

CAVITE AGRICULTURAL RESEARCH AND EXPERIMENT STATION (CARES)
formerly Technology Generation and Dissemination for the Growth of Vegetable Industry
(TECHGEN)



CARES Office Building

Symbolism



Hands depicted open arms ready to serve the agriculture industry in Cavite and the whole provinces of DA 4A.



CARES Demo Farms

Brgy. Tres Cruces, Tanza, Cavite

Brgy. Pantihan II, Maragondon, Cavite

Address : Brgy. Ibayo, Naic, Cavite, PHILIPPINES

Tel./Fax No. : (046) 412-14-62

Cell No. :

E-mail Address :

Station Chief: **Ms. EDA F. DIMAPILIS**

Agricultural Center Chief III

OUR MANDATE

Provide Sustainable agricultural development program for the development of agricultural industry in the province of Cavite and nearby provinces.

OUR TASK

Provide agricultural research and development program for the development of agricultural industry in the province of Cavite and nearby provinces.

OUR MISSION:

To empower and enhance global competitiveness of the farming community for increased production and income through agribusiness entrepreneurs with strong public and private sector collaboration.

The CARES

A. Brief Historical Background

CAREs (formerly TECHGEN) started in year 80's as Second Laguna de Bay Irrigation Project-Vegetable Component (SLBIP-VC), organized primarily to help ensure that the farmer beneficiaries would be able to plant vegetables, making them able to pay the high cost of irrigation water which would be pumped by the Project from Laguna Lake. When the financial assistance from Asian Development Bank (ADB) was terminated in 1991, the bank required the firm commitment for the next twenty five (25) years which is the repayment period of the project cost estimated at fifty million (\$50 M) dollars. The Department of Agriculture thus incorporated the project to its regular program with GAA of P16 M and would handle the line function of "Technology Generation and Dissemination for Growth and Development of Vegetable Industry (TECHGEN)" serving the whole CALABARZON in the year 1996. For 17 years, TECHGEN is mandated to provide services in improving the vegetable production in Southern Tagalog Region. With the implementation of Rationalization Plan and Approved NOSCA in 2013, TECHGEN was renamed as CARES, as one of the research station of DA-4A, serving the province of Cavite and nearby provinces.

