Australian Government

Australian Centre for International Agricultural Research

# Final report

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| *Project full title* | Learning alliance approaches to scaling out vegetable value chains in the southern Philippines |
| *project ID* | AGB/2017/039 |
| *date published* | 2/08/2022 |
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| *approved by* | Mr Howard Hall |
| *final report number* | FR2022-021 |
| *ISBN* | 978-1-922787-38-5 |
| *published by* | ACIAR<br>GPO Box 1571<br>Canberra ACT 2601<br>Australia |

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# 1 Acknowledgments

This report represents extensive collaboration of researchers, local government officials, farmers in Southern Philippines over a period of four years, from 2018 to 2022.

The work, however, would not have been possible without the active involvement of the farming community at the project sites in Leyte. We also want to acknowledge numerous buyers that got engaged with the project and made their businesses more inclusive.

We convey our appreciation to ACIAR staff who have been supporting project implementation amidst the pandemic, in particular Mr Howard Hall, the Research Program Manager, and staff from ACIAR Philippines Office.

# 2 Executive summary

The project, “Learning alliance approaches to scaling out vegetable value chains in the southern Philippines” successfully established a farmer-to-farmer learning model. The farmer-to-farmer learning model began with 2-3 farmers and is continuously growing with more than 24 farmers. The farmer-to-farmer learning model was established successfully through demonstration of participatory farmer trials on growing lettuce, field days, farmer field school, farmer training, walk the chain by farmers, collaboration discussions amongst the farmers, building relationship and successful delivery of lettuce to buyers.

The research activity highlights the potential to grow lettuce in Cabintan and Liberty areas in the Philippines to improve smallholder income and women participation in farm business. The challenge faced by the project was farmers’ reluctance to grow vegetables such as lettuce due to the risk associated with crop management and marketing.

Entrepreneurial farmers who were willing to make the change were identified as the nuclear farmer and a buddy system was designed to engage farmers who are willing to follow the nuclear farmer in taking the risk of growing lettuce. Participatory farmer field trials were conducted in nuclear farmer’s fields in the villages. After a successful cycle of lettuce production and marketing, the nuclear farmer identified a follower farmer based on the relationship and trust and in most cases their relatives and friends were selected to meet market demand. The follower farmer followed best practice production of lettuce as advised by the nuclear farmer thereby benefiting both the nuclear farmer and follower farmer. The success of the two nuclear farmers in Cabintan has brought attention to many farmers in their village, particularly their relatives and friends. A farmer network through snowball technique has been established by the two nuclear farmers with a total of 22 follower farmers to share their farmer-to-farmer learning.

On March 15, 2021, 3 farmers from Brgy. Cabintan and 4 farmers from Brgy. Liberty walked the chain with the project team following the standard operating procedures advised by Ormoc City. During “walk the chain” the farmers interviewed a total of 6 different market players: 2 wholesalers, 1 representative of Supermarket, 1 online seller and 2 representatives of restaurants. Farmers discussed their observations with other follower farmers and jointly decided to follow best practices to improve quality and follow a planting schedule to avoid over and under supply. As a result, a planting calendar was developed to sustain regularity of lettuce production that earned an average profit of Philippine peso 56.00 per kg per square meter, with an average selling price of Philippine peso 141.00 per kg which was 67% on an average grower’s share in consumer’s price.

The communication between the traders and growers was strengthened through the project, as farmers improved the quality of lettuce, by post-harvest practices such as wrapping the lettuce with paper to avoid damages, setting a standard quantity limit of lettuce (5kg/ bag), to avoid overpacking and following the schedule set by the buyer for timely delivery. The project team involved the City Agriculture to gain a deeper understanding about important farmers’ issues regarding growing and marketing of lettuce to further support during the pandemic through “*market on wheels*”.

Farmer to farmer learning has continued to help local farmers to understand the benefits and consider following best practices for lettuce production, and for farmers to articulate their current problems and issues in lettuce production and marketing. Farmers claimed that through the project they were able to keep records to understand the income generated through lettuce, negotiate price, sell directly to consumers, or sell online and build social relations and share knowledge. Women farmers were trained on building relationships with buyers, communication and negotiation skills for effective participation in vegetable value chains.

