

Philippines Rice Breeding and Production

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Philippines



○ **GOAL**

Increase productivity in the different rice growing ecosystems

○ **OBJECTIVE**

To identify high yielding rice lines with tolerance to biotic and abiotic stresses and good grain quality that can adapt to the different rice growing ecosystems

Plant Breeding Priorities

- **Increasing yield potential**
- **Multiple resistance to diseases and insects**
- **Increasing tolerance for abiotic Stresses**
- **Superior quality**
- **Appropriate growth duration**
- **Efficient nutrient uptake and utilization**
- **Adaptation to climate change**

Breeding Centers

- IRRI
- UPLB
- PhilRice
- Other private companies

Role of Breeding Centers

Generate promising lines and submit to national programs for test in specific regions/sites

→ a line performing better than commercially cultivated varieties = recommended for release as new variety

The agency sponsoring the line for release provides the breeder seed for foundation seed production.

Breeding Programs

- **DEVELOPMENT OF IRRIGATED LOWLAND RICE**
 - **Transplanted Inbred Rice**
 - **Direct seeded Inbred Rice**
- **DEVELOPMENT OF HYBRID RICE**
- **DEVELOPMENT OF SPECIAL PURPOSE RICE**
- **Variety development for rainfed, upland and abiotic stress-prone environments**

Strategies and breeding methods

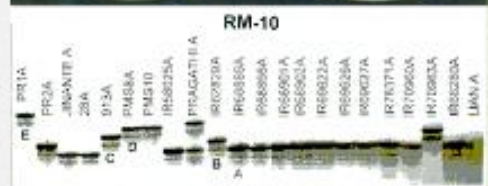
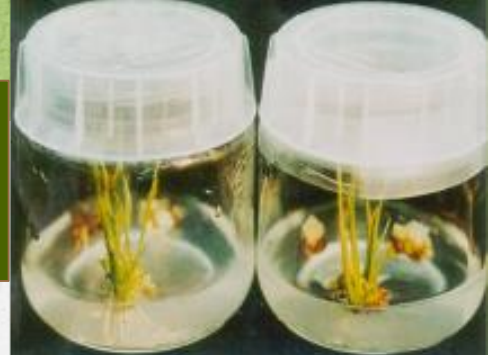
Conventional hybridization and selection procedures

- Basic, time-tested
- To generate and utilize existing genetic variation
- Generates a wide array of combinations of the genes coming from the parent plants
- Cross-pollination followed by several cycles of selection and self-pollination → stable promising lines' → candidate varieties

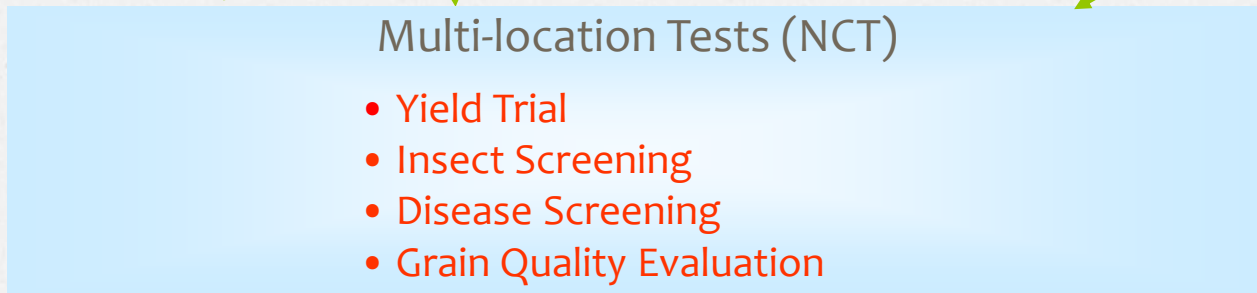
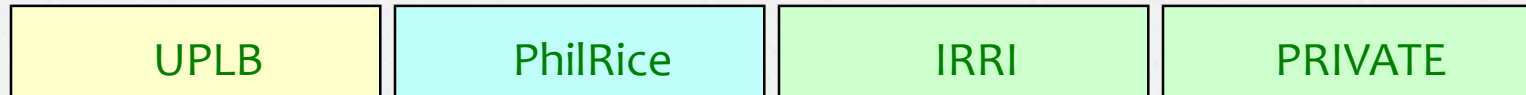


