

ANGRAU's Contribution to the State and National Rice Baskets

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Abstract

ANGRAU is a pioneer in rice research in India. It has the credit of releasing 123 rice varieties in 58 years of its inception which include 91 HYVs, 30 pure line varieties and 2 hybrids. ANGRAU has the credit of developing first BPH tolerant rice variety MTU 5249 (Vajram) way back in 1986. Developed two rice hybrids for first time in the country in 1993 – APHR1 and APHR 2. Out of 45 mha of rice area in India, ANGRAU rice varieties occupy 14 mha of area, producing 38 mt of production accounting for 33.15% of total rice production in India. By cultivating ANGRAU rice varieties, a revenue of Rs 62317 crores is generated annually in the form of returns accounting for 2.22 percent of India's Agricultural GVA.

Keywords: Rice Varieties, MTU, APHR1, APHR2, Popular, Breeder seed

Introduction

Acharya N.G. Ranga Agricultural University (ANGRAU), Guntur, Andhra Pradesh has been serving and catering to the needs of farmers across the country and the state. In the last 58 years of its existence, it has the credit of developing 123 rice varieties, released at the state and national level, including 30 pure line selections in the pre-green revolution era, 91 high yielding rice varieties and two hybrids by different rice research stations located at Maruteru, Nellore, Bapatla, Ragolu, Nandyal and Machilipatnam through crop improvement programs (**Figure 1**). ANGRAU also has the credit of development and release of the first Brown Plant Hopper resistant variety, Vajram in 1986 in the Country. It was also the first to develop and release rice hybrids in the country, in 1993, namely, APHR-1 and APHR-2.

In 2022, ANGRAU has released four rice varieties through Central Variety Release Committee (CVRC) and three rice varieties through the State Variety Release Committee (SVRC). The CVRC varieties, namely MTU Rice 1273 and MTU Rice 1293 are short duration introgressed lines of the Mega Rice Variety, MTU 1010 of 115-120 days' duration with non-shattering nature and tolerance for BPH and blast. MTU 1293 is also tolerant to salinity. These varieties have long slender grain with kernel length >6mm and are

highly suited for export under non-Basmati category. MTU Rice 1310 and MTU Rice 1321 are high yielding medium duration, medium slender grain type varieties with high head rice recovery and suitability for raw rice. The SVRC varieties, MTU Rice 1318 is highly non-lodging and has become popular as non-lodging Swarna. It has replaced more than 2.0 lakh hectares of Swarna area in the State of Andhra Pradesh and is poised to become a mega rice variety in the coming years. MTU Rice 1232 is highly tolerant to submergence and flash floods even up to one month, while MCM Rice 103 fulfills the long demand for 140 days' duration, fine grain, salinity tolerant variety.

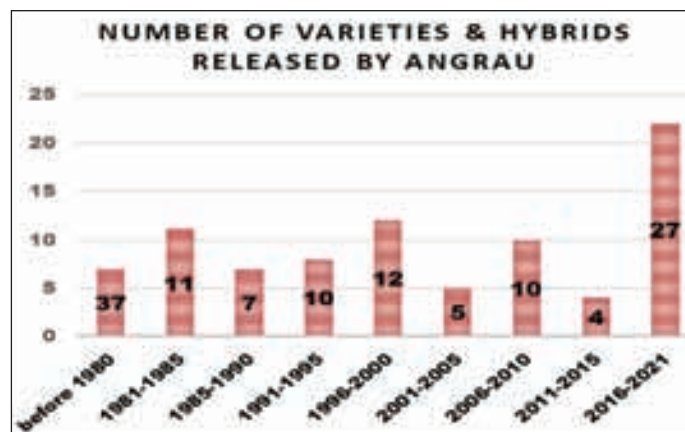


Figure 1: Details of rice varieties / hybrids released by ANGRAU



ANGRAU Rice Varieties – National Scenario

ANGRAU rice varieties are cultivated across different states of the country and the details are presented in **Table 1**. Swarna (MTU 7029), Samba Mahsuri (BPT 5204) and Cottondora Sannalu (MTU 1010) receive more than 100q GOI breeder seed indent each year and are in much demand. These three varieties account for 60 per cent of the total ANGRAU rice varieties breeder seed indent. Among these, Cottondora Sannalu (MTU 1010) and Samba Mahsuri (BPT 5204) have the highest average annual cultivation area in the country (3.24 and 2.79 million hectares, respectively) and with an annual contribution of Rs. 13,705 and Rs. 8,587 crores in the country's rice production economy. It is also estimated that because of these varieties, an average of Rs. 652.6 and 587.5 crores of additional income are generated annually to rice farming community. Likewise, Swarna (MTU 7029), Vijetha (MTU 1001) and Nellore Mahsuri (NLR 34449) contribute a per cent share of 3.32, 2.89 and 1.84, respectively, to the country's total rice revenue.