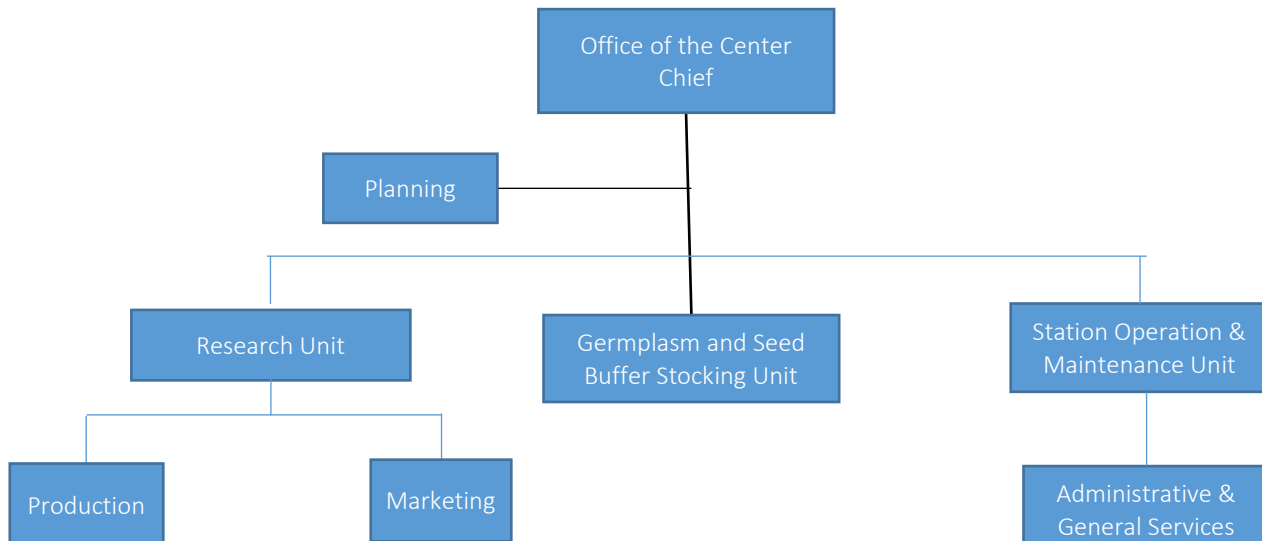
B. Functions

Research Unit – develops and implements on-station and on-farm research programs/projects on crops and/or livestock; identifies problems/issues and recommends solutions and establish feedback mechanism in the implementation of RD/E programs/projects; collaborates with other research institutions, LGUs, other sectors for effective and efficient implementation of programs/projects and packages research outputs and evaluates technologies for dissemination.

Germplasm & Seed Buffer Stocking Unit – establishes and maintain orchards/demo farms to showcase modern/new production technologies, establishes and maintains animal stock/foundation/seed garden and scion groves and grains; operates and maintains animal stock/plant propagation nursery (as income generating project) of genetic quality; and maintains germplasm collection to maintain bio-diversity

Station Operation and Maintenance Unit – develops and implements plans for the improvement and/or maintenance of station’s infrastructure and support service facilities; oversees the utilization and maintenance of all infrastructure and support service facilities.

C. Organization Structure

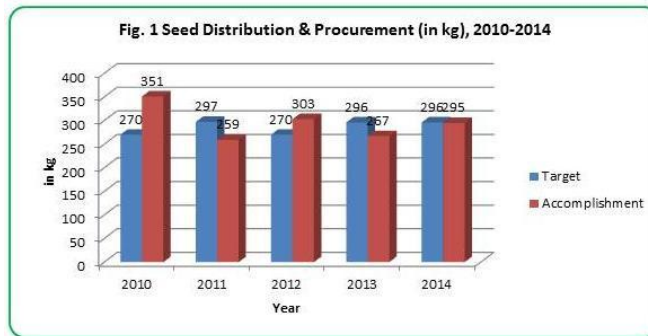


D. Accomplishments (2010-2015[as of first semester])

D.1 Production Support Services

D.1.a Seed Distribution and Procurement

During the past 20 years, DA-TECHGEN now CARES has been promoting the transfer of agricultural technologies for increasing production and productivity of vegetable industry in the region. From 2010 to 2014, seed procurement and distribution target was attainable. These seeds are being distributed to different clientele/beneficiaries; others were used in training on vegetable production as starter seeds of the participants, and for demo farm production of the station. However, in year 2015, seed distribution was stop since it is not anymore the mandate of the station.



Seed Distribution Activity, 2010-2014



Padre Garcia, Batangas



Tanauan, Batangas



OPA, Talipan, Pagbilao, Quezon



Pililla, Rizal



Cainta, Rizal



Luisiana, Laguna



Real, Quezon



Silang, Cavite



Casile, Cabuyao, Laguna



Pililla, Rizal



Nagsinamo, Lucban, Quezon



Sto. Tomas, Batangas



Brgy. Malaking Ambling, Magdalena, Laguna



LVIC Members



Lobo, Batangas

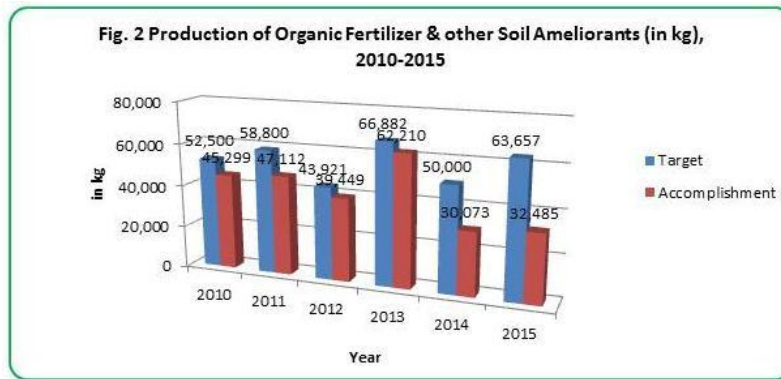
D.1.ab Production of Organic Fertilizers and Other Soil Ameliorants



