

The Role of Government and Academe in the Hybrid Rice Industry

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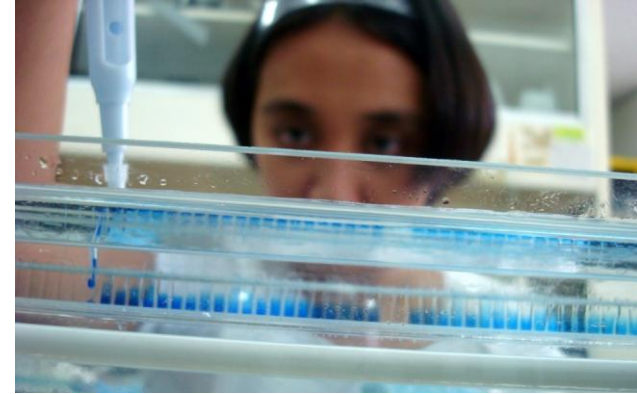
7th Annual Hybrid Rice Development Consortium (HRDC) Meeting

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D.L. Umali Hall, IRRI, Los Baños, Laguna, Philippines

Areas of participation

- Variety development
 - Commercial seed
 - Licensing
- Research
 - Basic and applied research, publish results
 - Partner with industry
 - Variety testing
- Training
 - Short courses
 - University degrees



Commercial hybrid seed

- Public hybrid seed: P 3500/18 kg
- Private hybrid seed: \geq P4500/18 kg

Hybrid rice variety releases

Year	Public	Private	Companies
1991-1995	2		
1996-2000		1	Monsanto
2001-2005	2	3	Bayer, Monsanto, SL Agritech
2006-2010	8	14	Bayer, Bioseed, Hyrice, Pioneer, Seedworks, Syngenta
2011-2013	8	15	Advanta, Bayer, Beidahuang, Devgen, Metahelix, Pioneer, Seedworks



Mestiso 19

Two-line hybrid by PhilRice-UPLB
Released: 2009
Ave yield: 6.7 Mt/ha
Max yield: 10.7 Mt/ha
Maturity: 110 DAS
Height: 108 cm
Blast: I
BLB: S
Tungro induced: S
Tungro modified: I
GLH: MR



Mestiso 20

Two-line hybrid by PhilRice-UPLB
Released: 2009
Ave yield: 6.4 Mt/ha
Max yield: 11.7 Mt/ha
Maturity: 111 DAS
Height: 112 cm
Blast: I
BLB: S
Tungro induced: S
Tungro modified: S
GLH: MR





Research

- Basic and applied research
- Data and results available in publications

Hybrid rice breeding and genetics at PhilRice

- Parent line development
- F1 development
- Genetic diversity
- Disease resistance and abiotic stress tolerance
- Heterosis and yield prediction
- Varietal performance
- Seed production