Lettuce Production manual was developed containing best practices in lettuce production and post-harvest handling based on farmer leaders' experience. A video was produced to scale out the concept of nuclear model of farmer to farmer learning and developing market linkages to improve farmer's livelihood. Two follow on projects are being developed through Socio-Economics Research Division of Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) to further apply the learnings derived from this project. The Visayas State University's department of extension will be funded to organize trainings for the City Agriculture technicians on building business models based on farmer-to-farmer learning.

# 3 Background

The Philippines is a predominantly rural society with more than 80 percent of the population relying on agriculture for their livelihood. Agriculture is the primary source of income for rural communities, most of whom depend on subsistence farming and fishing for their livelihoods. Smallholders in Southern Philippines reported floods, Typhoon Haiyan, and extreme weather conditions to be the causes for low vegetable production. Financial problems prevented smallholder farmers from making upfront investments such as purchase of seeds, inputs, transport, irrigation mechanisms, and lack of technical advice resulting in low productivity and product quality. Other reasons include lack of guidance, lack of unity, unpaid loans, and free riders in collective work contributing to low production and income.

The ACIAR project ABG/2012/109 addressed problems associated with limited capacity to produce vegetables in the off-season by employing infrastructure such as protected cropping and irrigation. Limited bargaining power of smallholders with traders and wholesalers and absence of market feedback was also addressed. Solutions for reducing high farm-to-market losses due to poor postharvest practices and inadequate infrastructure have also been explored. The challenges in governing farmer associations such as Cabintan Livelihood Community Association (CALCOA) for agro-enterprise development were addressed. The farmer-to-farmer learning alliance approach improved capitals and livelihoods in CALCOA which could be scaled out to entrepreneurial farmers and other established farmer associations, with Department of Agriculture. The ACIAR project ABG/2012/109 demonstrated that a new approach of farmer-to-farmer learning model was required for farmers to work collectively.

Farmer associations are common in the southern Philippines so that smallholder farmers can access benefits from Government schemes on food security and create easy access to public investments in infrastructure (Batt et al, 2010; Digal & Concepcion, 2007; Montiflor et al, 2010). Most farmer associations own a farming enterprise through communal land and a non-farming enterprise such as sari-sari store to generate revenue for the member farmers. However, the communal farm is left barren or leased out to interested farmers proving the fact that farmers prefer to work individually rather than collectively. Many farmer associations have become dysfunctional after closure of programme facilitation (Briones, 2003). Findings reveal that in the long-run, farmer groups will only survive when there is an appropriate level of trust, confidence and unity; a personal commitment; active leadership; open communication; collective decision making; multiple buyers and abundant institutional support (Digal & Concepcion, 2007).

During the pandemic period in 2020, collective work, meetings, and other gatherings were cancelled per local ordinance. Smallholder farmers were individually looking for ways to sustain their well-being amidst the pandemic, leading to unattended communal farm activities. Also, other income-generating activities of the farmer association, such as sari-sari stores, were affected. As a result, the pandemic added to the already weakly functioning farmer associations to fail to address the food security of the community.

Smallholder farmers were vulnerable during COVID-19 due to limited access to markets, increased difficulty in the transportation of goods, narrowed options in selling vegetables and changes in the distribution channels and prices. These challenges added to the already experiencing problems of high production costs, price volatilities, and climate change that exacerbated heavy rain and typhoons.

The innovative nuclear model of farmer-to-farmer learning developed through ABG/2012/109 allowed farmers to meet their needs individually and to work collaboratively to supply to their customers. The nuclear model development was guided by sustainable livelihood framework with a lot of emphasis on human and social capital of smallholder farmers. Main inputs from other projects were production protocols and postharvest activities to reduce losses in value chains.

# 4 Objectives

The project aimed to understand how entrepreneurial farmers and farmer associations in the southern Philippines can be transformed to self-directed learning entities through developing social and human capitals in developing viable market linkages.

Its objectives were to:

1. Understand capacity of entrepreneurial farmers and farmer association through livelihoods framework with an emphasis on social and human capitals;

2. Develop capabilities and assets of entrepreneurial farmers and one farmer association in communities to support vegetable value chain development;

3. Improve community livelihood from vegetable value chain development through farmer to farmer learning and facilitated by research stakeholders and

4. Recognize women's contribution in horticulture value chains.

The project understands the processes for scaling out learnings through farmers to improve smallholder profitability and sustainability in vegetable value chains.

