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Kalanamak rice, 'Buddha's gift to people', is now small, strong

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Indian Agriculture Research Institute has successfully tested two new dwarf varieties — Pusa Narendra Kalanamak 1638 and Pusa Narendra Kalanamak 1652 — in Uttar Pradesh that give double the yield



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Kalanamak, a traditional variety of paddy with a black husk and a strong fragrance, which is considered a gift from Lord Buddha to the people of the Sravasti when he visited the region after enlightenment, is all set to get a new look and name. Grown in 11 districts of the Terai region of northeastern Uttar Pradesh and in Nepal, the traditional variety has been prone to lodging, a reason for its low yield.

Lodging is a condition in which the top of the plant becomes heavy because of grain formation, the stem becomes weak, and the plant falls on the ground. Addressing the problem, the Indian Agriculture Research Institute (IARI) has successfully developed two dwarf varieties of Kalanamak rice. They have been named Pusa Narendra Kalanamak 1638 and Pusa Narendra Kalanamak 1652.

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The IARI says the new name is in recognition of the association the institute has with the Acharya Narendra Dev University of Agriculture and Technology in Ayodhya, where the two varieties were tested. The yield of the new varieties is double that of the traditional variety, and the IARI and the Uttar Pradesh Council of Agriculture are working together to make the seeds available to farmers at the earliest.

The traditional Kalanamak rice is protected under the Geographical Indication (GI) tag system. It's recorded in the GI application that Lord Buddha gifted Kalanamak paddy to the people of Sravasti so that they

remembered him by its fragrance.

A tall problem

The problem with the traditional variety of Kalanamak paddy is that it's tall and prone to lodging, which badly impacted grain filling and quality. The yield, as a result, fell drastically, and the market for the rice dwindled, too. The traditional Kalanamak paddy's yield is barely two to 2.5 tonnes per hectare.



A field in Uttar Pradesh where Kalanamak paddy is being grown on a trial basis. Photo: Special Arrangement

IARI Director A.K. Singh told *The Hindu* that their objective was to bring dwarfness into the variety and make the plant sturdy so prevent lodging. “The idea was to combine the quality of traditional Kalanamak into high yielding varieties. Its grains are short. In that process, we did the breeding programme by bringing the dwarfing genes from the rice variety Bindli Mutant 68, and also the gene of Pusa Basmati 1176 was used as a parent to cross with Kalanamak, and the progenies were further back-crossed with Kalanamak to restore its quality. This is a novel mutation,” he said.

The process started in 2007, when the first cross with dwarf varieties was carried out. For the last three years, the IARI conducted extensive evaluation at 10 Krishi Vigyan Kendras (KVK) located in the GI districts. “In this kharif season, it was given to farmers. The aroma of the new breed is higher and nutritional qualities are also excellent. Productivity has gone up to 4.5 to five tonnes per hectare as against 2.5 tonnes in the case of traditional Kalanamak,” Dr. Singh said.

Tilak Ram Pandey, a farmer from Sidhharth Nagar, said his family has been cultivating traditional Kalanamak paddy for generations. “We consider this rice as the *prasad* of Lord Buddha,” Mr. Pandey said. He has carried out his trial with the new variety in eight acres of his farm. “For the old variety, the length of the plant is 140 centimetres, and for the new variety it is between 95-100 centimetres. I will start harvest on November 20. It will be a good yield. There was larvae attack on the paddy, but it was much less than last year,” he added.

Encouraging results

Mr. Pandey said 75% of farmers used to grow Kalanamak in the area, but of late, the market for the variety had shrunk. “Now, there is encouragement from the government. Last year also, I had joined in this experiment. I had given the rice to the scientists and officials who visited my home. The taste is very good. But old timers say that the taste will not match the traditional variety,” he added.

In Basti, the KVK has looked into the trials carried out by various farmers and the result is very good, according to its Director, Professor S.N. Singh. “The yield is very good, especially at low-lying land area. Compared to the traditional variety, the increase in production is three times. The sowing was generally done in July. The response was good where sowing was done in August. We have given seeds to about 150 farmers in Basti. In Basti, Kalanamak is cultivated in about 9,000 hectares,” he added.

In all, Kalanamak is cultivated in about one lakh hectares in Uttar Pradesh.

Prof. Singh said the KVKs will provide seeds for large-scale cultivation for the next crop season. “Farmers are very happy with this seed. We have been testing this for the last three

years and this season, we gave it for farmers as part of the trial. One issue was attack of blight bacterial disease. It has also been addressed by inducting blight tolerant genes," he said.

A prominent rice breeder, Chairman of the Centre for Research and Development, and former Director of Research at the Birsa Agriculture University, Ranchi, B.N. Singh, has been helping the IARI in breeding the new varieties. "We have been testing this variety since 2015. Yield and cooking quality is good. Generally, this variety has good tolerance to diseases. Lodging has been ruled out," he said, adding that zinc and iron content in Kalanamak is higher than other rice varieties.

"We have given the samples to the National Institute of Nutrition, Hyderabad, to know the nutritional compounds and glycaemic index. If the glycaemic index is low, this variety can be used by diabetic patients, too," Dr. Singh said.

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