Department of Biochemistry and Molecular Biology
Plant Biotechnology Laboratory

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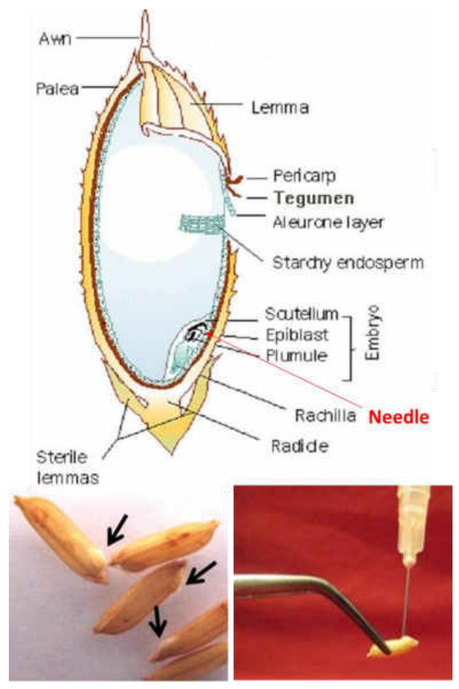
Development of salt-tolerant rice varieties (Target SDG 2, 12, 13) suitable for cultivation in the coastal areas of Bangladesh. Our laboratory contributed to –

- DNA marker-based breeding (collaboration : IRRI and BRRI)
- Identification of the salt tolerance loci
- Characterization of QTLs/genes from salt-tolerant rice landraces
- Pioneered *in planta* transformation in rice
- CRISPR/Cas-based gene editing in rice