Cutting-edge Technology Development in support to breeding

- Biotechnology
 - increasing breeding efficiency
 - improving resistance/tolerance to biotic & abiotic stresses
- Molecular marker technology
 - using marker-aided selection
 - germplasm characterizations
- Induced mutations
 - *In vitro* techniques- developing lines for adverse environments
 - Physical & Chemical mutagenesis
- Genetic engineering
 - cloning/introduction of important genes
- Wide hybridization
 - transferring resistance genes



Process of Varietal Release at the NCT



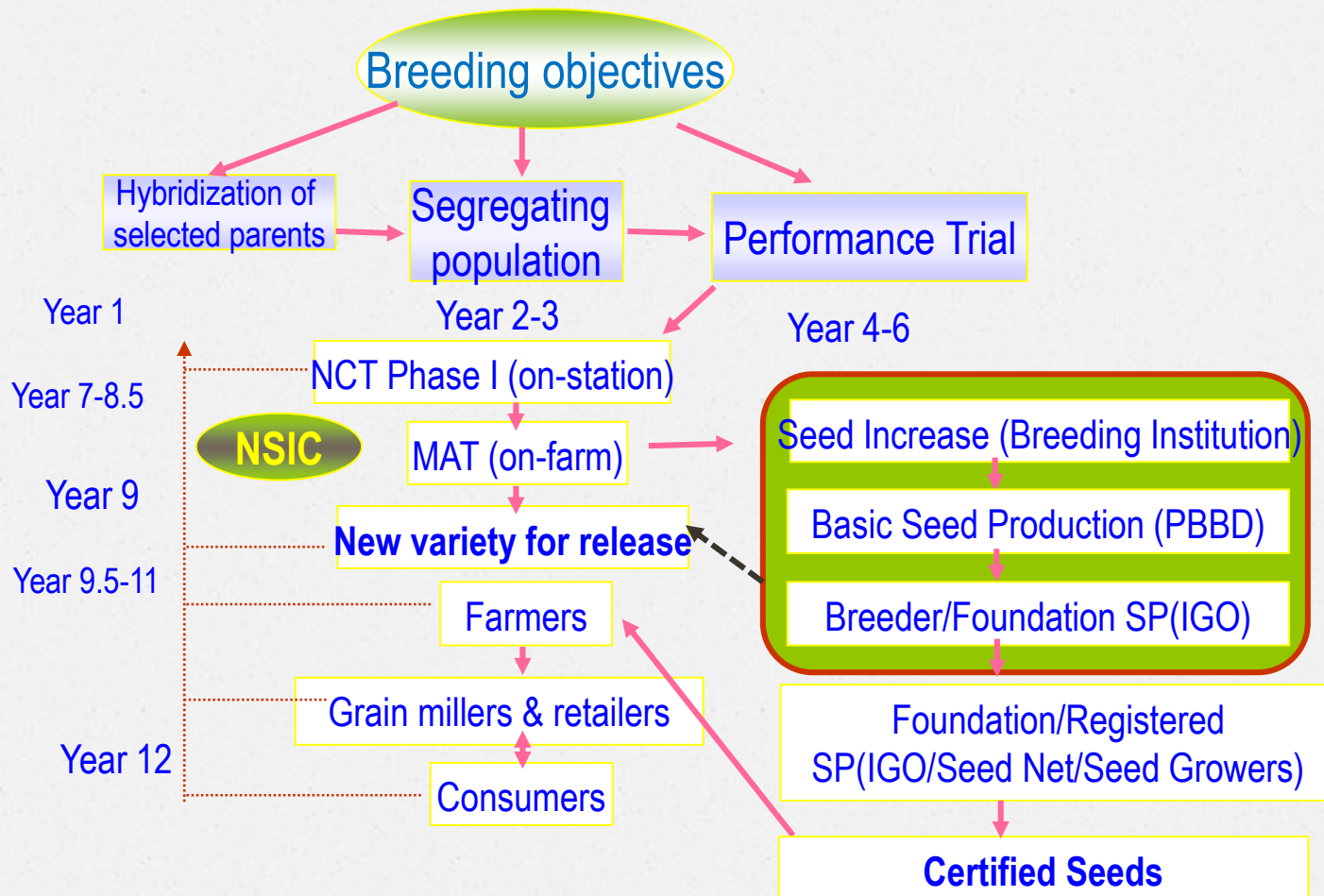
Evaluates results of NCT, drop and accept new entries