Production of organic fertilizers and other ameliorants is a regular activity in demo farm of TECHGEN. These include compost, soilless media, vermicompost, wood vinegar, assorted liquid fertilizers such as fermented plant and fruit juices, lactic acid bacteria serum, oriental herbal nutrients (OHN), vermitea, and wood vinegar. These fertilizers are readily available and are distributed to the farmers beneficiaries/participants during the conduct of the season

long training on vegetable production, establishment of techno demo farm, urban gardening and gulayan sa paaralan. It is also being used in the production of vegetable in the demo farm of TECHGEN.

There is erratic accomplishment for organic fertilizer production and soil amelioration activity due to non-availability of raw materials during rainy seasons. The year 2014 is mostly affected giving a low accomplishment (61%) due to transition period and implementation of rationalization plan, most of the staff were terminated thus affected the operation. However, the first semester of 2015 run smoothly wherein personnel were in place properly, thus continuous operation/activities in the demo farms.



2015 (Data from 1st semester of 2015 only)

Production of Organic Fertilizer and Soil Ameliorants Activity, 2010-2015

Soilless Media Production :



Vermicompost Production



Wood Vinegar Production



Organic Fertilizer Production



D.1.c Maintenance of Demo Farms

CARES had established and maintained two (2) permanent demonstration farms in Barangay Tres Cruces, Tanza and Tera Verde, Berangay Pantihan, Maragondon, Cavite.

Production of wood vinegar, soilless media, organic liquid fertilizer, vermi-compost/ compost, carbonized rice hull and vermitea are the major activities on the site. Such produce are being used in vegetable seedling production in the said demo farms, experimental trials, and others were distributed in different stakeholders

Activities in Demo Farm (2010 - 2015)

Demo Farm (Tres Cruces, Tanza, Cavite)



Nursery Production



Modified Hydroponics



Terra Verde Demo Farm (Pantihan II, Maragondon, Cavite)

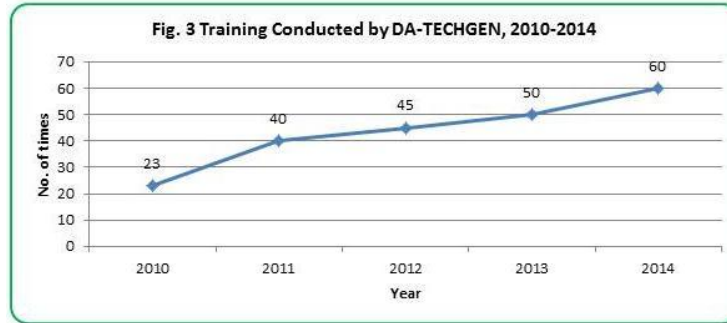


D.2 Extension Support, Education and Training Services

For the past five (5) years (2010-2014), TECHGEN continuously increase its training services to different stakeholders interested in vegetable production which was the most requested services of the station. The increase in the number of training conducted and number of participants attended was the result of the continuous request for trainings of the clientele. Training conducted includes: Season Long Training on Vegetable, Advanced Vegetable Production, Organic Vegetable Production, Agri-Pinoy Gulayan sa Paaralan, Training on Vegetable Production for New Bilibid Prison.