The project went through variations to modify the objectives and methods during the pandemic years.

# 5 Methodology

The project followed the action research methodology which was underpinned by farmer- to-farmer learning alliance and value chain development. Following action research enabled us to understand past events, present phenomena, particularly the ongoing dynamics of human interactions, as well as future intentions and the forward design of joint development. Entrepreneurial farmers were engaged in a systematic farmer-to-farmer learning alliance exercise, entailing changes in values and frames fostering development. The details of the research methods employed are described per specific research component below.

**Objective 1 - Understand capacity of entrepreneurial farmers and farmer association through livelihoods framework with an emphasis on social and human capitals;**

Focus group discussions (FGDs) and semi-structured interviews were used to understand community characteristics through the livelihood's framework with an emphasis on social and human capitals (Scoones, 1998). The criteria used for selecting participants include: i) vegetable grower, ii) entrepreneurial farmer, iii) willing to participate in the interview, and iv) willing to participate in project activities.

## 5.1 Community Resource Mapping

Community Resource Mapping was conducted to understand the community assets and associated risks for their livelihood.

1. A map of the boundaries of the barangay was drawn on the manila paper.
2. Secondary data on the number of households and their location was mapped.
3. The participants identified the infrastructure in their barangay (like roads, schools, shops, input stores, market, public space, health centre, chapel, recreation, water tank).
   Distance b. frequency of service c. dynamism of the market d. Benefits of the infrastructure d. challenges in access to infrastructure
4. Discuss with the community to draw the production area (individual farms, communal farms, private farms, source of irrigation, land size, topography, agro climatic conditions, types of crops eg. Banana, cassava)
   a. Is vegetables main source of income? b. Number of people involved in vegetable farming (Whether men or women are more involved) c. benefits of vegetable production d. challenges in production?
5. Other economic sites – hunting, logging, fishing, reforestation sites, labourers, commercial trading, eco-tourism sites, protected areas –
   a. Prioritize the major source of income
6. Please mention people's organizations functioning in the barangay
   a. Institution providing assistance b. Private sector participation (fertilizer, seeds) c. contract farming
7. In the last 5 years, occurrence of natural disaster like Yolanda, earthquake, landslides

## 5.2 Focus Group Discussion

Followed by community resource mapping, focus group discussion was conducted to understand the strength and weakness in production, marketing and farmer association.

**Table 1 Focus Group Discussion on production, marketing and farmer association**

| Production | Marketing | Farmer Association (Organizational Development) |
|---|---|---|
| Irrigation | Access to Market | Good leadership |
| Inputs | Quantity/Quality | Delegation of roles (marketing, etc.) |
| Land | Regularity | Linkages (Brgy.LGU, D.A, PMPC, NGO's, |
| Transportation | Market Demand | Regular Meetings (Records, Minutes of the Meeting) |
| Prevalence of pests and diseases | Entry point for new market linkages | Common Fund (Financial Assets and Schemes |
| Cultural practices and management | | Assets (store, post-harvest facilities) |
| Protective structures for year-round production | | Expertise in mrktg. and etc. |
| Nursery | | Registration with accrediting agencies |
| Choice of Crops | | Purpose and Priority |
| | | Involvement (Gender) |
| | | Source of Income |
| | | Level of dependency to mother org. (PMPC) |

## 5.3 Social Network Analysis

Network analysis is a tool that helps analysts to think strategically about the strength and nature of institutional connections in the political landscape. It is a visual method of mapping that "measures" the relationships and interaction between a set of actors/entities (people, groups or organizations) in a community, sector, or industry.

Network analysis tells about:

• The structure of relationships between actors/entities and

• Current relationships before any intervention.

Development interventions are enmeshed in both formal and informal social networks of individuals and organizations, and their aim is to have an effect on the lives of people within, and marginal to, those networks. A network representation of a development program enables a quick

focus on who is influencing whom (directly and indirectly) up to whatever level of complexity is required.
*Bring large sheets of paper and several colour markers. Ask the groups to draw a m*ap the institutions that the community connects.
A dark line is for a strong connection
A double line is for a moderate connection
A thin line is for a weak connection
A dotted line is for a wishful connection .....
A connection needs improvement

Ask probe questions as why they are categorised strong/moderate/weak/wishful/improvement

Part 2. Ask community how they see their connections with institutions to be in the future (next 5 years)

A star for an important connection 

A circle for a moderate connection 

Probe questions Why and How will you be able to develop these connections.

