

ACKNOWLEDGEMENTS

The authors express their sincere thanks to Associate Director (Research), Agricultural Research Station, Mandor, Jodhpur for providing the necessary facilities for conducting this study.

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(Received :

Revised:

Madras Agric. J. 82(12): 629-630 December 1995

<https://doi.org/10.29321/MAJ.10.A01283>

MDU 4 : A HIGH YIELDING COLD TOLERANT RICE

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ABSTRACT

ACM 16 (AC 2836/Jeganath) was an introduced genotype in to Tamil Nadu from Central Rice Research Institute, Cuttack through Directorate of Rice Research trials. It is short statured with high tillering ability and non-lodging culms. It matures in 120- 125 days. It tolerates the cold stress at all stages of growth and produced low spikelet sterility (7.8%) as compared to IR.20 (13.7%) in cold stress areas. ACM 16 has recorded a mean grain yield of 5882 kg/ha under cold stress condition. It is resistant to blast, sheath rot, white backed planthopper and grain discoloration and moderately resistant to brown spot and brown planthopper. Hence it was released as a new rice variety MDU 4 for cold stress areas of Madurai, Salem and Dharmapuri Districts.

KEY WORDS : Cold stress, Rice Variety, Spikelet Sterility

In Tamil Nadu, the rice crop in Cumbum valley of Madurai District (1400 'MSL), Hosur and Krishnagiri of Dharmapuri District and part of Salem District is being severely affected by the cold stress during *rabi* season every year. The low temperature 14 - 16°C) particularly prevailing during active tillering and flowering period considerably reduces the yield by developing high percentage of spikelet sterility in the ruling variety IR 20. Hence this situation warranted a high yielding cold tolerant rice variety for these tracts.

MATERIALS AND METHODS

Cultres from the International Rice Cold Tolerant Nursey (IRCTN) trials as well as from the Central Rice Research Institute (CRRI), Cuttack through the Directorate of Rice Research (DRR), Hyderabad, were evaluated at the Agricultural College and Research Institute, Madurai and State Seed Farm, Keelagudalur (Cumbum Valley) during the year 1984-85 to 1987-88 in *rabi* season (September - January). Among them IET 9302, a hybrid derivative of the cross AC 2836/Jeganath was identified as a promising genotype under cold stress condition and included in the

Table 1. Overall performance of ACM 16

Name of the trial	Grain yield (kg/ha)	
	MDU 4 (ACM 16)	IR 20
State Seed Farm, Keelagudalur	5447 (127)	4418 (127)
Adaptive Research Trials	6894 (130)	6138 (138)
National Trial (AICRIP)	5304 (130)	4486 (135)*
Mean	5882	5014
% increase over IR 20	17.3	

* Mean yield of Jaya from AICRIP trials

Figures in parentheses indicate duration in days

germplasm as ACM 16. During 1985-86, this culture was tested under national trials (AICRIP) and during 1986-89, adaptive research trials (ART) were organised at the farmers holdings of Madurai, Dharmapuri and Salem Districts during rabi season.

RESULTS AND DISCUSSION

The distinguishing morphological characters of ACM 16 are: Habit erect tall; leaf sheath green; axil green; junction colourless; auricle colourless; ligule colourless; ligule shape acuminate; septum green; flag leaf green; lemma and palea green; apiculus green tip; awn absent; panicle compact and medium, stigma purple; husk colour yellow; length of grain 9.12; breadth of grain 2.26. grain L/B ratio 4.03; 1000 grain weight 22.87 g; length of

kernel 8.8; breadth of kernel 2.1; kernal L/B ratio 4.3; rice grade medium slender; rice colour white; abdominal white absent.

The culture ACM 16 registered a mean grain yield of 5447 kg/ha under severe cold stress conditions at State Seed Farm, Keelagudalur in Cumbum valley of Madurai District, as against 4418 kg/ha recorded by the ruling IR 20. The yield increase was 18.9 per cent (Table 1).

In the ART conducted at the farmers holdings of Madurai, Dharmapuri and Salem Districts, ACM 16 recorded an average grain yield increase of 12.3 per cent over IR 20 (Table 1). In AICRIP trials, ACM 16 maintained its superiority over Jaya recording a mean grain yield of 5304 kg/ha as against Jaya (4468 kg/ha)

The culture ACM 16 could with stand cold stress during reproductive stage with low spikelet sterility (7.8%) as compared to IR 20 (13.7%). It is highly resistant to blast, sheathrot, grain discoloration and white backed planthopper and moderately resistant to brown spot and brown plant hopper. The grain is medium slender with white rice possessing good cooking quality.

ACM 16 was released as MDU 4 during 1991 for the cold stress affected areas of Madurai (Cumbum Valley), Dharmapuri and Salem Districts of Tamil Nadu.

(Received September 1995 Revised November 1995)

Madras Agric. J., 82(12): 630-634 December 1995

EFFECT OF PLANT ATTRIBUTES ON THE QUALITY CHARACTERISTICS IN CHILLI

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Abstract

Quality of chilli (*Capsicum annuum* L) is determined by its capsanthin content, capsaicin content, and ascorbic acid content. The relationship between the quality traits on the one hand and other characters on the other and the direct and indirect effects of other traits on quality traits were investigated. Ascorbic acid content, stem height upto 3rd internode length and fruit stalk weight showed not only positive correlation but also direct influence on the capsanthin content. Fruit length and fruit weight showed negative association with capsaicin content. Ascorbic acid content was found to be positively correlated with each of 1000 seed weight, fruit stalk weight, pedicel length, fruit length and capsanthin content and negatively correlated with number of fruits/plant. The direct effect of 1000 seed weight on ascorbic acid content was maximum.

Chilli (*Capsicum annuum* L.) is a very important vegetable crop and is used in the diet of both rich and poor all over the world.

Economically, chilli is a good choice for greater income generation among the farming sector. Yield and quality plays an important role in increasing