Among the training, Season Long Training, an intensive and lengthy training running for sixteen weeks, was considered the most effective in terms of technology dissemination. On the other hand, Vegetable Processing is integrated in the training activity to provide farmers the option to eliminate or lessen the losses during periods of over production. This was aimed at providing clients opportunities to engage in enterprise development for processed food.

Lakbay Aral is also part of the extension activity of the station; it assisted different participants from different progressive farmers in Cavite as part of the study tour.



Training Activities for the past 5 years.



Sisters of Mary Boystown, Silang, Cavite



Season Long Training in Sitio Bato, Barangay Aga, Nasugbu Batangas

Bangcod, Indang, Cavite



Season Long Training in Binangonan, Rizal



Season Long Training in Pantihan II, Maragondon, Cavite



Season Long Training in Pililla, Rizal



Season Long Training in Brgy. Dalig, Teresa, Rizal



Season Long Training in Aliliw, Lucban, Quezon

Impacts of trainings and other activities were attested by testimonials which were recorded and documented based on survey/interview conducted by TECHGEN in 2009.



"Ah hindi ako maglalakas ng loob maggulangay o kaya... pwede naman ibang business ang pasukin ko eh... pero hindi siguro matalas ang loob ko kung hindi ko nakilala ang mga taga TECHGEN. At pangalawa, ulitin ko talaga ang sinabi ko na meron pala sa Pilipinas na isang agency, isang government agency na talagang kung tumulong todo-todo... Ah bilis ako sa mga tao sa TECHGEN. Wala talaga, saludo ako. Kaya sabi ko nga hindi ako... hindi malakas ang loob ko na ituloy ito kung wala ang assistance na binibigay sa akin."

Ding Polistico
Pangil, Amadeo



"Lahat ng training na na-attendan ko ay assisted ng DA-TECHGEN. Umang-una si Bing, siya ang nag-encourage sa akin na sumama sa Laksby-Aral. Doon nag start ang lahat."

Crispina Colocada
Tanza Market



"Malaki ang natutulong ng TECHGEN. Mula sa pagtatanim hanggang market linking o sa trading tinutulungan kami. Sila rin ang nakikipag-usap sa mga agency/traders"

Albeniz Calapine
Vegetable Farmer/Trader
(Laguna)

"Tinuturo sa amin ng mga taga TECHGEN yong pagagawa ng bokashi, yong mga fermented juices, mga kalabasa, mga kokawati yun nahinilo sa brown sugar as organic fertilizer"

Teachers
Tanza National Trade School

"Ang masasabi ko po sa TECHGEN ay talagang ayos, maganda, talagang maganda ang natulong. Sa katurawan, pati ang director ay nakaibot dito eh. Talagang malaki ang natulongat hanggang ngayon ay talagang sa aming paghahalaman ay doon kami nakuha ng kita"

Juan Aranez
Padre Garcia, Batangas



"Maganda ang inyong departamento, yung inyong bureau dahil marami po yung inyong natutulungan sa amin, di lamang po sa akin kundi sa panglalathasan sa buong Antipolo. Daril marami na silang nagawang pagse-seminar sa mga magasaka sa Antipolo kila na sa paggugulangay. Every time naman po na tawagan namin kayo, tawagin namin sina ate Vilma (TECHGEN technician), talagang nakakarating sila. Kahit po merong iba na pang nakauuna na sa amin, talagang hinahati nila po yong kanilang trabaho para lamang po may magpunta dito."

Jojo Calapir
Antipolo, Rizal

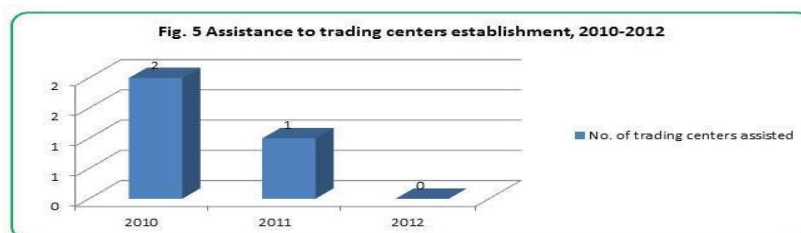
Aside from testimony, other impact includes continuous planting or organic vegetable, duplication of demo farm in their own area of production.