However, the project went through several variations due to the pandemic and modified the group methods to individual methods such as interviews in 2020 onwards.

**Objective 2 - Develop capabilities and assets of entrepreneurial farmers and one farmer association in communities to support vegetable value chain development.**

Motivating small farmers to adopt value chain approach and associated interventions is always a challenge. Normally smallholder farmers are not willing to change their practices or to take any risks. In this project “Walking the Chain” and conducting trial consignments were applied to small farmers (Collins and Sun, 2012). The two participatory action research (PAR) trainings were associated with the value chain approach.

Small farmers from target communities were invited to participate in ‘Walking the Chain’ activity (Collins and Dunne, 2008). Facilitated and supported by the project team, small farmers were involved in the value chain data collection and analysis including what consumers value, what quality issues exist in the chain, and what opportunities were there for them. After value chain analysis small farmers worked with the project team to identify all the possible interventions that can be applied to mitigate the value chain issue. Finally, farmers were required to evaluate all the interventions proposed based on their practical and economic feasibility, possible risk, and management. The final call on which intervention they would adopt was made by the small farmers.

## 5.4 Topic guide to interview Collectors, Wholesalers and Retailers

1.Could you tell us about your business?

Name _____ # of years in Business: _____ Locations of operation: _____

2.Your buyers:

**Table 2 Topic Guide on Communication and expectation of customer**

| Focus | Questions | Responses |
|---|---|---|
| **Communication** | How and how often do you communicate with your major customers? | |
| **Customer's expectation** | Could we look at some of these issues in more detail, for example, your customers' expectations?<br><br>When your customers buy vegetables, in general, what are they looking for? | |

3. The follow-up (probing) questions should provide the necessary data on what factors drive consumer purchasing behaviour of lettuce (specify vegetables) and their relative importance. Care should be taken not to lead the retailer's responses. The process will be repeated for each of the target vegetables.

**Table 3 Topic guide to identify consumer purchasing behaviour**

| Attribute | Relative importance | | | | |
|---|---|---|---|---|---|
| | Vegetable A | Vegetable B | Vegetable C | Vegetable D | Vegetable E |
| Variety | | | | | |
| Freshness of produce | | | | | |
| Blemish Free (Gwapa) | | | | | |
| Chemical Free (Safety) | | | | | |
| Maturity/ Shelf Life | | | | | |
| Form | | | | | |
| Size | | | | | |
| Price | | | | | |
| Reliability of supply | | | | | |
| Others | | | | | |

**Table 4 Meeting Customers' Expectations**

| Focus | Questions | Responses |
|---|---|---|
| **Meeting Customers' Expectations** | Could we now look at how you run your business so that you meet the expectations of your customers?<br><br>Could you describe for us what you do daily to meet the needs of your customers? | |

5.The follow-up (probing) questions should explore what activities the retailer engages in and how these activities contribute to creating value for his customers. In general, these activities relate to how he has the produce required by his customers, available when they need it at a price, they are willing to pay.

**Some of these value creation activities will apply to all produce lines but some may be product specific.**

**Table 5 Creating value for customers**

| What consumers value | What activity contributes to creating consumer value? | Responses/ explanation |
|---|---|---|

| | | |
|---|---|---|
| Product quality (sourcing, handling, storage) | | |
| Product availability (sourcing) | | |
| Price (sourcing, waste control) | | |
| Others | | |

**Table 6 Issues in Meeting Customers' Expectations**

| Focus | Questions | Responses |
|---|---|---|
| Issues in Meeting Customers' Expectations | Could we look at some of the problems you face in meeting your customers' expectations with the onions you sell them (lettuce, tomatoes, atsal, ombok)?<br><br>What are the major problems you face with meeting your customers' expectations when they purchase onions? | |

The follow-up (probing) questions should provide the necessary data on the issues the retailer/middlemen/ encounters when attempting to meet the needs of his customers. Further (probing and specifying) questions attempt to quantify the impact of these issues and the respondent's opinion of possible solutions to his problems.

