

The first newsletter released by HRDC to provide news and update and to strengthen the communication within its members.

## HRDC membership continues to grow

When the Hybrid Rice Development Consortium (HRDC) was inaugurated in April 2008, it had 39 members. Since then, the number of members has increased. As of July 2013, HRDC has 67 members—5 from private sector A, 26 from private sector B, and 36 from the public sector.

IRRI-HRDC provides a platform for collaboration between the public and private sector to enhance innovation and widen access to new germplasm and information on all aspects of hybrid rice technology.

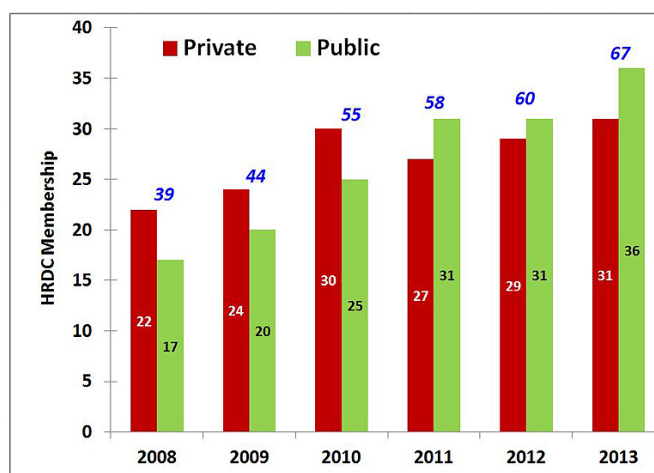
The increasing number of HRDC members over the years also means a continued increase in the number of germplasm shared among HRDC members and partners.

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**HRDC Members**  
as of July 2013



## HRDC members gather for sixth annual meeting

Eighty two members of the Hybrid Rice Development Consortium (HRDC) gathered to present and discuss updates on hybrid rice breeding at the consortium's sixth annual meeting on 2 April 2013 at IRRI Headquarters. Both public and private sectors were represented, with 59 and 23 attendees, respectively.

The highlight of the meeting was a keynote speech from Professor Yuan Longping, "father of hybrid rice," on progress in the breeding of super hybrid rice in China.

Around the meeting date, on 1–5 April, HRDC breeders selected plants from early-generation breeding lines ( $F_2$  and  $F_3$ ) under IRRI's hybrid rice breeding program. The selection will speed up product development in breeding programs of both public and private sector and will make IRRI's germplasm available sooner and on a wider spread.

This year, 3,536 lines were selected. Seeds were dispatched to 24 members from May to July; the rest of the selection is being processed for import.



Topics taken up for discussion were: IRRI's new breeding structure (Eero Nissila, IRRI); rice supply, demand, and trade market outlook (Sam Mohanty, IRRI); progress of hybrid rice R&D at the International Center for Tropical Agriculture (CIAT) (Edgar Torres, CIAT); PRISM: crop monitoring system (Tri Deri Setiyono, IRRI); mechanized hybrid rice production in the U.S. (Jose Plaza, RiceTec); disease screening and marker lab service for HRDC members (Michael Thomson and Casiana Vera Cruz,

IRRI); HRDC report, MRYT, and general discussion (Fangming Xie, IRRI); and MTA for hybrid rice materials at IRRI (Elsie Quaite-Randall, IRRI).

The participants also went on a tour of the Grain Quality and Nutrition Center, Genotyping Services Laboratory, Blast Nursery (led by K.K. Jena), and HRDC's multilocation replicated yield trial (led by Wenceslao Larazo).



## Revised HRDC guidelines

**Effective 2 April 2013**, the Materials Transfer Agreement (MTA) for IRRI-developed germplasm has been revised to align with IRRI's intellectual property policy. This development was announced during the sixth annual meeting.

The only part revised in the *2011 HRDC Guidelines* was that on general conditions to access hybrid rice germplasm materials (page 10 of the *Guidelines*, Table 1).

These files may be downloaded from links at the homepage of the HRDC website (<http://hrdc.irri.org/>).

