BW variety yields in selected Low Country Wet Zone locations, Bombuwela, Sri Lanka.

Variety	District	Locations (no.)	Av yield (t/ha)
BW272-6B	Kalutara Galle	23	2.12
BW267-3	Kalutara Galle Gampaha Matara Rathnapura Colombo	37	3.13
BW266-7	Rathnapura	03	2.65

All varieties proved successful when used with low inputs in the Low Country wet zone (see table). BW272-6B yielded 2.12 t/ha, nearly twice the Herath Banda yield of 1.44 t/ha. It was well adapted to bog and half-bog soils. BW267-3 was highly adapted to iron-toxic soils and yielded well. BW266-7 was resistant to gall midge from seedling stage to maximum tillering and produced well.

A natural rice mutant from IR22

A. K. Mitra, senior lecturer, Gramsevak Training Centre, Chinsurah; and D. K. Mukherji, jt. director of agriculture (research), West Bengal, Calcutta-700 001, India

Natural or spontaneous mutants in rice occur infrequently and are usually lethal. A mutant has been isolated from an IR22 multiplication plot at the Rice Research Station, Chinsurah, West Bengal, India. Leaves have no auricle, ligule, or junctura.

The mutant was protected from pollen contamination and seeds obtained were grown the following season to test previous observations. Reciprocal crosses were made between IR22 and the mutant. F_1 plants were scored for auricle, ligule, and junctura characteristics 4 weeks after sowing. The progeny exhibited all three leaf characteristics, indicating dominance. F_2 populations showed segregation patterns conforming to monogenic control of the characteristics (see table).

Distribution frequencies of F_2 population.

Auricle, ligule and junctura		X^2 value
Present	Absent	
610	214	0.364 $p = 0.70 - 0.50$

The mutant's leaves grow at an acute angle. Studies are in progress to determine if this leaf arrangement captures more solar radiation and allows higher nutrient uptake rates.

An early dwarf mutant of Tilakchandan

J. S. Nanda, S. C. Mani, Harpal Singh, J. P. Singh and C. V. Singh, Plant Breeding Department, Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, Nainital U.P., India

Tilakchandan is a popular rice variety in northwestern Uttar Pradesh. It has excellent cooking qualities and mild aroma. It is a traditional tall, photoperiod-sensitive, late-maturing variety (150-155 days). Use is decreasing because the variety is not efficient in rice-wheat rotation, which is common in the region.

In 1972 a breeding program was initiated to develop dwarf and early mutants. Dehusked seeds were soaked in distilled water for 6 hours, then treated with freshly prepared EMS aqueous solution in 3 concentrations (0.2%, 0.4% and 0.6%). They were held at room temperature for 6 hours, with intermittent shaking.

Treated seeds were washed in running tap water for 1 hour, then sown on blotting paper at room temperature. Seedlings were moved to a field nursery 7 days after sowing, and transplanted (10 × 20 cm spacing) in the main field 25 days after sowing.

The first three panicles and bulks were separately carried to the M2 generation. Panicle to row planting and, thereafter, single plant progenies were carried from M3 to M6. Productive mutants were isolated, purified, multiplied, and evaluated in multilocation trials.

The selected mutant matured earliest. Qualities were similar to those of Tilak chandan (Table I). Kernel length and elongation rate were higher than for Tilakchandan. Alkali value and water uptake were slightly lower. Mutant yield was lower because panicles had fewer grains (Table 2). The mutant is dwarf and flowers early. It can be used in hybridization programs. Seed is available to interested breeders.

Table 1. Morphological and grain characteristics of Tilakchandan and its mutant, West Bengal, India

Characteristic	Tilakchandan	Mutant
Height (cm)	125	85
50% flowering (days)	122	82
Av no. of tillers/hill	18	18
Position of flag leaf	Erect	Erect
Plant type	Tall	Dwarf
Panicle length (cm)	25.8	23.6
Grains per panicle	169.8	101.4
Awned or awnless	Awned	Awned
1,000-grain weight	16.7	13.6
Kernel length (mm)	5.0	5.6
Kernel width (mm)	2.0	2.0
Length-breadth ratio	2.5	2.8
Rice color	White	White
Abdominal white	Absent	Absent
Hulling (%)	76.0	75.0
Milling (%)	72.0	70.5
Alkali value	4.1	2.5
Kernel elongation	2.1	2.3
Volume expansion	5.8	5.1
Water uptake (at boiling temp)	600	520
Cooking quality	Good	Good

Table 2. Yield performance of Tilakchandan and its mutant in scented variety trials, 1979 and 1980 kharif, West Bengal, India.[a]

Variety	Yield (kg/ha)						Days to 50% flowering
	Pantnagar		Nagina		Bulandshahr		
	1979	1980	1979	1980	1979	1980	
Tilakchandan (mutant)	1210	2350	2227[b]	1250	5020*	2917	82
Tilakchandan (normal)	3298*	3856*	1662	2472*	2945	3558	122
C.D. (5%)	1195	684	904	1183	872	821	–
C.V.	29.01	10.20	23.65	17.55	10.12	18.21	–

[a]*Significantly higher at 5% level of significance. [b]Crop suffered from drought.