

Santosh—a high-yielding variety for the rainfed lowland of Bihar, India, developed through participatory breeding

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The rainfed lowland is a predominant rice ecology in Bihar (2.7 million ha). As it is monsoon-based, sowing and transplanting of rice are invariably delayed. The crop also faces flood and drought, singly or in combination, at any growth stage. Because of these constraints, the high-yielding varieties developed for this ecology through on-station efforts are not widely adopted. Traditionally, to develop varieties adapted to this ecology, photoperiod-sensitive cultivars are grown. A participatory approach began in 1995 at RAU. The program was further strengthened when an IRRI-sponsored participatory breeding project was launched in 1998. From the beginning, farmers were partners in varietal selection.

An on-farm research trial consisting of 12 improved varieties and advanced breeding lines (including local checks) that differed in height and growth duration was conducted at three representative sites in farmers' fields. Of these materials, four entries were selected, mainly on the basis of high yields, and were included in large-scale multilocation on-farm trials. A survey conducted under the Farmers' Participatory Breeding (FPB) Project found that RAU 1306-4-3-2-2, a line included in the 1995 on-farm trial, was already being grown in several villages. Farmers liked its excellent grain and cooking quality and tolerance for submergence and drought. It is about 15 d earlier than some popular local cultivars such as Bakol. This entry

was thus included in the ongoing multi-location on-farm trials to assess its performance in farmers' fields. All the entries were evaluated at the vegetative and reproductive stages and a relative ranking, by both scientists and farmers, was made. RAU 1306-4-3-2-2 was rated the best by farmers.

RAU1306-4-3-2-2 was en-

tered in the All-India Coordinated (ACRIP) and state varietal trials as IET15773. The performance data formed the basis of its release. In the ACRIP trials, its yield ranged from 2.7 to 5.3 t ha⁻¹ and its average yield was 4.0 t ha⁻¹ (the national check yielded 3.5 t ha⁻¹) (Table 1). In state varietal trials at different locations during the

Table 1. Yield (t ha⁻¹) of RAU1306-4-3-2-2 (IET15773) under an initial varietal trial with shallow water at different coordinating centers, 1997 kharif.

Location	RAU1306-4-3-2-2	Salivahan (national check)	Local check	CD at 5%	CV (%)
Jeypore	4.6	4.1	3.5	13.3	16.1
Chinsurah	3.5	3.5	4.0	7.8	11.7
Kharagpur	3.5	5.0	4.0	11.7	14.9
Pusa	4.1	3.3	2.7	11.2	17.0
Ranchi	2.7	6.2	1.7	9.3	19.7
Varanasi	4.2	3.4	3.2	14.5	23.4
Raipur	3.9	2.6	3.7	10.8	17.8
Titabar	3.8	5.0	4.1	6.0	7.6
Karimganj	3.8	3.7	4.0	5.5	8.5
Arundhati Nagar	5.3	4.4	5.4	2.7	13.6
Mean	4.0	3.5	3.6	—	—

Table 2. Yield (t ha⁻¹) of RAU1306-4-3-2-2 in on-station varietal trials at Patna, Pusa, and Sabour.

Year/location	RAU1306-4-3-2-2	Rajshree	Mahsuri	CD at 5%	CV%
1993^a					
Patna	2.6	2.0	3.0	8.84	18.6
Pusa	2.8	1.8	1.8	6.87	19.3
Sabour	3.5	1.4	1.9	7.70	21.4
1994					
Patna	6.0	—	1.3	—	—
Pusa	7.2	5.0	2.4	9.16	10.46
Sabour	3.8	1.6	1.5	8.94	30.89
1995					
Patna	5.5	3.7	3.2	10.2	19.2
Pusa	4.7	3.3	2.7	9.5	20.0
Sabour	4.2	3.3	2.8	—	24.4
1996					
Patna	4.8	3.8	2.9	11.5	21.5
Pusa	4.4	5.1	4.2	9.2	17.3
Sabour	4.5	3.1	—	—	23.5
Pooled mean	4.5	3.1	2.7	—	—

^aDrought year.

1993-96 wet seasons, its average yield was better than that of popular check varieties Rajshree and Mahsuri (Table 2). In 18 on-farm trials conducted in 1999 and 2000, the mean yield of RAU 1306-4-3-2-2 ($4.4 \pm 0.5 \text{ t ha}^{-1}$) was higher than that of Rajshree ($4.2 \pm 0.4 \text{ t ha}^{-1}$) and the farmers' variety Bakol ($3.9 \pm 0.4 \text{ t ha}^{-1}$). RAU 1306-4-3-2-2 outyielded Bakol at 15 out of 18 sites.