D.3 Marketing Support Services

Market linkaging activities resulted in the development of direct market linkage between producers/farmer associations and retailers, minimizing the layers of marketing channels. This resulted to increase in the producer’s margin of profit., Market tie-ups between individual farmers and buyers were not sustained due to lack of continuous supply and lack of product variation.



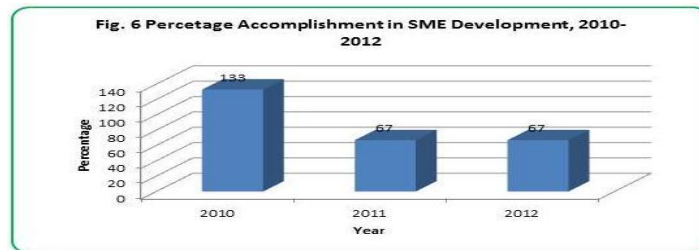
The graph indicates a decrease in the number of individual producers assisted in market linkaging, but an increase in the number of farmer group/associations linked to buyers. This projects the efforts to development and this is hoped to widen the production base to meet the demand for continuous supply and product variation.



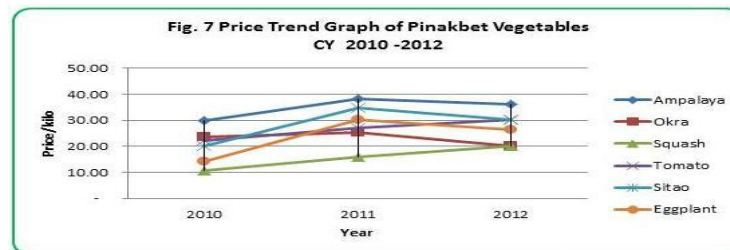
There was a full in this activity in the past three years. Prior to this, Trading Center Establishment was one of the priority projects of the Department of Agriculture. This program aims to link the farmers directly to these trading center purposely established at different local markets in Metro Manila and at “strategic” site in CALABARZON provinces. The objective is to increase the farmers’ margin of profit by eradicating/lessening the layers of marketing channels.



Implementation of the program, however, did not meet the desired objective. Market integration/surveys conducted revealed the prevalence of cartel in the market as one of the contributing factors. Financiers from major trading centers, through their agents/friends in the local markets implement; a “bagsak presyo” counter strategy to discourage farmers from continuously supporting the program. Trading Center established in other locations also failed to meet the desired goal due to lack of supply and demand pull. A more systematic, wholistic and well-planned program should first be in place, to successfully implement the program.



Monitoring the impact of this activity was not given emphasis. This will be included in future plans, noting that SMEs developed/assisted in Cavite had successfully established/processed product business enterprise.



The graph showed a dramatic increase in prices of pinakbet vegetables in 2011. The stormy weather conditions brought about by typhoons Mina, Juaning, Pedring and Quiel during the second half of the year reduced the supply of vegetables in the market resulting to tremendous increase in their prices. Price monitoring is one of the regular activities being conducted under the Agribusiness and Marketing Unit.

Interventions under price monitoring included collection of wholesale price updates of vegetables from Divisoria and Balintawak. These markets, being the major trading center of vegetables in the country dictate the prevailing prices of these commodities in everyday transactions. The Bureau of Agricultural Statistics, through its Metro Manila Operations Center e-mail the data and these in turn were forwarded to clients through e-mail or text message.