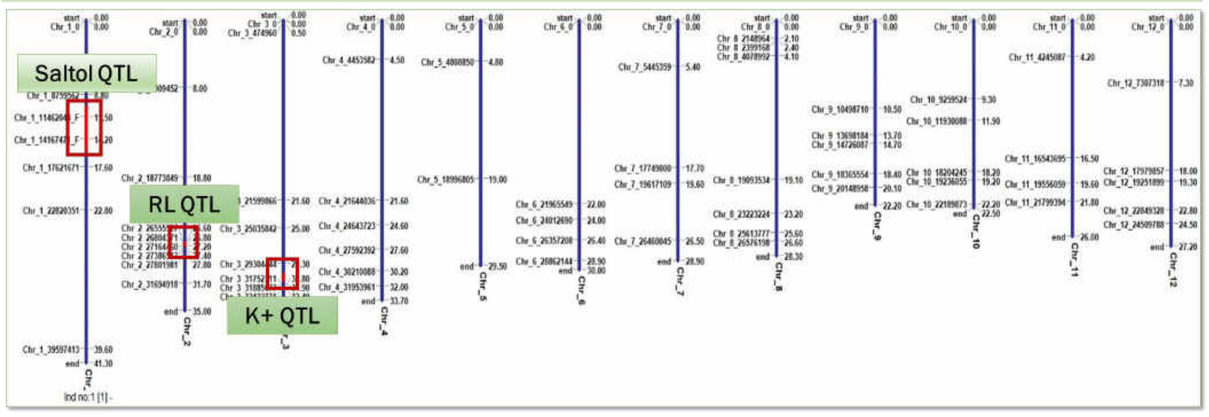
In planta transformation in rice



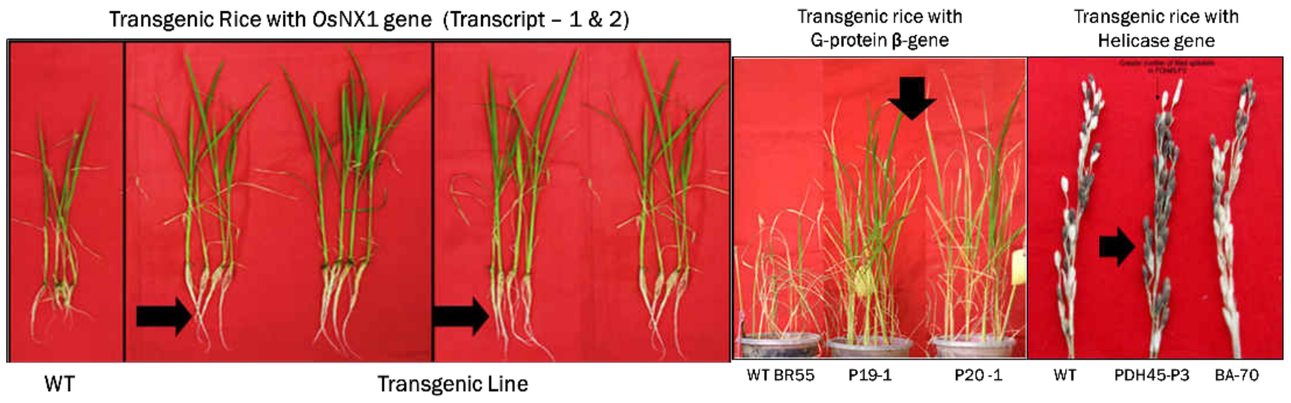
Transgenic Salt, drought, and heat-tolerant rice lines developed at Plant Biotechnology lab, BMB, DU.

Name	Genetic Background	Generation	No. of seeds	Properties	Publication
Rice vNa/H antiporter; 2.3 cDNA	BRRI Dhan 28	T_5	300	Salt tolerant ~10dS/m	Amin et al. 2016[1] Biswas et al. 2015[2]
Pea DNA Helicase (PDH) cDNA	BRRI Dhan 47	T_5	300	Salt tolerant ~10dS/m	Biswas et al. 2018[4]
At-HRD cDNA	BRRI Dhan 27	T_5	300	Drought and Salt	Sumaiya Jannat, 2016. MS thesis, BMBDU[5]
Rice SNAC1 cDNA	BRRI Dhan 55	T_5	300	Drought and salt tolerant	Parvin et al. 2015[6]
Rice G-protein βsubunit cDNA	BRRI Dhan 55	T_5	300	Drought and heat tolerant	Biswas et al. 2019[8]
amiRNA to DST transcription factor	BRRI Dhan 28	T_5	300	Salt tolerant	Faisal et al. 2017[9]

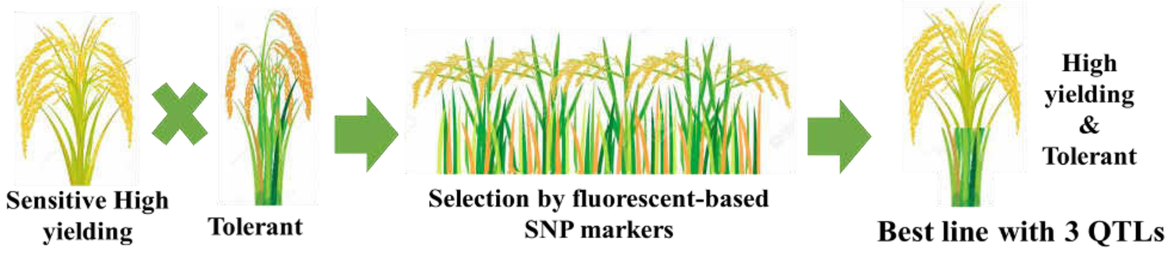
Ideal genotype having 3 Salt tolerant-QTLs in the genomic background of BD63, BD67 and BD74