**Table 7 Analysis of issues and solutions**

| Issue | Cause | Impact | Solution |
|---|---|---|---|
| Product Availability | | | |
| Product quality | | | |
| Waste | | | |
| Supplier/Middlemen | | | |
| Price | | | |
| Transport | | | |
| Government Regulation | | | |

**Table 8 Details of supplier**

| Vegetables | Your major supplier * | Reason for selection of this supplier | Region/province of supplier | Qty ordered /week | Packaging used by the supplier |
|---|---|---|---|---|---|
| Mode of transport by the supplier | Mode/terms of payment | Problems with the quality | What are your suggestions for improvement? | | |

*1. Retailer 2. Wholesaler 3.Collector 4.Individual farmers 5.farmer groups 6. Other

**Table 9 Details of business operation**

| Vegetables | Do you Store veg and how? | No of days of shelf life | What is the % wastage/damage? Reasons | Do you do sorting and grading, if yes how you do it? | If you grade vegetable into good and poor quality, what do you mean by good quality and what do you mean by poor quality? (veg attributes) | What is the price difference between good quality and poor quality? |
|---|---|---|---|---|---|---|
| | | | | | | |

Have your customers complained about the quality of the vegetables you are supplying? If yes, which crop and what is the issue?
Can it be solved? If yes, how and if not why?

**Table 10 Customer's complain about vegetable quality**

| What Vegetables | What Complain | Solved? If yes how? if not, why? |
|---|---|---|
| | | |

What farmers can do to mitigate the problems in the supply chain so that end users can be happy with vegetable quality?

**Table 11 Mitigate problems in the chain**

| Vegetables | What farmers can do? | How? |
|---|---|---|
| | | |

## 5.5 Evaluation of opportunities identified through walk the chain

- Participants are divided into two groups.
- Each group will understand opportunities, issues based on the information shared from the 4 representatives who are involved in the Walk the chain
- Farmers will identify possible interventions that capture the opportunities and issues.
- Prioritize what intervention is practically feasible and what support they needed.

Asking farmer group, the question: Are there any opportunities to improve vegetable farmers' profit by farmer through creating market values (or satisfy what retailers and consumers want)?

If yes, please describe the opportunity and give the reasons.

Evaluate each opportunity proposed by farmers by the following table

Opportunity 1

Opportunity 2

**Table 12 Evaluation of opportunities**

| **Areas** | **What interventions or changes are needed** | **Practical feasibility of proposed intervention** | **Financial feasibility of proposed intervention** | **What support needed for proposed intervention** | **Possible RISK** | **Remarks** |
|---|---|---|---|---|---|---|

| | **for this opportunity** | | | | | |
|---|---|---|---|---|---|---|
| Quality issues:<br>Pests and Disease damages<br>Physical damages due to improper handling<br>Poor post-harvest handling (poor packaging, improper or no sorting/grading<br>Improper hauling | | | | | | |
| Deliver on time (logistic issues, which will affect freshness and shelf life of vegetables) | | | | | | |
| Consistent Supply | | | | | | |
| Volume | | | | | | |
| Cooperation /collaboration between farmers | | | | | | |
| Cooperation /collaboration with chain members | | | | | | |
| Others (please specify) | | | | | | |

*Financial feasibility: Many suggested interventions inevitably incurred extra cost. Farmers have to evaluate if the profit increase from this intervention can cover this extra cost.

Conducting trial consignments with farmers is the key to develop farmers' skills in value chain approach and most importantly to convince farmers of the economic benefit of the interventions applied to the consignment. During each consignment cycle, farmers studied their own actions and experience in order to improve their performance in the next cycle, following an action learning cycle, learning-by-doing through iterations.

To develop an effective business model of farmer groups engaged in production and marketing collectively, the project uses a farmer who conducts the trial consignments as the nuclear farmer for farmer group development. The nuclear farmer selects farmers he trusts to join his group. Using his skills and knowledge in production and marketing developed by the project and using his consignments as a physical participatory training tool, the nuclear farmer takes responsibility to supervise and mentor his group members in production and marketing. The group division will happen when 1) the number of members in the group has increased to the point that the nuclear farmer feels difficulty in supporting them and 2) one member in his group has developed the skills and knowledge to become another nuclear farmer for the group to split.