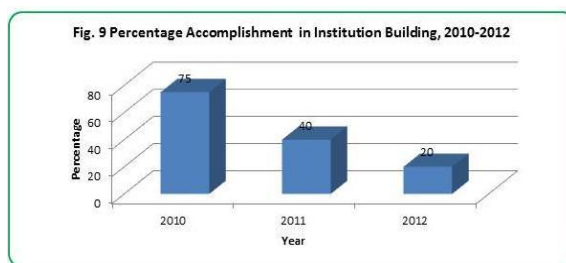
Farmers from CALABARAZON, and even beyond (CARAGA and Isabela provinces) use the info as leverage in price negotiation. An increase of up to 300 percent in the margin of profit was reported.



The increase in farmers' awareness on the availability of this information resulted to an increase of more than one hundred fifty percent in the number of farmers served.

The number of farmers/clients served only captures beneficiaries who were directly informed through e-mail or text. The chain effect was not mentioned. CARAGA and Isabela farmers who benefitted from this activity through the radio station ("Praktikal na Pagsasaka" at DWIN 107.5 FM) Radio Station at Isabela, were also not counted.

Benefit from this activity however, was limited by farmers' access to information. This could be maximized if price monitoring boards be established at production areas and data based systems developed.



This activity seeks to develop a viable production-marketing institution among CALABARZON vegetable farmers. The desired goal is to increase farmers' income by enhancing their entrepreneurial skills and development of an efficient production marketing system.



This will tap the opportunities in the concepts of economics of scale, data-based information networking, production programming, faster and efficient technology transfer/information dissemination and other inherent potentials of an organized institution.

The peak of institutional development was in 2010, when Regional and Provincial Vegetable Industry Councils were organized as a result of the “Vegetable Post Harvest and Marketing Intervention Project”.

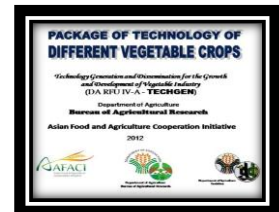
The impact of institutional development in terms of increased income, however, is still raw to be measured. Transforming the institution as a vehicle for an efficient production-marketing system of vegetables in CALABARZON is hindered by a complex of factors that affect the industry, i.e. climate change, global market, prevalence of cartel, etc. Organizing farmers into associations are directed towards alleviating/fighting these obstacles through unified efforts.

The above accomplishments of DA-TECHGEN are proving its worth as a vehicle of change in the lives of its clients in CALABARZON. With continued support from the top management and increased collaborative efforts with other stakeholders, DA-TECHGEN’s unwavering commitment will remain strong.

D.4 Research and Development

D.4.a Completed Researches (2010-2014)

- **Documentation of Organic Vegetable Production Systems/Technologies in CALABARZON** – Results of the study provided the master list of vegetable growers in CALABARAZON. It also produced leaflets on Natural Farming entitled “A Technology/Strategies/Practices used in Vegetable Organic Farming in CALABARZON”. It is being used and disseminated in organic training program of the station.
- **Updated Package of Technology of Different Vegetable Crops** – This manual is now being used by CALABARZON farmers engaged in vegetable production and served as reference manual in agricultural curriculum of elementary and high school in CALABRZON and NCR.



- **Updating of DA-TECHGEN 3rd Floor Building as Training Cum Laboratory and Processing Center for Vegetable Industry in Southern Tagalog Region** – To date, the building had already completed Phase I of the project. Finishing touches as well as laboratory equipment are needed for Phase II which can be made possible through sourcing of funds.

- **Wood Vinegar as Potential Organic Fertilizer and Pesticide** – Results of the study showed that wood vinegar had potential as organic fertilizer and pesticides for selected vegetable crops. It can also be used for germination of hard coated vegetable seeds. Chemical analysis of wood vinegar show traces of macro and micro elements, as well as methanol content. Further studies are needed to demonstrate the potential of wood vinegar using different kinds of agricultural wastes as firewood.