Recommends promising entries

Approve release of new varieties



Varietal Development and Release

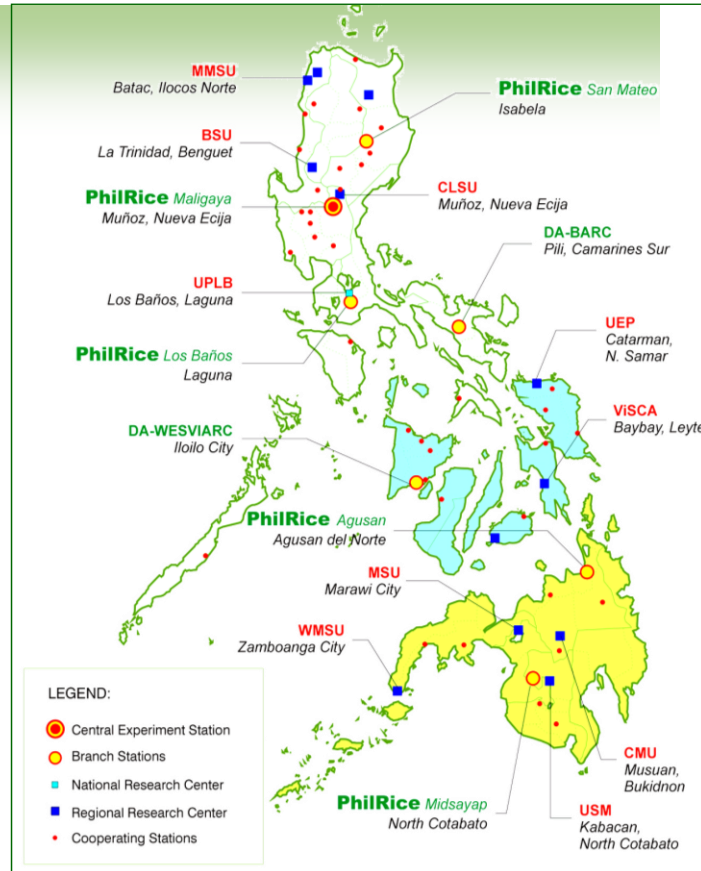


Testing Sites.....