Evaluation of parent lines

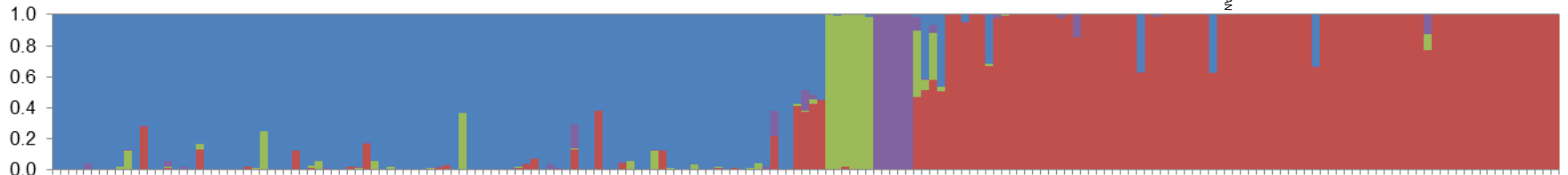
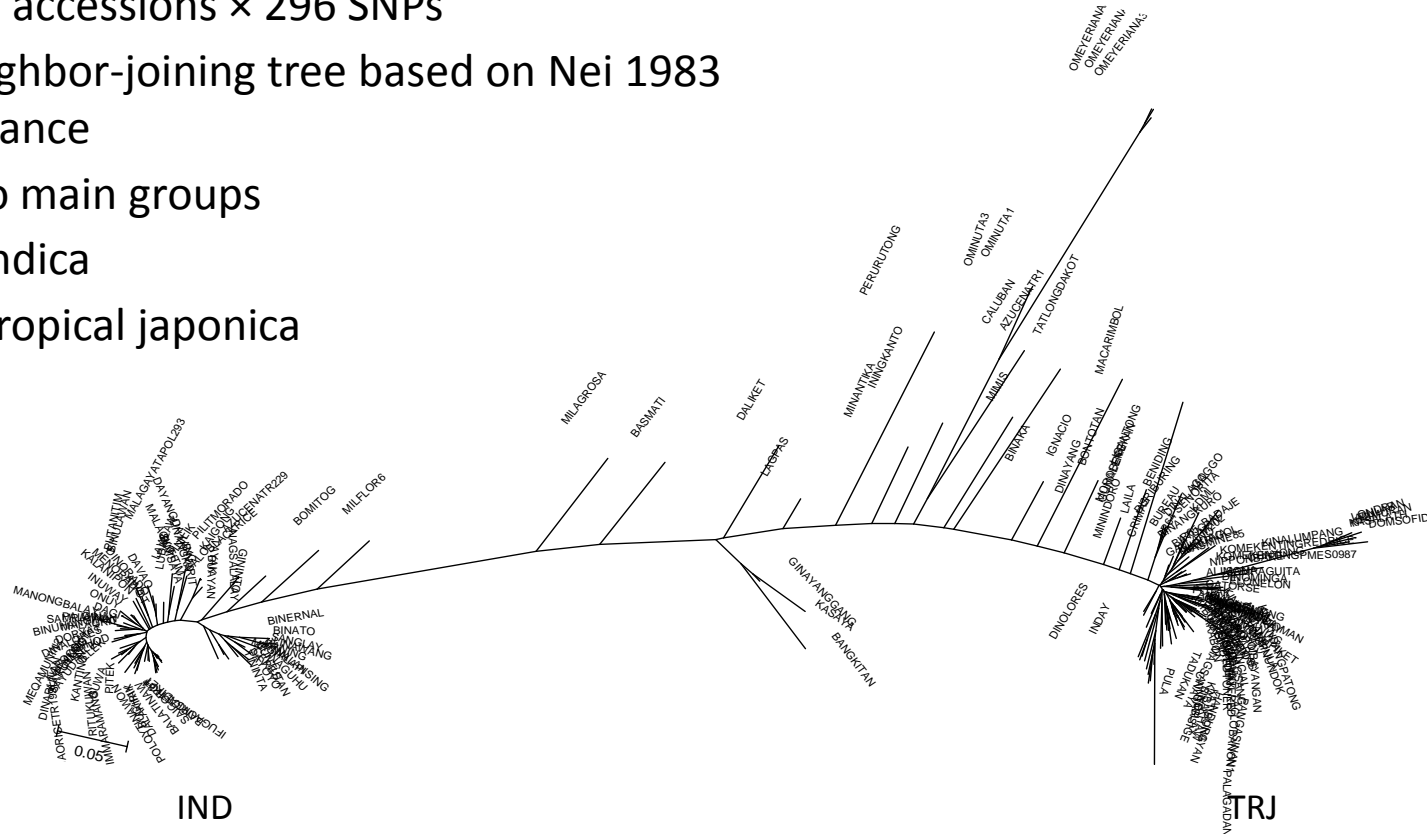
- Per se performance
- Testcross performance
- Pest and disease resistance

Tungro resistance screening of DH restorer lines (PhilRice Negros, 2013 WS)