D.4.b On-going Researches (2013-2015)

- Production and Bio-Efficacies of Philippine Wood Vinegar Using Different Agricultural Waste as Firewood (2013-2015).** The study consists of four components. Component I is the production aspect (2013) wherein five (5) wood vinegar/mokusaku chambers were distributed in different areas of CALABARZON, for them to five part of the production as input to the on-going study/trials. Component II is the chemical analysis of different firewood used to find out the best firewood as fertilizer/pesticide (2013). Component III is the experimental trials of the best firewood fertilizer/pesticide for different vegetable crops (2014). Component IV is produce-based development of mokusaku/wood vinegar as soap and ointment.

Activities by Component:

Component I

INSTALLED WOOD VINEGAR CHAMBER IN CALABARZON



Alfonso, Cavite

Luisiana, Laguna

Lipa City, Batangas



Quezon Agricultural Experiment Station (QAES)



Rizal Agricultural Station (RAS)

Component II

Bureau of Soils and Water Management (BSWM)

Firewood Used	Available	Not Detectable	Available	Not Detectable
Akle	N & K ₂ O	P ₂ O ₅	Ca, Mg & Na	Zn, Cu, Mn & Fe
Bamboo	NPK		Ca, Mg, Na, Zn, Cu	Mn & Fe
Coconut Shell	NPK		Ca, Mg, Na & Fe	Zn, Cu & Mn
Eucalyptus	N & K ₂ O	P ₂ O ₅	Ca, Mg, Na & Fe	Mn
Ipil-ipil	N & K ₂ O	P ₂ O ₅	Ca, Mg, Na, Zn, Cu & Fe	Cu, Mn & Fe
Madre de Cacao	N & K ₂ O	P ₂ O ₅	Cs, Mg & Ns	Zn, Cu, Mn & Fe
Malunggay	NPK		C, Mg and NA	Zn, Cu, Mn & Fe
Narra Trimmings	K ₂ O	N, P ₂ O ₅	Ca, Mg, Na, Zn, Cu & Fe	Mn
Neem Tree	NPK		Ca, Mg, Na, Zn. & Cu	Mn, Fe
Rice Straw/Hull	NPK		Ca, Mg, Na, Zn. Cu & Fe	Mn

Department of Science and Technology (DOST)

Firewood Used	Organic Carbon (%)	Alcohol (%)	pH	Sterility
Akle	1.08	0.24	3.49	Sterile
Bamboo	0.32	0.24	3.73	Fungi
Coconut Shell	1.88	0.04	4.47	Fungi
Eucalyptus	1.39	0.24	4	sterile
Ipil-ipil	1.01	0.24	4.5	sterile
Madre de Cacao	0.88	0.48	4.72	sterile
Malunggay	0.32	0.04	4.77	fungi
Narra Trimmings	0.37	0.24	3.38	bacteria
Neem Tree	2.38	0.48	5.47	sterile
Rice Straw/Hull	5.74	0.04	3.77	fungi

Component III



Land Preparation



Mulching



Plotting, Basal Treatment



Planting

Component IV



- a. **Production and Commercialization of Organic Base Vegetables in Selected Areas of CALABARZON (2013-2015).** A Bureau of Agricultural Research (BAR) funded project aiming to reduce the burden of organic vegetable farming in CALABARZON and make them self dependent thus increase income through quality produce and contribute to safe and healthy food security in CALABARZON areas. To date, the project is on the last component which is the assessment and monitoring of organic growers in CALABARZON. A survey was conducted on the following areas: Cavite (Brgy. Esperanza, Alfonso and Daine, Indang); Laguna (Luisiana and Siniloan); Rizal (Teresa and Jala-jala); Quezon (Lucban).
- b. **Community-based Participatory Action Research on Coffee + Vegetable Farming System in Indang, Cavite.** Based on the result of CPAR, the project aims to promote cost effective and improved farming technologies in Barangay Carasuchi and Pulo, Indang, Cavite
- c. **Technology Development and Commercialization of product Lines from Katchamita Mango and other Tropical Fruits.** The proposal aimed to contribute to increase MSME productivity thru technology development and provision of infrastructure and/or to facilitates that would lessen labor cost and increase production per unit of time. To date, among the activities conducted were as follows:
 - Identified beneficiaries of the research study:
 - + Biga Rural Improvement Club and Luksuhin Rural Improvement Clud of Calatagan, Batangas for Katchmita; Mango;
 - + Talibayog Women’s Tomato Special and Baha Rural Improvement Club of Calatagan, Batangas for Tomao;
 - + Kabuhayab ng Kababaihan ng Brgy. Pulo (KKBP) of Indang, Cavite for other tropical fruits, jackfruit, soursop, pineapple and katchamita mango.

