tained with urea alone. For grain breadth, treatments with 1.0%, 1.5%, and 2.0% $ZnSO_4$-coated urea had bolder grains before and after cooking. Coating prilled urea with ZnO at 1.5% and 2.0% gave significantly bolder grains than prilled urea only after cooking. Upon cooking, grain length increased by 1.69 to 1.76 times that of the grain before cooking, but the effect of coating prilled urea with zinc was not significant. Similarly, grain breadth increased by 1.33 to 1.47 times (see table). The grains obtained with 2.0% $ZnSO_4$-coated urea were significantly thinner (considered a good quality trait) than those obtained with prilled urea. It is therefore concluded that zinc fertilization had no deleterious effects on the quality of basmati rice; it even increased hulling percentage and produced longer and better grains.

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BRRI dhan 47: a salt-tolerant variety for the boro season

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The demand for a salt-tolerant rice variety for the salinity-prone areas of Bangladesh during the boro season has long been felt. Three environmental constraints—saline soil, saline irrigation water, and cold temperature—have made this environment very complex. On-station replication of such an environment is thus very difficult. An alternative approach used participatory variety selection (PVS) under a mother-and-baby trial in 200 farmers' fields in salinity-prone areas of Bangladesh. The farmers had chosen four genotypes—PVS-B3, PVS-B8, PVS-B9, and PVS-B1—from 385 BR and IR lines with different degrees of salt tolerance.

Salt stress screening of the four PVS-B genotypes was done under controlled conditions. Of these genotypes, PVS-B3, PVS-B9, and PVS-B19 showed a very high degree of seedling-stage tolerance at 12–14 dS m^{-1} (Fig. 1). It should be noted that popular boro variety BRRI dhan 28 could tolerate salt stress at 4.0 dS m^{-1} only. The same set of four PVS-B lines was screened for adult plant resistance to salt stress at 6.0 dS m^{-1}. Salinity was applied at transplanting and was continued throughout the crop growth period. BRRI dhan 28 died 30 d after transplanting; PVS-B8 and PVS-B9 soon followed. PVS-B3 and PVS-B19 survived and flowered at 6.0 dS m^{-1} (Fig. 2).

Fig. 1. Salt stress tolerance of BRRI dhan 47 at 12 dS m^{-1} at the seedling stage. V1 = PVS-B3 (BRRI dhan 47), V2 = PVS-B8, IR29 = susceptible check, BRRI dhan 28 = standard check, V3 = PVS-B9, and V4 = PVS-B19.

Fig. 2. Salt stress (EC 6 dS m^{-1}) tolerance of PVS-B3 (BRRI dhan 47) and PVS-B19 at the reproductive phase. BRRI dhan 28 = standard check, PVS-B3 (BRRI dhan 47), PVS-B19, and IR29 = susceptible check.

Table 1. Grain yield potential of BRRI dhan 47 in salinity-prone coastal areas[a] in 2005 boro.

Genotype	Yield (t ha^{-1})						Mean
	L1	L2	L3	L4	L5	L6	
BRRI dhan 47 (PVS-B3)	5.4	7.0	7.4	5.6	5.3	5.7	6.1
BRRI dhan 28 (check)	3.2	5.9	5.8	5.0	4.7	5.4	5.0

[a]L1=Botiaghata; L2 = BRRI farm, Satkhira; L3 = Satkhira Sadar; L4 = Ashashuni; L5 = Kaliganj; L6= Tala.

Knowing the high-temperature sensitivity of PVS-B19, PVS-B3 was finally chosen for the variety trials conducted at six salt-affected locations—Botiaghata, Kaliganj, Tala, Ashasuni, Satkhira Sadar, and the BRRI farm in Satkhira. The initial soil salinity of these fields (before irrigation) ranged from 8 to 12 dS m^{-1}. The salinity of the irrigation water ranged from 0.2 to 2.0 dS m^{-1}. The field evaluation team of the National Seed Board (NSB) compared the performance of PVS-B3 with that of BRRI dhan 28 under these conditions. PVS-B3 had a 1.0 t ha^{-1} yield advantage (mean) over BRRI dhan 28 (Table 1). The other agronomic and grain characteristics of the two lines are shown in Table 2.

PVS-B3 is an IR line with pedigree IR63307-4B-4-3. The NSB has approved the release of PVS-B3 as BRRI dhan 47 for cultivation in salt-affected boro areas of Bangladesh.

Table 2. Agronomic and grain quality characteristics of BRRI dhan 47 in salinity-prone areas in 2005 boro.

Genotype	Plant height (cm)	Growth duration (d)	1,000-grain weight (g)	Whole-grain length (mm)	Decorticated grain				Amylose content (%)
					Length (mm)	Width (mm)	Length-width ratio	Size and shape	
BRRI dhan 47 (PVS-B3)	101	152	27.1	8.0	5.6	2.7	2.1	Bold	28.3
BRRI dhan 28 (check)	105	147	22.1	9.0	6.5	2.0	3.3	Slender	28.5