Other rice varieties released in the recent years and in increasing demand at the national level are Chandra (MTU 1153) and Tarangini (MTU 1156) with more than 70q breeder seed indent from GOI and other indentors. These varieties are mostly cultivated in the states of Chhattisgarh, Madhya Pradesh, Odisha and West Bengal for export

purpose under non-Basmati category in view of their long slender grain with kernel length more than 6 mm and convenient duration of 115-120 days. The variety, Pushyami (MTU 1075) is being grown in more than 30,000 hectares in West Bengal and 50,000 hectares in Odisha because of its high yield potential and resistance to Brown Plant Hopper (BPH). Similarly, Bheema (MTU 1140) is popularly grown for its submergence tolerance in West Bengal in more than 40,000 hectares while, MTU Rice 1223 is grown in rainfed uplands of Chhattisgarh in more than 1 lakh hectares.

Maruteru Samba (MTU 1224) and Maruteru Mahsuri (MTU 1262) are grown for their fine grain in Odisha and Telangana in an area of about 1.20 lakh hectares annually. Indra (MTU 1061), another predominant rice variety of Andhra Pradesh state after Swarna (MTU 7029) and Samba Mahsuri (BPT 5204) is popular in the state of Telangana for its salinity tolerance, high head rice recovery and suitability for raw rice. Nellore Dhanyarasi (NLR 3354) and Nellore Mahsuri (NLR 34449) are popular in Tamil Nadu and are being grown in more than 70,000 hectares for their grain quality and tolerance to pests and diseases. Sravani (MTU 1239) is grown in Chattisgarh in about 1.30 lakh hectares while Sujatha (MTU 1210) is popular in the states of Odisha (50,000 ha), Telangana (10,000 ha) and West Bengal (20,000 ha).

Table 1: ANGRAU rice varieties are cultivated across different states of the country

State	ANGRAU rice varieties being cultivated		Per cent area under ANGRAU rice varieties
	Number	Details	
Chhattisgarh	7	MTU 1010, MTU 7029, MTU 1001, MTU 1153, MTU 1156, MTU 1223, MTU 1239	85.05%
Maharashtra	4	MTU 1010, MTU 7029, MTU 1001, MTU 1153	11.34%
Odisha	6	MTU 1156, MTU 1153, MTU 1075, MTU 1224, MTU 1262, MTU 1210	8.45%
Tamil Nadu	2	BPT 5204, NLR 34449	7.95%
West Bengal	10	MTU 7029, MTU 1153, MTU 1140, MTU 1156, MTU 1001, MTU 1075, MTU 1210, NLR 3354, MTU 1223, MTU 1006	6.30%
Karnataka	3	BPT 5204, MTU 1001, MTU 1010	6.26%
Uttarakhand	1	MTU 7029	4.17%
Madhya Pradesh	2	MTU 1153, MTU 1156	2.55%

Source: GOI Breeder Seed Indents for 2022-23 (<https://www.seednet.gov.in>)

ANGRAU Rice Varieties – Andhra Pradesh Scenario

ANGRAU rice varieties occupy lion share in the state of Andhra Pradesh. During Kharif season 15.57 lakh hectares out of 17.42 lakh hectares of total rice grown area is under ANGRAU varieties. Similarly, 6.21 lakh hectares out of 7.62 lakh hectares of Rabi rice area is under ANGRAU varieties. An output of 123.14 lakh tones was produced by cultivating ANGRAU rice varieties in Andhra Pradesh, which accounted for 88 per cent of the State’s total rice production in 2021-22. ANGRAU rice varieties, Sri Dhruthi (MTU 1121), Swarna (MTU 7029) and Samba Mahsuri (BPT 5204) are most commonly grown with 5.03, 3.5 and 3.34 lakh hectares respectively, during 2021-22. Other important ANGRAU rice varieties occupying more than 1.0 lakh hectares in the state are Indra (MTU 1061) and Nellore Mahsuri (NLR 34449) (Figure 2).

The GOI breeder seed indents for 2022-23 reveals maximum indent of 799.25q for 33 ANGRAU rice varieties accounting for 23.41 per cent of the total GOI paddy breeder seed indent (Figure 3). ANGRAU has also been consistently ranking first, in comparison to other Rice Research Institutes and State Agricultural Universities with respect to GOI breeder seed indent, since 2015. Further, 26.8 per cent of the ANGRAUs rice varieties are receiving regular indents for breeder seed from GOI. Apart from the Central Indents received for Breeder Seed, ANGRAU also receives indents from Seeds Men Associations, Seed Production Societies, Agencies and Progressive Seed Growers accounting for more than 2000 quintals of Breeder Seed every year pertaining to more than 35 ANGRAU rice varieties resulting in generation of 2.5 to 3.0 crores of revolving fund.