- Preliminary talks on counterpart funding
- Barangay profile of identified areas for research (production, area planted, number of producers, etc)
- Coordinated with DOST for product development

d. Value Chain Analysis of Pinakbet Vegetables in CALABARZON. The study focused on production problems, marketing problems and roles and responsibilities of actors can play significant role towards the improvements of the existing marketing system in CALABARZON. This study was proposed to investigate the value chain analysis of major vegetables produced in CALABARZON and would help to fine the weakest link of the chain and to narrow the information gap on the subject.

D.4.c Proposed Researches

Among the proposed researches and conceptualized were as follows with corresponding status as of 1st semester of 2015.

Assessment of Different Control Measures Against Eggplant Fruit and Shoot Borer (<i>L. Costelo</i>)	Submitted to STIARC
Verification on Efficacy of Bio-Organic Solution in Selected Pinakbet Vegetables (<i>V. Mojica</i>)	Submitted to STIARC
Utilization of Wood Vinegar “Mokusaku” Technology as Pesticides/Fertilizer for Selected High Value Fruit Bearing Trees and Plantation Crops in CALABARZON (<i>E. Pugay</i>)	Submitted to BAR for possible funding
Development of Organic Hydroponic Solution for Celery (<i>G. Aure</i>)	Presented, for revision
Utilization of Wood Vinegar as Fertilizer and Pesticide on Black Pepper (<i>H. Cotoner</i>)	Presented, for revision
Off-Season Production of Honeydew Melon under Rain Shelter Condition (<i>A. Andam</i>)	Presented, for revision
Impact Assessment of Rice Banner Program Intervention in CALABARZON (<i>E. Pugay</i>)	Submitted to STIARC
Rehabilitation/Upgrading of DA-CARES 3 rd Floor laboratory, processing and research training center for agricultural crops in Cavite Province (<i>E. Pugay</i>)	Submitted to Sen. Pangilinan
Building Market Access for Organic/Natural Products of CALABARZON’s Farmers and Processors (<i>E. Pugay</i>)	Submitted to MAD Chief
Establishment of Organic/GAP Demonstration Farm in Terra Verde Eco Farm in Brgy. Pantihan I, Maragondon, Cavite (<i>E. Pugay</i>)	Submitted to ORED
Production of Disease-Free Yam Seedling in Aeroponic System (<i>L. Costelo/V.Mojica</i>)	For finalization of Paper

E. Other Activities (2010-2015)

Aside from the regular functions, DA-CARES were also given major task in support to agricultural development in CALABARZON. Among them were as follows:

- Agri-Pinoy Gulayan sa Paaralan Project for NCR and Region 4A.
- Vegetable Production Project at New Bilibid Prison.
- Production and distribution of high quality seeds of open pollinated varieties of selected vegetables
- Promotion of Alternate Food Utilization
- Varietal trial of new pineapple varieties
- Multi-Location adaptability trials of Singapore vegetables: eggplant, okra, pepper and parsley
- Assistance on the Establishment of Quality Plans for “Pinakbet” Vegetables in Support to Good Agricultural Practices (GAP) Implementation in Luzon Cluster
- Attendance to the 17th China International Fair for Investment and Trade CIFIT, 2013
- Serve as Gawad Saka Evaluator Team