**Table 1. General conditions for access to hybrid rice germplasm materials**

Germplasm Category	Access Option	CURRENT HRDC GUIDELINE (2011)	REVISED HRDC GUIDELINE <i>effective April 2, 2013</i>
		General Condition of Access	General Condition of Access
1) Early Generation and 2) A/B pairs	(A) Breeding & Research	SMTA with limited access and fee for access	OMTA (+ fee if applicable)
3) Elite hybrid rice parents and pilot hybrids	(B) Final development	SMTA with fee for access and development license including options for limited exclusivity and commercialization license	CMTA + fee (could include options for a commercial license)
	(C) Breeding & Research	SMTA with non-exclusive or limited exclusive license	OMTA
4) Commercialized parents/hybrids	(D) Commercialization	Commercialization license with option for limited exclusivity	Commercialization license with option for limited exclusivity
	(E) Breeding & Research	SMTA	OMTA or other non-restrictive breeding and research arrangement

You may download the files at the homepage of the HRDC website <http://hrdc.irri.org/>

✓ Revised HRDC Guidelines effective April 2, 2013

✓ Modified Material Transfer Agreement

## The 3 Material Transfer Agreements (MTA)

MTA	MATERIAL	PURPOSE	REMARKS
1. SMTA	Treaty Material		
2. Open MTA (OMTA)	Treaty Materials under Development by IRRI "Breeding materials"	Only Breeding & Research (No Direct Commercialization)	Have additional restrictions as permitted by the Treaty and as required by the IA principles to better monitor the impact of IRRI's intellectual assets and facilitate commercialization of the material if appropriate
3. Custom MTA (CMTA)	Treaty Materials that are developed fully i.e. no further breeding required; however need final development to be ready for commercial sales	- Purpose <b>as requested</b> by the Recipient related to Final Development (e.g. PVP registration etc.) - NO DIRECT COMMERCIALIZATION of the breeding material <b>without permission</b> from IRRI.	

\* OMTA and CMTA include the terms and conditions of the SMTA

## The hybrid rice R&D group at IRRI

The hybrid rice R&D group at IRRI belongs under the Plant Breeding, Genetics, and Biotechnology division and is led by Fangming Xie, senior scientist for plant breeding. Fangming oversees four subgroups: testing/yield trial, seed production, line breeding, and molecular application. The group of 15 is composed of scientists, research technicians, the HRDC assistant coordinator, and a secretary. Teamwork, focus on a common goal, dedication, and hard work are key characteristics of members of the group.

In the 2013 dry season (December 2012 to May 2013) at IRRI, hybrid rice materials were planted on about 15 hectares. In the 2013 wet season (June to November 2013), the area was at about 12 hectares.

The table shows the status of hybrid rice breeding and yield trials in 2012 as presented by Fangming during the sixth annual meeting.

Other ongoing activities of the hybrid rice group at IRRI:  
**Heterotic group study.** Classification of IRRI hybrid rice germplasm into groups using markers evaluated for heterosis.

**Outcrossing.** Conventional screening and screening using wild rice.

**Bacterial leaf blight (BLB) resistance.** Transfer of *Xa* genes into hybrid rice parents using field screen and MAB.

**Drought and submergence tolerance.** Transfer of drought- and submergence-tolerant QTLs to hybrid rice parents using conventional methods and MAS.

**SNP markers.** Conversion and confirmation of SNP markers for *Rf*, *SUB1*, BLB, and blast genes.

Status of Hybrid Rice Breeding and Yield Trial in 2012

Activity	Materials	2010	2011	2012
Breeding	New Crosses for breeding (IRRI named crosses)	182	252	928
	F2 Population	72	127	410
	AxB Pairs	1,203	950	834
	Breeding Lines > F2	8,743	8,324	15,138
	<b>Total Breeding Lines</b>	<b>13,086</b>	<b>11,902</b>	<b>17,310</b>
Hybrid Yield Trial at IRRI	Observation Trial			4,348
	Replicated Trial			278
	Advanced Trial			48
	<b>Total hybrids for yield trials</b>			<b>4,674</b>