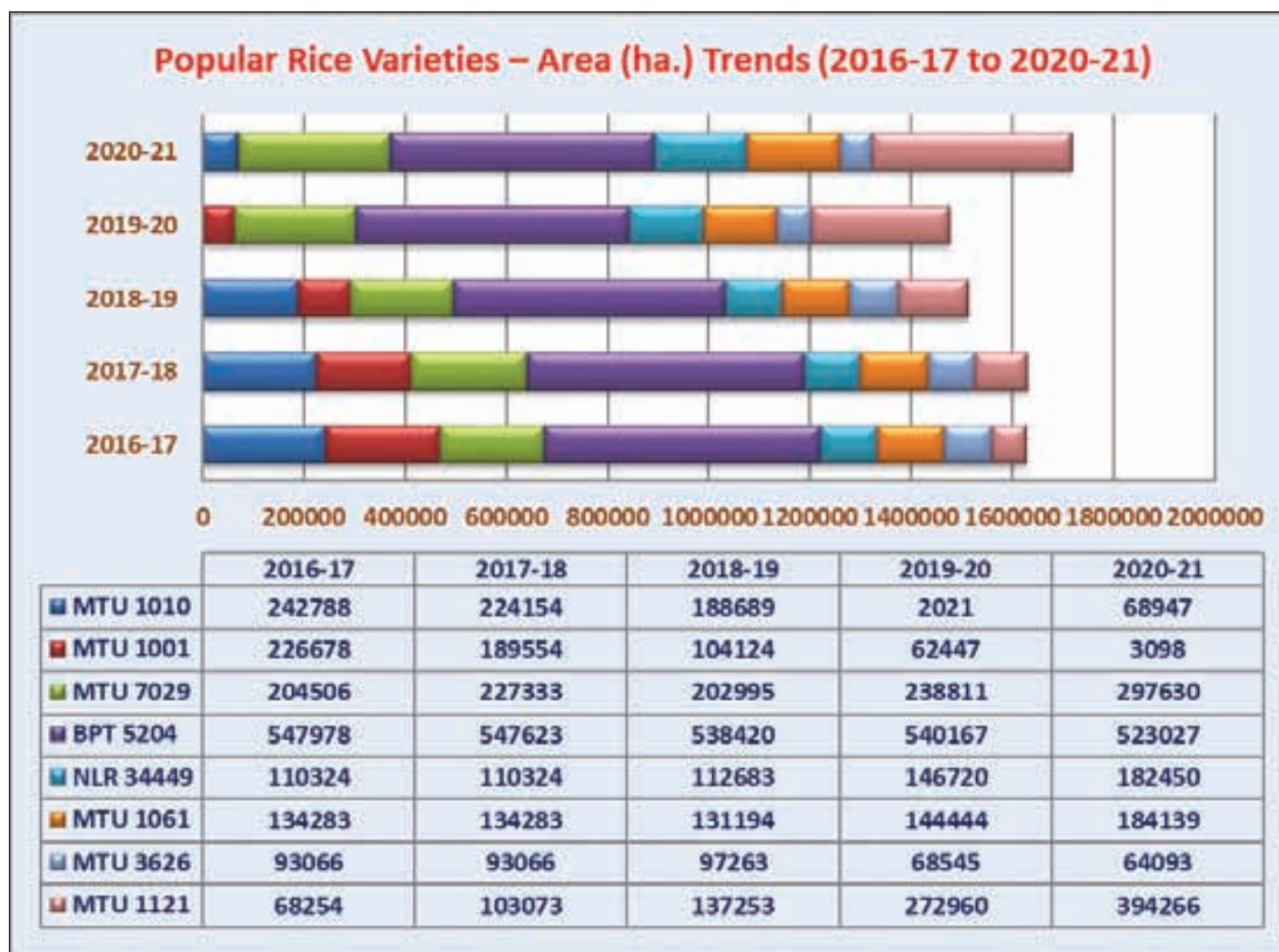


Figure 2: Trends in Area occupied by popular rice varieties of ANGRAU (2016-17 to 2020-21)

