

**DEVELOPMENT OF ORGANIC SEED PRODUCTION SYSTEM OF LOWLAND VEGETABLES AND FIELD
LEGUMES AT BPI-LBNCRDC AND STRENGTHENING PARTNERSHIP IN CALABARZON, MIMAROPA AND
BICOL REGION (PHASE 1)**

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KEYWORDS

Organic seeds, Legumes, lowland vegetables, Organic Certification, Organic in-transition, Partnership

ABSTRACT

This project is part of the continuing effort of the Department of Agriculture in increasing the production of certified organic seeds of the National Seed Industry Council (NSIC) varieties and promising lines of field legumes and selected vegetables. Guided by its three (3) objectives; it evaluated the seed yield performance under organic condition; secured organic certification from Organic Certification Center of the Philippines (OCCP) for organic seed production system at BPI-LBNCRDC; and established partnership with identified organic stakeholders for participatory seed production.

One-and-a-half hectare area for organic seed production of NSIC-approved varieties and promising lines of field legumes (Pole sitao (*Vigna unguiculata* subsp. *Sesquipedalis*), cowpea (*Vigna unguiculata* subsp. *Unguiculata*), and mungbean (*Vigna radiata*)) and lowland vegetables (tomato (*Solanum lycopersicum*)) was established in the Center.

Evaluation of seed yield performance of different varieties of crops grown was done. Highest yielders were: BPI-Cp3 (1.05 tons/ha) in cowpea; PSB Ps2 (1.54 tons/ha) and NSIC Ps5 (1.4 tons/ha) in pole sitao; NSIC mg 14 (0.88 ton/ha) in mungbean; and BPI-Tm9 (0.057 ton/ha) in tomato. Some horticultural characteristics of these crops were also gathered and analyzed.

Profitability analysis showed a positive return-on-investment on highest yielding varieties of cowpea (154.32%), pole sitao (334.92% and 295.38%), mungbean (6.70%) and tomato (63.39%).

In addition to the above results, BPI-LBNCRDC was awarded the organic certification on June 24, 2013 by OCCP. This certification authorizes BPI-LBNCRDC to use the OCCP seal "Organic in-Transition" for the seeds it produces. An area of 1.28 ha and a total of 645 kg organic seeds were certified by OCCP.

As for strengthening partnerships, the project was able to partner with the Organization for Industrial, Spiritual and Cultural Advancement (OISCA) in Quezon; the Madrigal Foundation Inc. and Christ Life Community (CLC) in Camarines Sur; and the Department of Agriculture-Palawan Agricultural Experiment Station (DA-PAES) in Palawan. Harvest festivals and trainings were conducted in the area with a total of 211 participants. These partnerships have led to the spread of organic farming technology around the country.

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INTRODUCTION

The Philippine Organic Agriculture Act of 2010 (RA 10068) was passed with the vision of attaining healthy and prosperous communities without negatively compromising nature. This Act aims to develop, promote, strengthen, and implement organic agriculture in the country that will cumulatively improve and enrich the fertility of the soil; increase farm productivity; reduce pollution; prevent the depletion of natural resources; protect the health of farmers, consumers, and the general public; and reduce imported farm inputs (The Organic Agriculture Act of 2010 Compendium of Implementation Guidelines. May 2012)

To effectively implement and uplift organic farming in the country, farmers would need to have access to readily available planting materials. This is one of the major concerns of the program. Other important issues and concerns to be addressed include, among others:

- a disaggregated organic seed production sector,
- limited research studies on organic seed production,
- lack of guidelines on organic seed production for NSIC registration,
- limited capability development and/or training programs on organic production for government and non-government organizations,
- limited support to the stakeholders of organic seed production, such as production support, seed bank, and limited information materials.

Bearing the above issues and concerns in mind, the Bureau of Plant Industry (BPI) plays a great role in addressing any or all of the above concerns. Within BPI's mandate, this proposed project can strengthen the organic seed production in the Philippines, and ultimately contribute to the sustainability of domestic organic food sufficiency consumption.

OBJECTIVES

General

To establish a national organic seed production program by setting up organic seed production areas at the Bureau of Plant Industry, broadening the science-based knowledge on organic seed production technologies, and strengthening the partnership of the Department of Agriculture with identified organic coordinators and stakeholders

Specific

1. To evaluate the seed yield and some horticultural characteristic performance of NSIC varieties and promising lines of field legumes and selected vegetables under organic condition;
2. To increase production of certified organic seeds of NSIC varieties and promising lines of field legumes and selected vegetables;
3. To secure organic certification from Organic Certification Center of the Philippines (OCCP) for the organic seed production system of the Center; and
4. To establish partnership with identified organic stakeholders for participatory organic seed production in the regions.

METHODOLOGY/ RESULTS AND ACCOMPLISHMENTS

COMPONENT 1

Organic Seed Production of NSIC-approved varieties and other promising lines of Pole sitao, Cowpea, Mungbean, and Tomato in the Center

Activity 1: Establishment of organic production areas

A one and a half hectare area was allotted for organic seed production in the Center which was composed of open field and greenhouse areas.