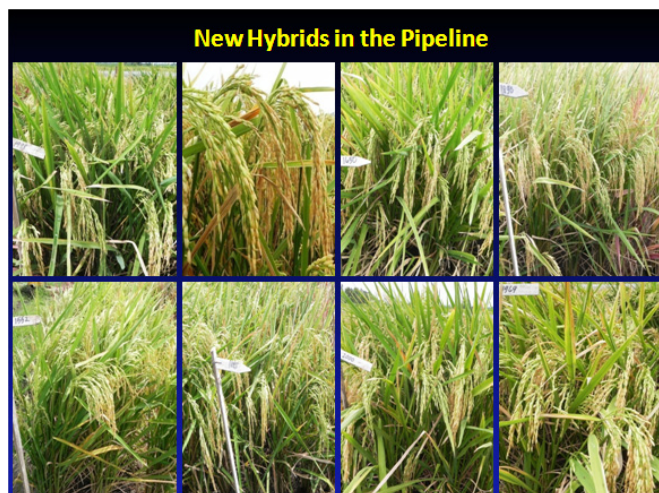
Hybrid Rice R&D Priorities at IRRI

Traits	Trait Details
Yield Heterosis	✓ High yielding > 20% heterosis in the tropical
	✓ <a href="#">Heterotic pools – concept and parental grouping</a>
	✓ Stable yielding over environments
Seed Production	✓ High-yielding
	✓ Stable sterility & high-outcrossing females
	✓ Elite male parents
	✓ <a href="#">Stable yielding</a>
Resistance & Tolerance	✓ Diseases – BLB, Blast, Sheath Blight, <a href="#">False smut</a>
	✓ Insects - Stem Borer, BPH & WBPH
	✓ Drought, <a href="#">Salinity &amp; Submergence</a>
Quality	✓ Less chalk, non sticky
	✓ Long grain or Medium grain with specific amylose
Maturity	✓ 115 – 120 days, 120-125 days
Others	✓ Wide adaption – parents & hybrids
	✓ <a href="#">Plant architecture for high-yielding</a>

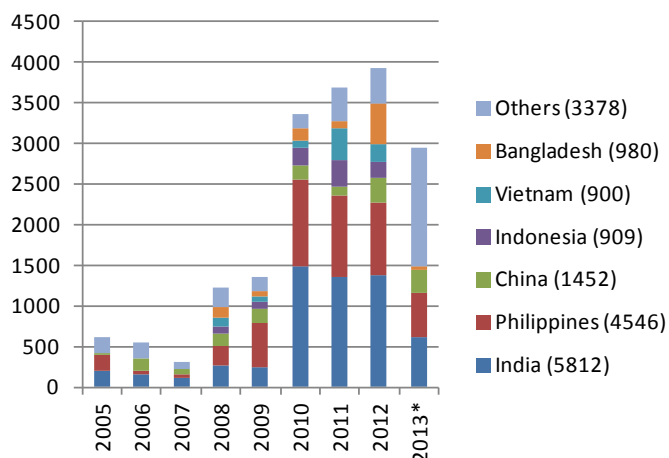


## Hybrid rice breeding at IRRI in numbers

- 15 hectares per season
- 15,000 breeding lines and populations per year
- 2,700 new hybrids tested per year



Germplasm shared with HRDC members & other partners



## First hybrid rice congress held in the Philippines

Forty-five HRDC members and IRRI staff attended the *1st National Hybrid Rice Congress (NHRC)* on 3–5 April 2013 at the Philippine Rice Research Institute in Muñoz, Nueva Ecija, Philippines. The congress, led by the Department of Agriculture (DA), aimed to create the Philippine Hybrid Rice Industry Development Board that will be responsible for policy recommendations and identifying areas for maximized hybrid cultivation.

The NHRC was conceptualized to support the Philippine Food Staples Sufficiency Program, the DA's centerpiece program that focuses on three major interventions: production support, enhancing incentives and enabling mechanisms, and managing food consumption. For

production, the country aims to plant hybrid rice in one million hectares of favorable land until 2016 to help the country become rice self-sufficient and increase the income of farmers.

On 18 October 2012, Philippine President Benigno Aquino proclaimed the year 2013 as *National Year of Rice* (NYR) to encourage every Filipino—including producers, policymakers, and consumers—to be part of the rice self-sufficiency goal.

*NYR 2013* is an advocacy campaign that aims to promote less rice wastage, responsible rice consumption for better health, and productive farming through efficient rice technologies.



## Hybrid rice seed production training held in China

Eight participants attended the *2013 Hybrid Rice Seed Production Training* held at Nanchang, China, on 1–15 July 2013. The participants came from India (2), Nepal, the USA, Brazil (2), and the Philippines (2).

The training event was jointly organized by the Jiangxi Academy of Agricultural Sciences (JAAS) and IRRI-HRDC. HRDC had conducted the same training course for its members since 2010. As of 2013, 40 participants had undergone it.

Training format included interactive lectures, group learning exercises, discussions, hands-on practice, and classroom training, all of which were done inside the JAAS campus with field experts. Topics covered were concept, development, and organizational structures of hybrid rice breeding and seed production; basics of rice biology; technologies of hybrid rice parent and hybrid seed production; and techniques of field management, quality control, and disease/insect management related to hybrid rice seed production.