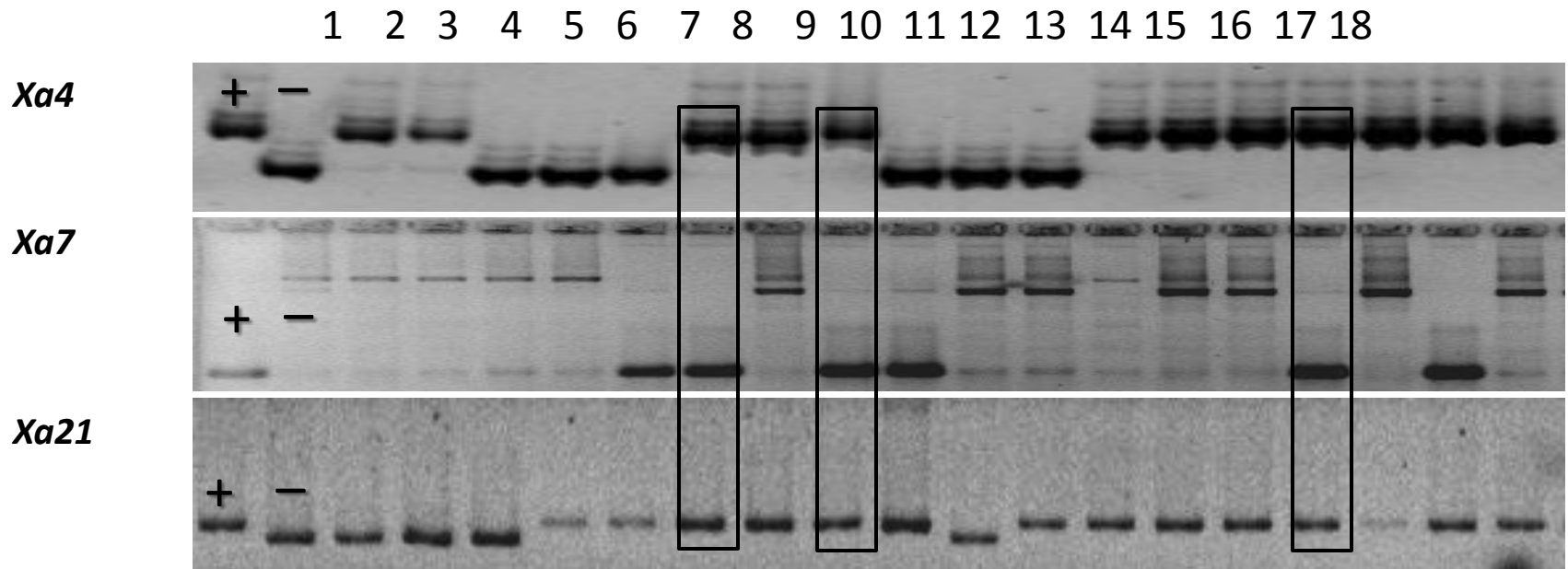


Philippine rice diversity

- 189 accessions × 296 SNPs
- Neighbor-joining tree based on Nei 1983 distance
- Two main groups
 - Indica
 - Tropical japonica



Pyramiding of bacterial blight resistance genes



Improved Mestiso 3 with bacterial blight resistance



Government-Industry research partnerships

- Research collaborations
- Variety testing
 - Research staff and facilities
 - Testing sites



Variety testing

Adaptability tests of promising lines



Testing of released varieties



Testing sites

Inbred TPR ●

- Ilocos N
- Cagayan
- Isabela
- N Vizcaya
- Pangasinan
- Pampanga
- Nueva Ecija
- Tarlac
- Laguna
- Cam Sur
- Or Mindoro
- Masbate
- Aklan
- N Samar
- Palawan
- Bohol
- Bukidnon
- Agusan N
- Zambo Sib
- Davao S
- Sultan Kudarat

Hybrid TPR ●

- Ilocos N
- Cagayan
- Kalinga
- Isabela
- Pangasinan
- Nueva Ecija
- Laguna
- Mindoro
- Iloilo
- Negros Occ
- Bohol
- Leyte
- Agusan N
- Bukidnon
- Zambo Sib
- S Cotabato
- Gen Santos
- Davao Or
- Davao S



Training



Farmers

- Farmers' field schools
- Season-long training

University degrees

- Seed money for scholarships for specialized training in research centers
- Seed money for scholarships for advanced degrees in universities