Activity 2. Seed yield and other horticultural characteristics performance evaluation

Table 1. Seed yield of different NSIC varieties and promising lines of field legumes and selected vegetable grown organically

| ¹ Cowpea | | ² Pole sitao | | ³ Mungbean | | ⁴ Tomato | |
|---------------------|-------------------|-------------------------|-------------------|-----------------------|-------------------|---------------------|-------------------|
| Variety | Seed yield (t/ha) | Variety | Seed yield (t/ha) | Variety | Seed yield (t/ha) | Variety | Seed yield (t/ha) |
| BPI-Cp3 | 1.05a | NSIC Ps5 | 1.40b | PSB Mg3 | 0.51bc | BPI-Tm9 | 0.057a |
| BPI-Cp5 | 0.45b | NSIC Ps4 | 0.87c | BPI Mg 9 | 0.32c | BPI-2026D Sel # 1 | 0.052b |
| | | PSB-Ps2 | 1.54a | NSIC Mg 11 | 0.26c | IPB 10162-1 | 0.021c |
| | | BPI-Ps4 | 0.83d | NSIC Mg 14 | 0.88a | | |
| | | BPI-Ps3 | 0.63e | NSIC Mg 15 | 0.82ab | | |
| Mean | 0.75 | | 1.054 | | 0.56 | | 0.043 |
| CV (%) | 0.00 | | 1.414E-6 | | 33.26 | | 0.00 |
| LSD (0.05) | 0.00 | | 41E-9 | | 0.35 | | 0.00 |

Means with the same letter are not significant with each other

¹Date planted: January 18, 2012

²Date planted: January 29, 2013

³Date planted: May 15, 2012

⁴Date planted: January 8, 2013

Activity 3: Organic Seed Production

NSIC approved varieties and other promising lines of pole sitao, cowpea, mungbean, and tomato available in the Center were planted and utilized for organic seed production in the Center. Table 2 shows the list the varieties planted.

Existing practices on organic seed production were used to prevent and control insect pests and diseases. Available materials around the Center such as citronella, marigold, madre de cacao (*Gliricidia sepium*) and guyabano seeds were utilized to minimize some pests infesting on crops such as aphids, leafminers, and armyworms. These organic pesticides were sprayed on crops when initial signs of target pests were observed.

Activity 4. Profitability Analysis

The Return-on-Investment (ROI) of highest yielding varieties of field legumes and selected vegetables was computed to assess its potential in the market.

Table 3. Return of Investment (ROI) of highest yielding variety of cowpea, pole sitao, mungbean and tomato

| Crop | Variety | ROI (%) |
|------------|-----------|---------|
| Cowpea | BPI-Cp3 | 154.32 |
| Pole sitao | PSB-Ps2 | 334.92 |
| Mungbean | NSIC-Mg14 | 6.70 |
| Tomato | BPI-Tm9 | 63.39 |

Activity 5. Secure OCCP certification for BPI-LBNCRDC Organic Seed Production System

Requirements needed in the application for organic certification from the Organic Certification Center of the Philippines (OCCP) were complied. In June 24, 2014, certification was awarded to the Center thus allowing it to use the OCCP seal "Organic in-Transition".



Figure2. OCCP certificate and seal

COMPONENT 2

Establishment of partnership with identified organic stakeholders in (Cavite, Laguna, Batangas, Quezon) CALABARZON, (Mindoro, Marinduque, Romblon, Palawan) MIMAROPA and Bicol region

The project leader coordinated with the Municipal Agriculturist of the selected areas in CALABARZON, MIMAROPA and Bicol Region for possible partnership. With the help of the Municipal Agriculturist and the Local Government Units, the project was able to identify partners who had signed a

Memorandum of Agreement (MOA) with the Center and agreed to support the project. A protocol on organic farming which is approved by Organic Certification Center of the Philippines was given to partner areas to serve as their guide in implementing the project in their area.

Promotion of organic seed production to farmers, growers, professionals and all interested entities in the country

To promote organic seed production to farmers, growers, professionals and all interested citizens in the country, trainings were conducted and attended by the project leader and study leaders. Aside from the conduct of trainings, harvest festivals were also conducted in partner areas to showcase the outcome of organic seed and vegetable production to all interested individuals. These activities were done to encourage partners and farmers to practice organic farming.

CONCLUSION/RECOMMENDATION

BPI-LBNCRDC has established 1.5 hectare of organic seed production area which is now OCCP certified as "Organic in-transition". Most of the organic seeds harvested were conserved and a significant amount was distributed to farmer groups and collaborators. Existing practices such as the use of organic nutrient supplementation and botanical pesticides were found to be helpful in attaining good crop growth and yield performance. However, extended studies on the effectiveness of these organic crop production practices must be conducted.

To effectively spread organic crop production in the Philippines, more trainings and seminars on organic seed and vegetable production must be conducted to encourage more farmers in going organic. Moreover technical assistance must be provided to those who want to start organic farming in their area.

REFERENCES

Manuals

Philippine National Standard, PNS/BAFPS 07:2003, ICS 65.020.20

Republic Act 10068 or The Organic Agriculture Act of 2010 Compendium of Implementation Guidelines. May 2012

Internet sources

Md. Wasim Aktar, et al. 2009. *Impact of pesticides use in agriculture: their benefits and hazard.*

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2984095/>

What is organic agriculture?

http://car.da.gov.ph/index.php?option=com_content&view=article&id=71&Itemid=106

What is organic agriculture? <http://extension.agron.iastate.edu/organicag/history.html>