Transgenic plants created via *in planta* transformation in rice



Crossing to introduce 3 QTLs in BRRI dhan: Principle



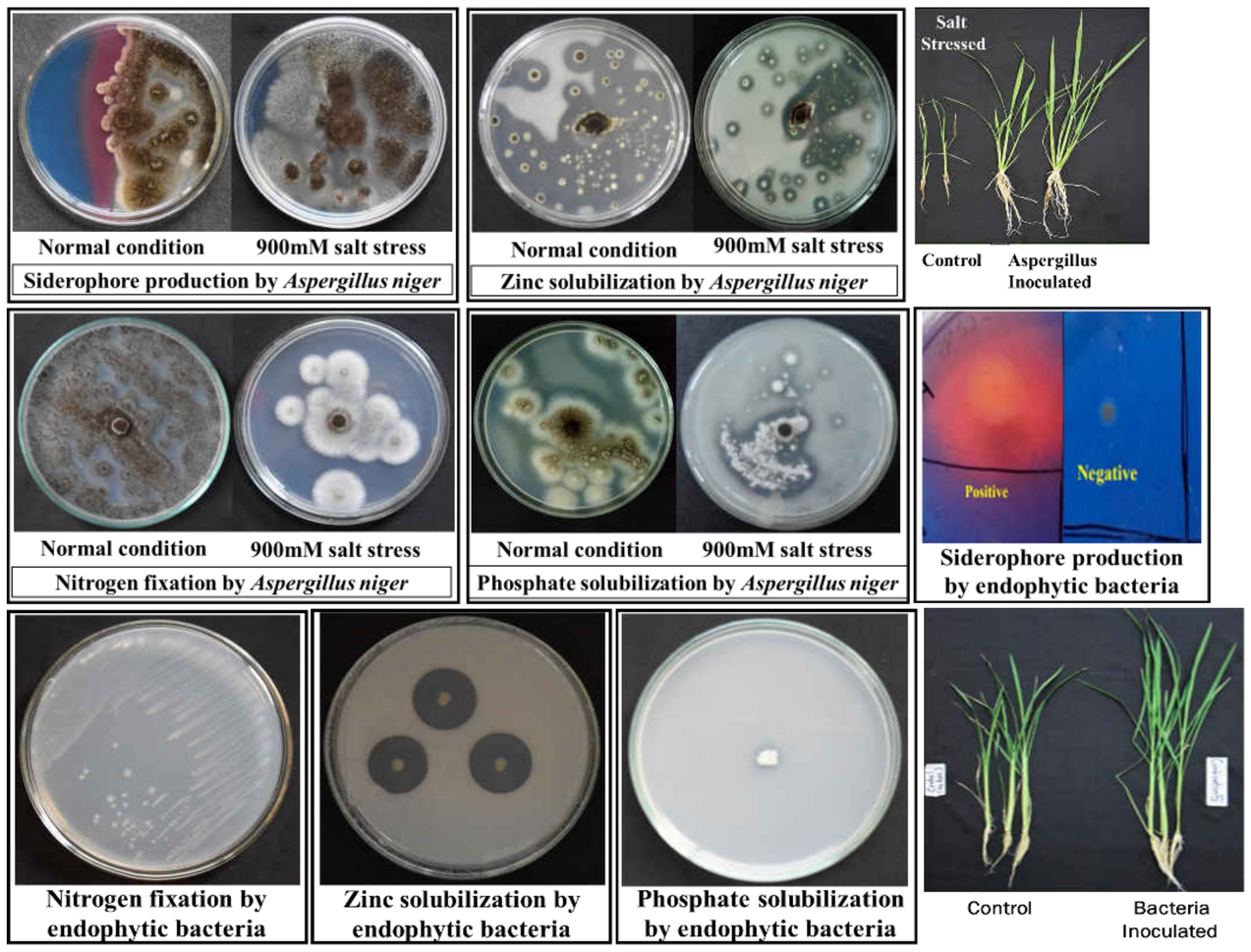
Fluorescent DNA marker-assisted backcrossing with commercial BRRI Dhan

BC2F2 Line 15-P-99 & Background BD63

BC2F2 Line 191-P-1701 & Background BD67

BC2F2 Line 428-P-3280 & Background BD74

Identification & application of endophytes



Publications of lab

Collaborations and Lab Members