

Research Program 2024-2025

Name of Division: Hybrid Rice Division, BRRI

SL.	Experiments	Major Objective	Expected output
Program Area: Varietal Development			
Project: Development of parental materials for high yield, high amylose content and fine grain containing hybrid rice variety			
Program Duration: 2024-2025			
Leader- Dr. Md. Jamil Hasan			
1.1	Source Nursery	Identification of prospective maintainers and restorers from diverse genetic origin	
1.2	Test cross Nursery	1. Confirmation of maintainers and restorers from the crossed entries, 2. Selection of heterotic rice hybrids, 3. Conversion of prospective materials into new CMS lines.	New B & R lines identification
1.3	Backcross Nursery	Developing CMS lines from identified maintainer by back crossing.	New CMS line development
1.4	CMS Maintenance and Evaluation Nursery	Maintain and evaluate of CMS lines	Genetic purity maintain
1.5	Development of disease resistant parental lines (Blast)	To develop new CMS lines resistance to disease(Blast) and selection of heterotic rice hybrids resistance to disease(Blast)	Blast resistant hybrid rice variety development
1.6	Improvement of parental lines by (B x B) and (R x R) crosses.	To broaden the genetic base of parental lines	New recombinant B & R lines development
1.7	Submergence tolerant parental line development	To develop new CMS lines resistance to submergence and selection of heterotic rice hybrids resistance to submergence	Submergence tolerant hybrid rice variety development
1.8	Field Rapid Generation Advance (FRGA) for B and R lines improvement.	New recombinant B & R lines will be developed	New recombinant B & R lines development
1.9	Development of hybrid rice through CRISPR/Cas9 technology	Conversion of best inbred into promising maintainer line	Two line hybrid rice variety development
Project-2: Evaluation of parental materials & hybrids		Program leader- Program leader- Dr. Mst. Umma Kulsum	
Duration: 2024-2025			
2.1	Observational Trial (OT) of experimental hybrids	Selection of promising hybrids	Selection of promising hybrids
2.2	Preliminary Yield trials of promising hybrids	To study the wider adaptability and yield potentiality of promising hybrids	Adaptable promising hybrids selection
2.3	Combining ability of A, B & R lines	To select the best combiner (S) in respect of grain yield & yield components	Best combiner hybrids selection
2.4	National Hybrid Rice Yield Trial (NHRYT)	Evaluation of imported hybrids for subsequent selection	
2.5	Quality ensure of previous season produced F ₁ and CMS lines through grow out test	To determine purity of parental lines and hybrids of BRRI released hybrid rice	Ensure quality of produced CMS & F ₁ seeds
2.6	Demonstration trials of BRRI released hybrids along with promising hybrids and checks	To evaluate the performances of released hybrids with promising ones	Best hybrid of promise identification

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2.7	Multi-location Yield trials of Promising hybrids	To study the yield potentiality of promising hybrids at farmers field	Wide adaptable hybrids selection
2.8	Identification of promising combiners developed using iso-cytoplasmic restorers (ICR)	Identification of promising combiners developed using iso-cytoplasmic restorers (ICR)	Iso-cytoplasmic restorer lines will be identified
2.9	Breeding for outcrossing potentials in CMS lines	To select best CMS lines for enhancing seed production of hybrid rice	New CMS lines with high out crossed will be developed
Project-3: Seed Production of Parental lines and Hybrids Duration: 2024-2025		Program Leader: Dr. Md. Hafizar Rahman	
3.1	Multiplication of promising CMS lines	To produce pure and good quality seed of CMS lines for subsequent use.	Seed increased for subsequent use
3.2	CMS multiplication of BRR1 hybrid dhan1 & BRR1 hybrid dhan4	Production of pure and good quality seed of CMS lines.	CMS seed multiplication of BHD1 & BHD4
3.3	CMS line multiplication of BRR1 hybrid dhan2	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD2
3.4	CMS line multiplication of BRR1 hybrid dhan3	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD3
3.5	F ₁ seed production of BRR1 hybrid dhan3	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD3 available
3.6	F ₁ seed production of BRR1 hybrid dhan4	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD4 available
3.7	F ₁ seed production of BRR1 hybrid dhan5	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD5 available
3.8	CMS line multiplication of BRR1 hybrid dhan5	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD5
3.9	F ₁ seed production of BRR1 hybrid dhan6	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD6 available
3.10	CMS line multiplication of BRR1 hybrid dhan6	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD6
4.11	F ₁ seed production of promising hybrids	Production of sufficient quantity quality hybrid seed of promising hybrids for subsequent use	F ₁ seed production of promising hybrids available
4.12	CMS line multiplication of BRR1 hybrid dhan8	Production of sufficient quantity quality seeds of CMS lines for subsequent use	CMS seed multiplication of BHD8
4.12	F ₁ seed production of BRR1 hybrid dhan7	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD7 available
4.13	F ₁ seed production of BRR1 hybrid dhan8	Production of sufficient quantity quality hybrid seed for subsequent use	F ₁ seed production of BHD8 available

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4.14	Growth duration differentiation method (GDDM) for synchronization in flowering	To determine proper heading time of parental lines (A &R) of promising hybrids	Actual growth duration of A & R lines will be determined
4.15	Nucleus seed production of BRRI hybrid dhan1 & BRRI hybrid dhan4	To produce parental lines nucleus seeds of BHD1 & BHD4	Nucleus seeds of A & R lines of BHD1 & BHD4 produced
4.16	Nucleus seed production of BRRI hybrid dhan2	To produce parental lines nucleus seeds of BHD2	Nucleus seeds of A & R lines of BHD2 produced
4.17	Nucleus seed production of BRRI hybrid dhan3	To produce parental lines nucleus seeds of BHD3	Nucleus seeds of A & R lines of BHD3 produced
4.18	Nucleus seed production of BRRI hybrid dhan5	To produce parental lines nucleus seeds of BHD5	Nucleus seeds of A & R lines of BHD5 produced
4.19	Nucleus seed production of BRRI hybrid dhan6	To produce parental lines nucleus seeds of BHD6	Nucleus seeds of A & R lines of BHD6 produced
4.20	Nucleus seed production of BRRI hybrid dhan8	To produce parental lines nucleus seeds of BHD8	Nucleus seeds of A & R lines of BHD8 produced
4.21	Maintainer and restorer lines multiplication of BRRI released hybrids	Production of sufficient quantity quality parental lines for subsequent use	Maintainer & restorer lines of released hybrids available

BHD1= BRRI hybrid dhan1, BHD2= BRRI hybrid dhan2, BHD3= BRRI hybrid dhan3, BHD4= BRRI hybrid dhan4, BHD5= BRRI hybrid dhan5, BHD6= BRRI hybrid dhan6, BHD7=BRRI hybrid dhan7 and BRRI hybrid dhan8