

BPI-LBNCRDC'S BREAKTHROUGHS

Identified as a national Center of the BPI for tropical crops and ornamentals in July, 1988 as per Executive Order No. 116, the BPI-Los Baños National Crop Research and Development Center, (formerly known as BPI-Economic Garden) assists in the formulation/development and implementation of plans, programs and policies on research and development on agricultural commodities, production and distribution of high quality seeds and planting materials, and in the transfer of generated technologies for the development of plant industry.

Research activities of the Center are multi-disciplinary and involve various commodities (field and vegetable legumes, vegetables and ornamentals). Acknowledged as one of the breeding centers of the BPI, bulk of these studies are on varietal development with the ultimate aim of increasing farmers' productivity and profitability by developing improved varieties with high yields; resistant to pests and diseases; with desirable horticultural/agronomic characters, and adapted to multi-cropping schemes of farmers.

For the five year period, two (2) varieties of mungbeans, two varieties of peanuts and one (1) variety of soybean were developed at the Center and were approved and released by the National Seed Industry Council (formerly Philippine Seed Board) for commercial production.

These field legumes are:

MUNGBEANS

NSIC Mg11 (EGM 4310)			NSIC Mg14 (EGM 93-266)		
Year Released: 2001			Year Released: 2004		
Parentage: VC 3061A x VC 2719-B-18-B-3-B			Parentage: VC 3737A x Chun Nam 4		
Local Name: "Kintab"			Local name: "Kulabo"		
	Dry Season	Wet Season		Dry Season	Wet Season
Yield (mt/ha)	1.06	1.27	Yield (mt/ha)	1.09	1.17
100-seed weight (g)	6.30	6.00	100-seed weight (g)	5.20	5.10
Days to flower	32	32	Days to flower	33	31
Maturity days	58	58	Maturity days	58	58
Plant Height (cm)	58.6	73.5	Plant Height (cm)	53.0	80.1
Pods per plant	19	15	Pods per plant	14.2	16.0
			Seeds per pod	11.3	12.0
Disease reaction:			Disease reaction:		
Cercospora leaf spot : Moderately resistant			Cercospora leaf spot : Moderately resistant		

Rust :	Moderately resistant	Rust :	Moderately resistant
Chemical composition (%):		Chemical composition (%):	
Crude Protein :	24.03	Crude Protein :	23.76
Carbohydrates:	62.79	Carbohydrates:	65.98
Starch:	48.48	Starch:	43.50
Ash:	4.33	Ash:	4.20
Crude Fat:	0.62	Crude Fat:	0.64
Adaptability:		Adaptability:	
Recommended for both wet and dry seasons		Recommended for both wet and dry seasons	

PEANUTS

NSIC Pn9 (EGPn 57)			NSIC Pn10 (EGPn62)		
Year Released: 2001			Year Released: 2001		
Parentage: EG Bunch x Tainan 7			Parentage: Gadjah x BPI P9		
Local Name: "Likas"			Local name: "Yaman"		
	Dry Season	Wet Season		Dry Season	Wet Season
Shelled Bean Yield (mt/ha)	1.60	1.62	Yield (mt/ha)	1.54	1.66
100-seed weight (g)	57.20	51.40	100-seed weight (g)	60.00	53.50
Maturity days	81	91	Maturity days	89	92
Plant Height (cm)	43.6	66.10	Plant Height (cm)	44.20	65.00
Pods per plant	12	16	Pods per plant	12	15
			Shelling percentage (%)	69.10	69.80
Disease reaction:			Disease reaction:		
Cercospora leaf spot : Intermediate			Cercospora leaf spot : Moderately resistant to intermediate		
Rust : Moderately resistant			Rust : Moderately resistant		
Chemical composition (%):			Chemical composition (%):		
Crude Protein :	28.82		Crude Protein :	30.20	
Carbohydrates:	30.61		Carbohydrates:	19.91	
Ash:	2.45		Ash:	2.55	
Crude Fat:	32.80		Crude Fat:	41.86	
Aflatoxin Content:	Not detected		Aflatoxin Content:	Not detected	

Adaptability:		Adaptability:		
Can be grown during the wet and dry seasons but gives better bean quality during the dry season cropping		Can be grown during the wet and dry seasons but gives better bean quality during the wet season cropping		

SOYBEAN

NSIC Sy8 (EGSy 96-6-1)				
Year Released: 2001				
Parentage: (R-10 x Lee) x (Shih Shih x SRF 400)				
Local Name: "Mapusyaw"				
	Dry Season	Wet Season	Disease reaction:	
Yield (mt/ha)	2.18	2.45	Bacterial Pustule: Highly Resistant	
100-seed weight (g)	18.4	18.6	Rust : Moderately to highly resistant	
Maturity days	90	95		
Plant Height (cm)	67.0	98.0	Chemical composition (%):	
Pods per plant	20	48	Crude Protein :	33.60
			Carbohydrates:	34.18
			Crude Fat:	18.88
Adaptability:				
Recommended for both wet and dry seasons				

Aside from the NSIC released varieties, other accomplishments of the Center from the different projects are the following:

Project Title: Development of Production Strategies for Bio-intensive Home Garden (2000-2003)

- ❖ The project aimed to increase production through the development and transfer of bio-intensive home gardening technology.