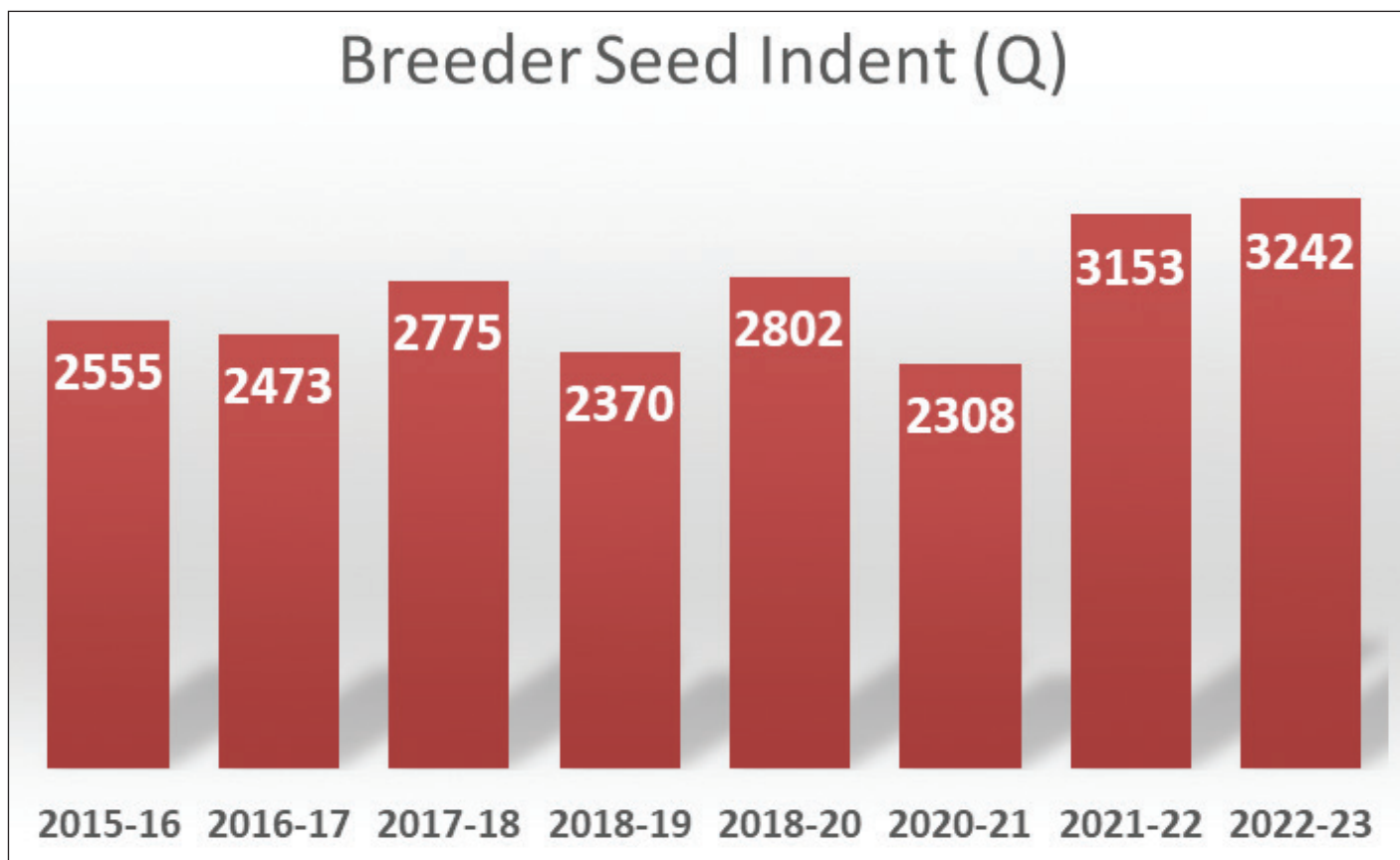


Figure 3: Breeder seed indents of ANGRAU rice varieties by GOI, ICAR and AP

Conclusion

It is estimated that 14 million hectares of rice area of the country is under ANGRAU rice varieties resulting in approximately 38 million tonnes of average annual production accounting for Rs. 62,317 crores of revenue generation annually, equivalent to 33.15 per cent of the total revenue generated from rice production, leading to about 2.22 per cent contribution to the country's Agriculture GVA.

ANGRAU rice varieties also account for 33 per cent of the total non-basmati rice exports from the country, resulting in annual export revenue of Rs. 8,073 crores. ANGRAU rice varieties have the credit of being consumed by one of every three Indian families with rice as their staple food in the country and nine out of every ten families in the state of Andhra Pradesh. The State rice farmers are estimated to have earned an amount of Rs. 20,243 crores through the cultivation of ANGRAU rice varieties.