

## MDU. 1 Rice : A High Yielding Rainfed Variety

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An attempt to evolve a high yielding and drought resistant rice suitable for Ramanathapuram district has resulted in isolation of a promising type. This type was obtained by crossing IR.8 with Chitraikar, a native cultivar of Ramanathapuram district. This 'Culture' 2' yielded 1800 kg/ha and the yield increase over Chitraikar being 20 per cent. The culture is possessing a red coloured rice with preferable cooking quality. Hence this culture was released as a new rainfed rice MDU.1 for drought prone areas particularly for Ramanathapuram district.

Rice, an important food crop of India, is mostly grown under low land condition. Intensive attempts are being made to evolve rice genotypes with high yield potential coupled with pests and disease resistance suitable for wet conditions only. A considerable amount of acreage of paddy is under the mercy of the monsoon in India and no serious attention was paid so far to improve the existing genotypes and also to evolve a suitable rice variety for this upland conditions.

In Tamil Nadu alone, an area of 1.84 lakh hectares of paddy is under rainfed condition particularly in the districts of Ramanathapuram, Chinleput, Trichy, Pudukottai; a part of Tanjavur and South Arcot. Among them Ramanathapuram district has a major area of 72,000 hectares under rainfed paddy. The maximum yield of rice under rainfed conditions is about 1200 kg/ha as

against an yield of 8000 kg/ha obtained in wet condition. Hence a high yielding and drought tolerant rice is a long felt need. With an objective to enhance the yield potential of the local types without any change to this drought tolerance, breeding work was undertaken at the Agricultural College and Research Institute, Madurai and the results are presented hereunder.

### MATERIAL AND METHODS :

Forty local rainfed rice types were collected from different places and evaluated at the Agricultural College and Research Institute, Madurai for their morphological characters and yield performance. Based on the yield and duration, few types namely Chitraikar, Thillainayagam, Kuruva, Shandikar, Shornavali Poongar and Pulthikarsamba were chosen as donor parents for drought resistance and crossed with IR.8 recip-

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roccally. For hybridization, hand emas-  
culation was done by hot air blowing  
method and artificial pollination was  
done during 1972. The  $F_1$ s were studied  
along with their parents. Pedigree  
method of selection was followed from  
 $F_2$  to  $F_8$  generations. Eight promising  
genotypes were isolated in  $F_8$  (IR.8 x  
Chitraikar) and their yield performance  
was assessed in the farm of Madurai  
Agricultural College as well as in the  
farmers holdings. Yield trials were  
conducted for three years with these  
promising short duration cultures in  
25 different places of Ramanathapuram  
district.

#### RESULTS AND DISCUSSION:

Among the hybrid derivatives tried  
the recombinants of the cross involving  
IR.8 and Chitraikar were found to be  
promising. Eight cultures based on their  
superior performance in  $F_8$  were isolated  
and tested, in the yield trials, conducted.  
Of the eight cultures tested, 'Culture 2,  
gave better performance in the trials at  
the Madurai Agricultural College. It was  
also evaluated in 25 centres in rainfed  
areas of Ramanathapuram district and

at research centre Srivilliputhur during  
1976 to 1979 (Table II to V). The morp-  
hological and quantitative characters of  
'Culture 2' are presented in Table I.

This 'Culture 2' rice is a medium  
tall plant with nonlodging habit and  
moderate resistance to pests and disea-  
ses under field condition. This new type  
has a long slender grain possessing red  
colour kernal, which is slightly longer  
than Chitraikar. This is having a prefer-  
able cooking quality. In field, this has  
surpassed the local Chitraikar in the  
Research Stations and also in ryots  
holdings at yields. It has recorded an  
average grain yield of 1800 Kg / ha  
under rainfed conditions which is 20%  
higher than that of Chitraikar rice  
(1500 kg/ha). (Table V), This culture  
comes up well during July - August  
season under rainfed condition. It has  
got 9.1 per cent of protein.

Based on the above desirable feat-  
ures, the culture 2' has been released  
as MDU. 1 rainfed rice by the Tamil  
Nadu Agricultural University, Coim-  
batore during 1980 for large scale  
cultivation, particularly in Ramanatha-  
puram district.



TABLE 1: Data on Performance of MDU. 1 in comparison with Chitraikar rice

	Culture 2 (MDU. 1)	Chitraikar
Parentage	IR. 8 x Chitraikar	Ramnad Local
Duration	115-120	120
Average yield (Kg/ha.)	1800	1500
Increase in yield	20%	—
1000 grain weight (g)	26.96	25.62
Grain L/B ratio	3.82	3.73
Grain type	Long slender	Long slender
Kernel Colour	Red	Red

b) *Morphology of MDU.1 Rice*

Habit : Erect medium tall (80-90cm)

Leaf sheath : Green

Septrum : Green

Ligule : Colourless

Auricle : Colourless

Panicle : Medium compact

Husk colour : Brown

Rice colour : Red

Abdominal whire : —

Grain size : a) Length-8.4mm. b) Breadth-2.2mm. c) Thickness-1.8mm

Protein content : 9.1%



TABLE : II Yield Performance of culture 2 during 1977-78

Name of the Place	Yield Kg/ha.	
	Culture 2	Chitraikar/Local
Kalayar Kott	2519	2692
Sivaganga	543	1087
Thiruppulan	198	543
Chandrakudi	353	223
Thiruvadanai	2519	1976
Mudukulathur	3310	2174
University trial	1927	1482
Sevilliputhur	2124	1776
Total	13493	11953
Mean	1687	1494
Increase over Chitraikar		12.88%

TABLE : III Yield Performance of culture 2 (MDU.1) During the year 1976-77

Name of the Place	Yield Kg/ha.	
	Culture 2	Chitraikar/Local
R. S. Mangalam	2534	771
Thriyuthur	1191	2386
Paramakkudi (SSF)	1363	-
Suriyakudiyirupu	1531	1186
Pokkanendal	1452	1176
Thirumanavayal	1423	902
Agri. College & Research Institute, Madurai I	1729.00	1734
" II	2667.60	1828
" III	3397.33	2645
Total	17199	12627
Mean	1910	1578
Increase over Chitraikar		21.07%



TABLE : IV Yield Performance of culture 2 (MDU. 1) during 1978-79

Name of the Place	Yield Kg/ha.	
	Culture 2	Chitraikar/Local
Pandiyur	2075	1630
Nalnarkoil	1625	1225
Nalnarkoil	1620	1447
Vani	1976.00	1531
Vani	2149	1457
Pandiyur	2075	1531
Valathiyur	1319	701
Pallapucheri	1877	1531
Venee, Vaikkal	1359	1680
Veneer Vaikkal	803	902
Pallacheri	1877	1482
Thiruvadanai	3211	2223
Total	21466	17342
Mean	1830	1445
Increase over Chitraikar		26.66%

TABLE : V Overall Performance of 'Cultures 2' in three years

Paddy variety	Mean yield Kg/ha.			
	1976-77	1977-78	1978-79	Mean for three years.
Culture 2	1912	1687	1830	1809
Chitraikar	1578	1494	1445	1506
% Over Chitraikar	21.07	12.88	26.66	20.20

Mean % increase over 'Chitraikar' - 20.20%