Accomplishments:

- Developed cropping pattern using amaranth, eggplant, upland kangkong and radish planted in the prescribed rotation of leaf-fruit-leaf-root which produced 600 gm/day edible yield equivalent to 16% protein, 43 % calcium, 137% iron and 1,872% Vitamin A to the recommended daily allowance of a family.
- Three model gardens with areas of 20,40, and 60 m² were developed to showcase the technologies. Consequently on-farm trials in Regions 3, 4 and 5 were conducted to promote the home garden technologies.

- Seeds and planting materials of vegetables, herbs and botanical plants made available to interested clients.
- Transfer of new home garden technologies was done by providing training, lectures and farmers' forum, demonstration at farmers' fields and technical assistance on vegetable nursery development and organic vegetable production
- The environment friendly strategies and procedures in the establishment of the home garden were highly accepted by various clientele. Health and nutritional benefits derived from home gardening far surpass the economic rewards, which though modest, can supplement family income.

Project Title: Off-season Production of Leafy Vegetables and Tomatoes (2000-2003)

- ❖ The project aimed to adopt production technologies that will stabilize production of leafy vegetables and tomatoes in peri-urban areas of the Philippines.

Accomplishments:

- The AVRDC Peri-urban Project introduced technologies to alleviate the effects of seasonal availability of vegetables. Cultivars/species of leafy vegetables and tomatoes were screened for yield, the species were characterized, the high yielding varieties were identified and compared with available local checks. The effect of the introduced technologies were compared with the usual practice of farmers in planting leafy vegetables and tomatoes done through Farmers' Field School (FFS), demonstrations at farmers' fields and at BPI-LBNCRDC, providing technical assistance on the development of organic farms and other technology transfer activities.

Project Title: Commercialization of Home Garden and Peri-urban Production Technologies (2003-2004)

- ❖ The project aimed to commercialize the home and peri-urban production technologies.

Accomplishments:

- Continuous production of seeds and seedlings of various vegetables, herbs and botanical plants and grafted tomato seedlings during off season were done.

- Showcased three model home gardens and production of leafy vegetables and tomatoes during off-season at BPI-LBNCRDC.
- Provided technical assistance in demonstrating the technologies at farmers' field.
- Conducted two Farmers' Field School on Grafted Tomato and Off-season Leafy Vegetable Production
- Conducted several lectures and on –station trainings for LGU technicians, NGOs, students and farmers on home gardening, composting and off-season production of leafy vegetables and tomatoes.

TITLE: Production of High Value Vegetables Crops Inside the Greenhouse and Open Field Cultivation

The project aims to showcase the technological breakthroughs in commercial crop production that are new to the common farmers in the country. The new technologies being showcased are: a) production of high value crops such as honeydew, cherry tomato, sweet pepper, cucumber and lettuce under greenhouse condition; b) modern nursery practices for high quality seedling production; c) use of pressurized irrigation namely overhead and drip; d) fertigation; e) use of F1/improved varieties of high value commercial crops.

The four crops that show good performance either in the greenhouse or open field and with high market potential are honeydew, cherry tomato, cucumber and sweet pepper showing good performance and a good market potential. The practices that contributed to the successful production of these crops are as follows:

- **Honeydew** – Maintenance of one fruit per plant by pruning or removing the other fruits. Trellising of the individual plant is also being done.
- **Cucumber** – Maintenance of one main stem; and continuous removal of the tendrils and side branches; and, removal of lower leaves at 1 meter height.
- **Cherry tomato** – The tomato plants are kept erect throughout their life span. This is done by trellising wherein the main stem is turned around the plastic string or nylon wire tied around the hanger that is hooked into the galvanized iron wire supports. Application of fruiting hormone twice a week is also being practiced to induce fruit development due to absence of natural pollinators such as bees and butterflies.
- **Sweet pepper** – The good performance of sweet pepper could be attributed to the right time of planting to coincide harvesting during off-season months wherein the price of the produce is relatively higher than the normal season.

The other practices that contributed to the success of the three crops (honeydew, cherry tomato and sweet pepper) are the use of F1 varieties, drip irrigation fertigation; sterilization of the media; use of yellow sticky traps, use of fruit fly attractants (Zorgen); and, incorporation of slow releasing fertilizers in the media.

Soilless Open field

Semi-heading and loose leaf lettuce (Emperor, President and Green Tower Romaine), kinchay, green onion and cauliflower (White Baron) were profitable crops under the soilless open field.

Open Field Soil Culture

In the open field culture, different high value crops (Sweet Bliss and Honey Bliss, Syngenta 74, Bright Jean, Super Combo), eggplant (Casino, jackpot, Spitfire, Batangas Long Purple), bittergourd (Makiling and Sta. Rita), pole sitao (BPI-PS 4 and Negro Star) cauliflower (White Baron), sweet pepper (Tosca and California Wonder) and lettuce (Green Tower) were profitable and found resistant to a biotic stress, such as sweet corn.

For hybrid corn, the use of double row at 75 cm. distance between 2 rows produced more Class A corn ears compared to a single row method of planting.

Technology Transfer

A total of 12 entrepreneurs/stakeholders adopted the greenhouse culture and another 16 farmers adopted some of the introduced technologies that are being showcased in the center.