SHORT COMMUNICATION https://doi.org/10.58297/HSZG4683

KAU Aadhya (MO 24): A High Yielding White Kernelled Rice Variety for Kerala

Hani Babu*, Leena Kumary S, Devika R, Ambily AK, Surendran M, Nimmy Jose, Biju Joseph, Jyothi Sara Jacob and Gayathri P

Kerala Agricultural University, MS Swaminathan Rice Research Station, Moncompu, Alappuzha, Kerala, India

*Corresponding author Email: *hani.babu@kau.in*

Received: 3rd February, 2025; Accepted: 2nd March, 2025

Abstract

KAU Aadhya (MO 24, KAUM 180-2, IET 25996) is a high yielding, medium duration, photo-insensitive, non-lodging, medium tillering rice variety with short bold white kernelled grains. It is the first white kernelled rice variety released from M. S. Swaminathan Rice Research Station, Moncompu, with an average yield of 6500 to 7000 kilograms per hectare. KAU Aadhya is developed from a cross between the popular variety Uma (MO 16) and the traditional variety, Thavalakkannan. The variety, MO 24, has slight tolerance to submergence during the early vegetative stage. KAU Aadhya has high hulling and milling percentage comparable to Uma. It also has better cooking quality than Uma. KAU Aadhya (MO 24) was released by the 29th State Seed Sub-committee meeting of the Government of Kerala for the agro-ecological units 4, 9, 10 and 22 of the state of Kerala.

Keywords: KAU Aadhya, white kernel, submergence tolerance, short bold grains

Introduction

Rice cultivation is one of the major means of livelihood for the farmers of Kerala especially for those in Kuttanad, the rice bowl of Kerala. Submergence stress mainly caused by the abrupt flash floods is a serious threat to rice cultivation in Kuttanad. Frequent floods and the resultant crop loss is being a major concern to the farmers especially during the *kharif* season. The variety development programme was started at M. S. Swaminathan Rice Research Station, Moncompu for developing high yielding rice varieties with tolerance to submergence at various stages of plant growth. Rice accessions with submergence tolerance were identified from the available germplasm collection and hybridisation was carried out. The parents for the crossing programme were the traditional variety, Thavalakkannan and the released varieties Uma, Gouri and Krishnanjana. Pedigree method of breeding was employed and further selections were carried out on the basis of plant characters, yield and stress tolerance. Once the cultures were uniform, Initial Evaluation Trial (IET) with 53 cultures was conducted, out of which 13 cultures were forwarded to Preliminary Yield Trial (PYT). Further two cultures were forwarded to Comparative Yield Trial (CYT) and Adaptive Research Trial (ART) in different rice growing agro-ecological units of Kerala. The culture KAUM 180-2 **(Figure 1)**, a cross between Uma and Thavalakkannan was found to have superior performance in the trials with slight submergence tolerance. The yield data of the culture in these trials are presented in **Table 1.**

Table 1: Mean grain yield of the culture KAUM 180-2 in various yield trials

Sl. No	Culture/Variety	Grain yield (kg ha^{-1})		
		PYT	CYT	ART
1	**KAUM 180-2**	**4757**	**6434**	**6646**
2	Uma	4554	7114	6002
C.D.(0.05)		**1162.10**	**1252.62**	**578**

Figure 1: Field view of KAU Aadhya

The culture KAUM 180-2 (IET 25996) was evaluated under All India Coordinated Research Project on Rice (AICRPR) under Initial Variety Trial - Irrigated Medium during *kharif* 2016. The culture along with 63 other cultures was evaluated in 39 locations across the country. KAUM 180-2 was the best performer in West Bengal and ranked 8th in the eastern zone. In Kerala, the culture ranked 6th among the entries showing 27 % yield increase over local check.

Artificial screening for pests and diseases was done at M. S. Swaminathan Rice Research Station, Moncompu and the results are presented in **Table 2**. The culture showed tolerance to major diseases like sheath blight, sheath rot, blast, brown spot and bacterial leaf blight and major pests like stem borer and brown plant hopper. Artificial screening of the cultures for submergence tolerance was done at seedling stage and the culture was found to be slightly tolerant to submergence in the early vegetative stage (**Table 3**). Grain, cooking and eating qualities of the culture were analyzed in the laboratory of ICAR-Indian Institute of Rice Research, Hyderabad and M. S. Swaminathan Rice Research Station, Moncompu based on standard laboratory procedures **(Table 4)**. KAUM 180-2 has short bold white kernelled grains **(Figures 2 and 3)** with cooking quality better than the popular variety Uma as represented in **Table 5**.

Table 2: Reaction of KAUM 180-2 to Pests and Diseases

Sl No	Culture / Variety	Score (0-9)						
		Sheath blight	Blast	Bacterial leaf blight	Sheath rot	Brown Spot	Stem borer	Brown plant hopper
1.	**KAUM 180-2**	**2.4**	**0.3**	**0.8**	**2.0**	**2.6**	**3**	**3**
2.	Uma	5.2	1.2	4.6	3.7	4.3	3	7
3.	Jyothi	6.4	6.4	6.4	5.6	5.0	5	7

Table 3: Artificial Screening of KAUM 180-2 for Submergence Tolerance

Sl No.	Name of variety/ Culture	Survival (%)	Comparative (%) survival with respect to Swarna sub 1	Increase in height during submergence (cm)
1.	**KAUM 180 -2**	**20 (26.56)**	**23.1**	**1.6**
2.	Uma	**2.6 (9.28)**	**3**	**3.02**
3.	Swarna sub 1	**86.7 (68.61)**	**100**	**0.26**
4.	IR 64 sub 1	**60 (50.76)**	**69.2**	**4.42**
5	IR 64	**0 (0)**	**0**	**8.14**
	CD (0.05)	**6.686**		**3.63**

Table 4: Grain Quality Parameters of KAUM 180-2 in Comparison with Popular Varieties

Variety / culture	Grain length (mm)	Grain width (mm)	Volume expansion	Laboratory Mill			Commercial Mill		Amylose Content (%)	Gel Consistency (mm)	1000 seed weight (g)
				Hulling (%)	Milling (%)	HRR	Hulling (%)	Milling (%)			
KAUM 180-2	**7.9**	**2.30**	**3.5**	**81.2**	**67.6**	**50**	**80.5**	**74.5**	**20.76**	**43**	**23**
Uma	7.8	2.06	3.5	81.8	68.8	51.4	80.84	75.35	22.26	28	24
Jyothi	9.2	2.1	3.1	80.9	64.8	44.6	76.7	70.44	21.64	55	28

Figure 2: Grain characters of KAU Aadhya

Figure 3: Panicle characters of KAU Aadhya

Table 5: Cooking Quality - Organoleptic Test of KAUM 180-2

Culture/ Variety	Appearance	Cohesiveness	Tenderness on touching	Tenderness on chewing	Taste	Elongation	Overall acceptability
Jyothi	White with brown streaks	Well separated	Moderately soft	Soft	Good	Good	I
KAUM 180-2	**White**	**Well separated**	**Soft**	**Moderately soft**	**Good**	**Good**	**II**
Uma	White with brown streaks	Well separated	Moderately soft	Moderately soft	Good	Moderate	III

KAUM 180-2 (IET 25996) was released as KAU Aadhya (MO 24) by the 29th State Seed Sub-committee meeting of the Government of Kerala for the agro-ecological units 4, 9, 10 and 22 of Kerala.