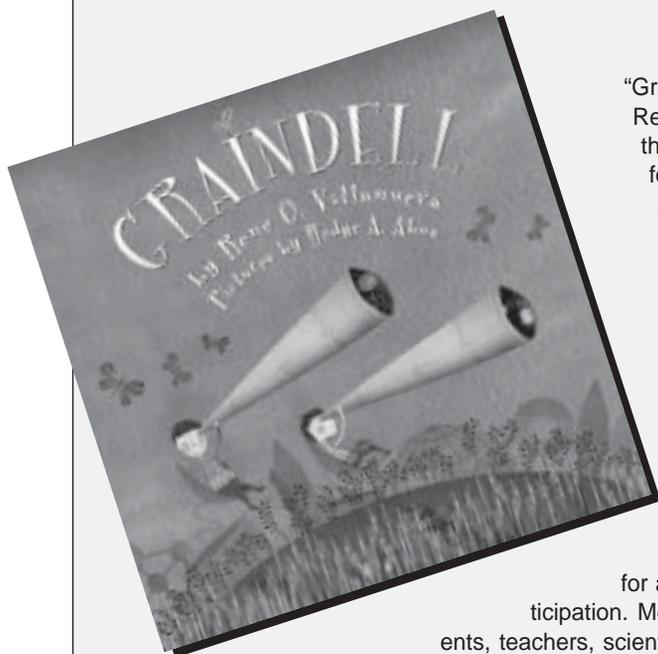
Our survey revealed that, before its release, many farmers

were growing RAU 1306-4-3-2-2 in both Malinagar and neighboring villages. In Malinagar village, it covered about 40% of the rainfed lowland and medium land area. Farmers preferred this variety because of its high yield, its excellent grain and eating quality, and its duration. In recent times, quality has become a deciding factor in varietal selection and adoption.

RAU 1306-4-3-2-2 was released by the RAU Research

Council in 2001 as Santosh (meaning "satisfaction"). It is tall (130 cm) and nonlodging and has erect leaves, long panicles, and brown husk. It can tolerate zinc deficiency and is adapted to delayed planting. Availability of seed, though, was a major constraint. However, with its release, seed production is expected to increase.

IRRI launches first children's storybook



"Graindell" is a children's storybook published by the International Rice Research Institute (IRRI). Written by renowned Filipino children's author Rene O. Villanueva, the book captures the organization's goal for all the children of the world—a "home for tomorrow," a progressive community where no one will go hungry. Through this first title in a series of children's publications, IRRI introduces its future stakeholders to important issues relating to rice, "the grain of life," food to half the world's population, especially in Asia.

Graindell, "the planetoid shaped like a little eye," tells the story of two friends, Abu and Thor, who share a common dream—to turn their home into the greatest place to live. The simple, yet moving, tale comes alive with the masterful renderings of Redge Abos, a young and talented artist from *Ilustrador ng Kabataan* (INK), in watercolor, combined with digital technology.

With the release of this first children's storybook, IRRI launches the "Graindell Community," which espouses the call for a dynamic, well-developed countryside through multisectoral participation. Membership is open to children and their stewards, including parents, teachers, scientists, children's storywriters and illustrators, and other concerned citizens.

The members of the "Graindell Community" converge at the educational Web site, Graindell.com, where IRRI's own scientists lend their expertise to build a popular knowledge bank on rice, against the backdrop of science, food and nutrition, environment, arts and culture, literacy, and community participation. The site teaches children to "aspire, persevere, and achieve" through games, instructional materials, and interactive learning exercises with other children, as well as their stewards.

Graindell is IRRI's first project for the United Nations International Year of Rice to be celebrated in 2004.

The story of "Graindell" celebrates what IRRI is all about. It portrays the organization's endeavor to create a new generation of rice farmers and consumers who will embrace the traditional wisdom of farm life, understand the need for new and creative technology, and work together for a self-sufficient and well-developed society. By involving children now, they can march fearlessly into the future, knowing that "a home for tomorrow" is not only possible—it is achievable.

Please visit www.graindell.com <<http://www.graindell.com>> to sign up, get more information, and contribute content to the site.