fied gene for BB resistance in Ajaya indicates that it is not allelic to the *xa5* gene.

For the allelism test, Ajaya was crossed with near-isogenic line IRBB5 of IR24. One hundred and twenty F_2 plants from this cross were screened for segregation of resistance to the Indian *Xoo* isolate. The segregation pattern is given in Figure 2. The occurrence of 53 susceptible plants in the F_2 population deviated significantly (χ^2 = 23.51, P<0.0001) from the expected 1:3 ratio, indicating that the gene in Ajaya is nonallelic to *xa5*.

The results of phenotype screening and molecular analysis clearly indicate that Ajaya carries a recessive gene different from *xa5*. A new symbol, *–xa5*(t), is proposed for this new gene.

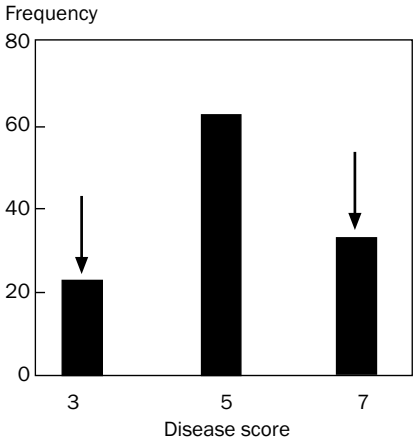

Fig. 2. F_2 segregation pattern for disease score of the cross Ajaya/IRBB5. Means of the parents are marked by arrows.

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Participatory assessment of medium-duration, high-yielding varieties for improved yield and efficient rice production in Bay Islands, Andaman

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Most of the area under rice (12,000 ha) in the Andaman Islands is planted to long-duration photoperiod-sensitive traditional variety C14-8. Besides its very low productivity (1.8 t ha^{-1}), this variety is not suitable for medium upland valley cultivation as it would delay the sowing of a second crop (vegetables / pulses) in the cropping sequence. A participatory rural appraisal pointed to the farmers' need for medium-duration high-yielding rice varieties (HYVs) in these areas (Conway 1985).

We conducted an experiment in 15 farmers' fields to assess the performance of several recommended medium-duration HYVs under the IVL Program of NATP. HYVs IET6314, Ponni, Quing Livan No. 1, and Taichung Sen Yu were compared with the farmers' variety (IR31851) during the monsoon season (June-October) in 2000 and 2001 in the villages of Mithakhari and Ograbaj. The experiment was conducted in a randomized block design with 15 farmers as replications. (Their soils have similar physicochemical properties and they use the same management practices. Soil is sandy loam and has a pH of 6.5, 0.53% organic carbon, and medium NPK.) Twenty-one-day-old seedlings were transplanted in the second week of July; the crop was harvested in October. No chemical fertilizer was applied, but plant protection measures were implemented as needed. The group of farmers ranked the varieties at final harvest and after 1 mo of consuming the grain.

The growth, yield, and economic data of the four varieties tested were better than those of the farmers' variety in both years (Table 1). IET6314, the tallest (115.3 cm), was on a par with Ponni (110.4 cm) but significantly higher than the others. Quing Livan No. 1 and IR31851 did not differ in plant height. Ponni recorded the maximum number of panicle-bearing tillers hill^{-1} (13.4) and the longest panicle (24.4 cm), on a par with IET6314 but significantly higher than the other varieties. Spikelet sterility was maximum in the farmers' variety

Table 1. Growth, yield, and economics of medium-duration rice varieties in farmers' fields.

Parameter	Farmers[1] variety (IR31851)	Quing Livan No. 1	Taichung Sen Yu	IET6314	Ponni	LSD (P = 0.05)
Plant height (cm)	94.8	92.7	112.35	115.3	110.4	5.7
Tillers (no.)	11.9	10.4	10.9	12.2	13.4	1.5
Panicle length (cm)	21.7	22.0	22.6	23.5	24.4	0.8
Spikelet fertility (%)	77.4	85.3	92.6	89.1	92.5	7.9
Av yield (t ha^{-1})	5.2	5.3	5.4	5.3	5.4	1.1
Gross returns ($ ha^{-1})	531.9	544.3	561.8	547.4	561.8	
Net returns ($ ha^{-1})	71.3	83.7	101.2	86.8	101.2	
B:C	0.15	0.18	0.22	0.18	0.22	–

(22.6%). Though Taichung Sen Yu recorded the maximum number of fertile grains (92.6%), this value did not differ significantly from those observed in other varieties. Taichung Sen Yu and Ponni recorded the maximum grain yield (5.5 t ha^{-1}), which was 5.6% higher than that of the farmers' variety (5.2 t ha^{-1}). The grain yields of Quing Livan No. 1 (5.3 t ha^{-1}) and IET6314 (5.3 t ha^{-1}) were also significantly higher than that of IR31851. Compared with those of the farmers' variety, the gross returns, net returns, and benefit-cost ratio obtained from cutivating Taichung Sen Yu and Ponni were higher. A marginal benefit of $12.40–29.90 was recorded with the recommended HYVs over the farmers' variety. The participatory matrix ranking of these varieties by farmers revealed that, even though the yields of Ponni and Taichung Sen Yu were both significantly higher than that of the farmers' variety, Taichung Sen Yu was more preferred because of its greater tolerance for lodging and its better taste (Table 2). But the variety most preferred was Quing Livan No. 1. Despite its low yield advantage, it was the top choice because it has greater tolerance for lodging and insect pests and diseases, has a better taste, and has bolder grain than the other HYVs.

This study confirms the findings of Pramanik et al (2001) and clearly shows that, apart from yield, farmers look at several other criteria in selecting varieties for their fields.

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Table 2. Participatory matrix ranking of rice varieties (1–5 scale).[a]

Characteristic	Farmers' variety (IR31851)	Quing Livan No. 1	Taichung Sen Yu	IET6314	Ponni
Yield	3	3	5	4	5
Tolerance for lodging	3	5	5	2	2
Taste	4	5	4	3	3
Keeping quality	3	5	4	3	4
Tolerance for insect pests	3	4	3	3	3
Leaf-blade sharpness	3	5	4	3	3
Grain size	Medium	Bold	Medium	Medium	Fine

[a]Uses a scale of 1–5 where 1 = least/minimum and 5 = best/maximum. Matrix score was the group ranking.