chemical characteristics			
	1. Moisture (%)	13.64	13.7	13.7
	2. Ash content (%)	0.56	0.60	0.6
	3. Protein (gm)	6.08	6.27	6.2
	4. Amylose (%)	31.50	30.50	21.7

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EFFECT OF FERTILIZER MANAGEMENT ON NUTRIENT UPTAKE BY SORGHUM AND GROUNDNUT UNDER DOUBL CROPPING SYSTEMS *

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ABSTRACT

The experiment conducted during **kharif** and **rabi** seasons at the Agricultural College Farm, Pune revealed that P and K uptake by sorghum was significantly more than by groundnut during all the three years and in pooled data. The pooled N, P and K uptake by sorghum and groundnut was significantly increased when these **kharif** crops were grown after mid-late and late sown wheat as compared to **kharif** crops after normal sown wheat. N,P and K uptake was significantly enhanced when **kharif** crops were grown after the application of 2/3 of the recommended and full levels of fertilizers as compared to 1/3 of the recommended level of fertilizer to wheat.

KEY WORDS : Nutrient uptake, Sorghum, Groundnut.

The results of the experiments carried out showed very conclusively that it was possible to have any number of crops on the same piece of land in one year under

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