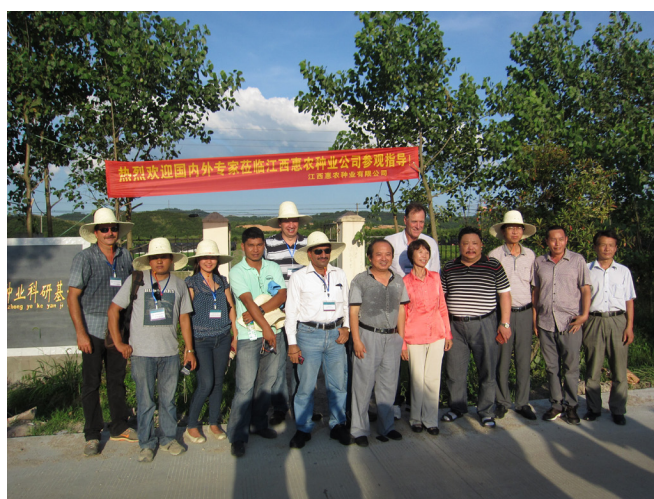
Participants also toured hybrid rice seed production sites in Yihuang County and the seed process-and-package plant of Jiangxi Jinshan Seed Company.



Participants with Dr. Xianhua Shen (Course Coordinator)  
From left to right: Sushil Subedi (NARC, Nepal), Antonio de Rosso (IRGA, Brazil), Blaise Boyle (BASF Hawaii), Arul Chezian (BASF India), Leonilo Gramaje (PhilRice, Philippines), Surendra Kumar (VNR Seeds, India), Amauri Schmitt (BASF, Brazil) and Charisse Arlegui (IRRI, Philippines).



Jiangxi Jinshan Seed Company.



Tour of the Seed Production Field at Yihuang County.



## HRDC's multilocation replicated yield trial

In the 2008 wet season, HRDC started a multilocation replicated yield trial (MRYT) of 42 hybrid rice entries in nine locations in Bangladesh, India, Vietnam, Indonesia, China, and the Philippines. The MRYT was organized for consortium members to assess the performance of their

products and to enable seed companies, particularly those without multinational testing capabilities, to generate reliable performance data across a set of test locations.

The 2014 MRYT season will start in December 2013 (dry season), with 43 entries that will be tested in 13 or 14 locations.

	SITE PROVIDER	LOCATION	COUNTRY	2008	2009		2010		2011		2012		2013		2014	
				WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS	DS	WS
1	BRAC	Dinajpur	Bangladesh	✓			✓									
2	BRAC	Gazipur	Bangladesh	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
3	BRAC	Pabna	Bangladesh								✓		✓	✓	✓	✓
4	Vibha	Bogra	Bangladesh			✓										
5	DCM - Bioseed	Lucknow	India	✓												
6	Pioneer	Lucknow	India			✓										
7	Nuziveedu Seeds	Lucknow	India										✓			
8	JK Agri Genetics	Raipur	India	✓		✓			✓	✓	✓		✓	✓	✓	✓
9	TNAU	Coimbatore	India			✓										
10	Indo-American	Hyderabad	India				✓				✓	✓				
11	Bayer	Hyderabad	India										✓	✓	✓	✓
12	Syngenta	Karnal (Haryana)	India										✓	✓	✓	✓
13	Pan Seeds	Burdwan, West Bengal	India												✓	✓
14	Advanta	Faizabad - Uttar Pradesh	India													✓
15	DCM - Bioseed	Ha Nam	Vietnam	✓												
16	DCM - Bioseed	Tay Ninh	Vietnam		✓											
17	DCM - Bioseed	Long An	Vietnam			✓	✓		✓	✓		✓	✓	✓	✓	✓
18	FCRI	Hanoi	Vietnam						✓	✓		✓	✓	✓	✓	✓
19	Pioneer	Malang	Indonesia	✓		✓		✓	✓				✓			
20	PT BISI	Kediri	Indonesia			✓			✓				✓	✓	✓	✓
21	ICRR	Sukamandi	Indonesia						✓				✓	✓	✓	✓
22	PTT Rice Center	Pathum Thani	Thailand			✓										
23	Sime Darby	Arau, Perlis	Malaysia			✓										
24	LPHT	Linshui	China	✓		✓										
25	Anhui AAS	Hefei	China			✓										
26	Hunan AAS	Changsha	China			✓										
27	DCM - Bioseed	General Santos	Philippines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
28	PhilRice	Nueva Ecija	Philippines						✓	✓	✓		✓	✓	✓	✓
29	IRRI	Los Baños	Philippines	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
				9	4	15	5	5	8	8	7	4	11	14	13	14

### Upcoming event

*7th International Rice Genetics Symposium*

**Date:** 5–8 November 2013

**Venue:** Dusit Thani Hotel, Manila, Philippines

Visit <http://rice-genetics.com/> for more information.