The Philippine Rice R&D Network

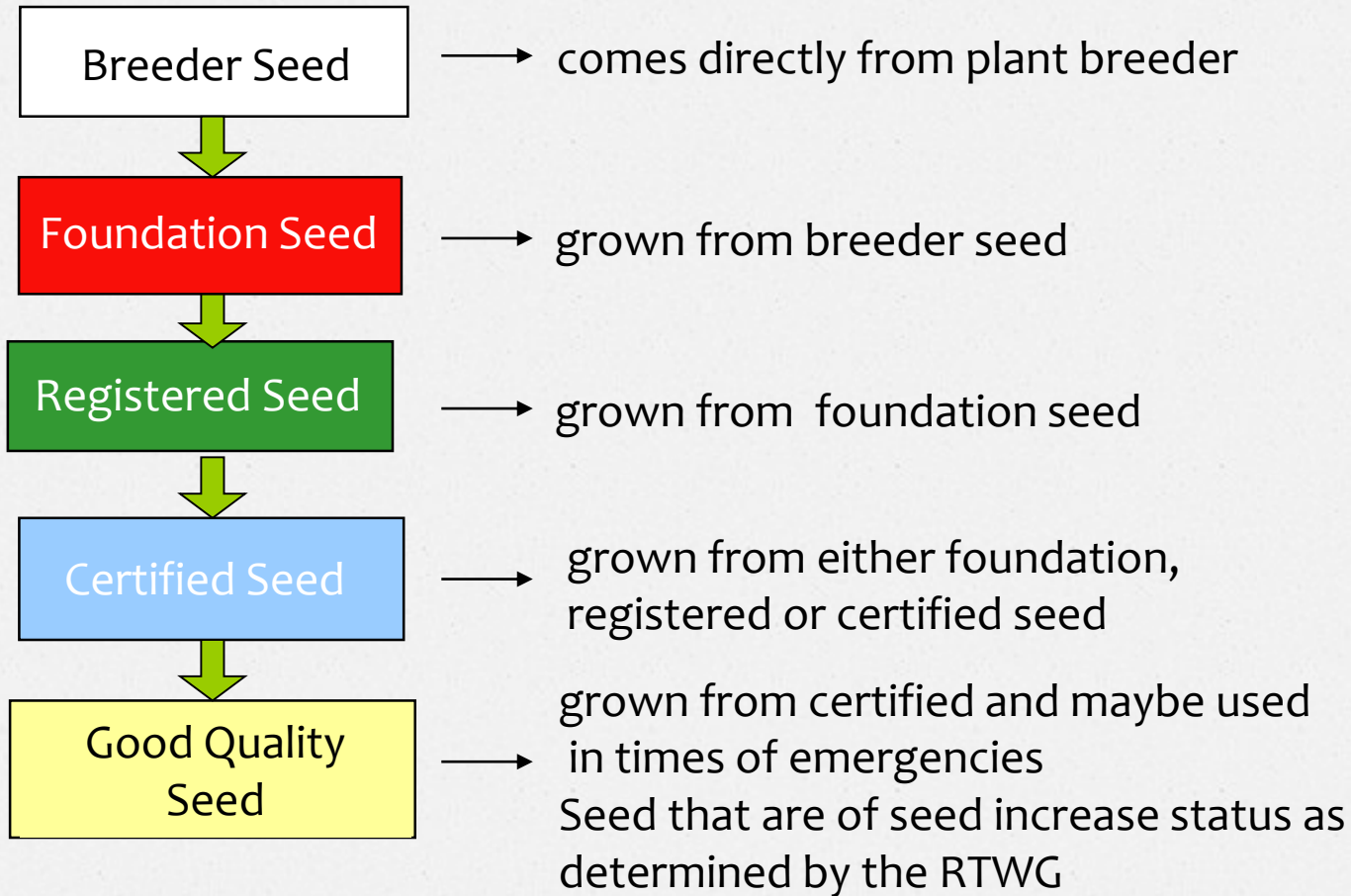
Composition (57)

- 2 national centers
- 6 branch stations
- 12 regional research stations
- 37 cooperating stations



Trends in Philippine Rice Production

Classes of Seeds



Production Area (ha)

Ecosystem	YEAR				
	2010	2011	2012	2013	2014
Irrigated	3,008,325	3,072,637	3,163,184	3,236,337	3,253,079
Rainfed	1,345,836	1,464,005	1,526,876	1,509,753	1,486,592
Total	4,354,161	4,536,642	4,690,060	4,746,090	4,739,671

Sourced: Philippine Statistics Authority

Volume of Production (mt)

Ecosystem	YEAR				
	2010	2011	2012	2013	2014
Irrigated	11,992,459	12,358,931	13,396,483	13,823,149	14,405,716
Rainfed	3,779,860	4,325,131	4,636,042	4,616,270	4,562,110
Total	15,772,319	16,684,062	18,032,525	18,439,419	18,967,826

Sourced: Philippine Statistics Authority

Recommended Varieties by Ecosystem from 2010 to 2014

Year	Irrigated lowland	Rainfed lowland	Upland	Saline	TOTAL
2010	7				7
2011	18	9	1	4	32
2012	5				5
2013	10	2		9	21
2014	19		3	2	24
Total	59	11	4	15	89

Sourced: National Seed Industry Council



PVP Applications and Grants

Rice	Applications	Grants
Inbred	14	12
Hybrid	21	13
Parentals	21	12
Total	56	37

Sourced: Plant Variety Protection Office

Rice Import and Export

RICE	IMPORT (as of Oct. 2015)	EXPORT (as of August 2015)
Planting Materials (mt)	8,562.22	155.40

Sourced: Plant Quarantine Division, Bureau of Plant Industry



Thank you