**Objective 3 - Improve community livelihood from vegetable value chain development through farmer-to-farmer learning and facilitated by research stakeholders.**

Nuclear farmers were identified among the vegetable farmers based on their entrepreneurial ability and willingness to participate in project activities. The nuclear farmers (referred as farmer co-operators) undertook participatory field trials (PFT). The participatory field trials included

variety trials, open field versus protected structure, nursery management practices. The knowledge from PFT was shared with farmers on farmer field day (FFD) to follow best practice to increase value and meet customer needs. In this way the nuclear farmers capacity developed in the vegetable value chain was transferred to the next set of vegetable farmers (first generation) who were identified through a set of criteria from an expression of interest.

Farmer-to-farmer learning transpired between the nuclear farmers and the first-generation farmers. Learning was further expanded to the second and followed to the third-generation farmers which consequently led to the improvement of the quantity and quality of lettuce vegetable production in the community. Farmers Field Day (FFD) was conducted several times to showcase the benefits of value-adding through following 'best practice' of lettuce nursery production and farm management. FFD also raised the farmer participants' interest in following the best practice as advised by nuclear farmers. Moreover, FFD enabled farmers to create networks with other farmers and acquire new and practical information that they can apply in their own production and marketing operations. In addition to the FFDs farmer group meetings were organized by the nuclear farmer which served as a knowledge sharing platform facilitated by the project team.

**Table 13 Knowledge sharing through Farmer Field Day**

| Activity |
|---|
| Arrival |
| Registration/Attendance |
| Prayer and Welcome Remarks |
| Overview of Participatory Field Trial Activity |
| Discussions to emphasize best practice, crop stages and crop management |
| Nursery Management |
| Present Comparative Cost and Benefit Analysis and Buyers Demand on lettuce based on the previous transaction |
| Sharing of farmer co-operators experience |
| Open discussions (raising questions and clarifications) |
| Field Observations |
| Expression of Interest |
| Closing |

**Table 14 Expression of interest form**

| | |
|---|---|
| Name: | |
| Land size: | |
| Land ownership | |
| Land allocation for lettuce crop | |
| State the reason(s) for your interest | |
| Please mention the name of the farmer co-operator you are willing to follow | |

Farmers participating in the field day expressed their interest by completing the above form to work with the leader farmer (Nuclear farmer).

### Objective 4 - Recognize women's contribution in horticulture value chains.

Interviews with male and female vegetable farmers in the project villages were conducted to determine the participation and contribution of women in vegetable production using semi-structured interview guide. Women's involvement in the following activities in the value chain were determined: purchase of inputs, land preparation, production, and marketing. Barriers to women's participation, women's leadership roles, and decision-making involvement were also assessed. Training was conducted to address some needs of the male and female vegetable growers.

**Table 15 Semi-structured Interview guide for Gender Analysis: Women's Contribution in Horticulture Value Chains**

| | Name of the participant: | | | | Date: | |
|---|---|---|---|---|---|---|
| | Land area for vegetable production: | | | | Contact number: | |
| **ACTIVITY** | **A. GENDERED ROLES** | | | | **B. DECISION-MAKING** | |
| | **% Involvement** | | | **Reasons for the distribution** | 1 = My decision<br>2 = Joint decision (final: H)<br>3 = Joint decision (final: W)<br>4 = Joint decision (both gender equal)<br>5 = Males in the HH<br>6 = Females in the HH<br>7 = External factors (e.g. financier) | **Reasons** |
| | Husband | Wife | Others (please specify who? | | | |
| **I. Purchase of Inputs** | | | | | | |
| Land purchase/lease agreement | | | | | | |
| Seed purchase | | | | | | |
| Fertilizer purchase | | | | | | |
| Insecticide purchase | | | | | | |
| Farm tools purchase | | | | | | |
| Others (please mention) | | | | | | |
| **II. Production Practices and Marketing** | | | | | | |
| Land preparation | | | | | | |
| Sowing | | | | | | |
| Transplanting | | | | | | |
| Irrigation management | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Weeding | | | | | | |
| Fertilizer application | | | | | | |
| Pesticide application | | | | | | |
| Trellising | | | | | | |
| Installation of plastic mulch | | | | | | |
| Harvesting | | | | | | |
| Sorting | | | | | | |
| Packaging | | | | | | |
| Transporting | | | | | | |
| Contacting buyers | | | | | | |
| Negotiating with buyers | | | | | | |
| Price information | | | | | | |
| **III. Household management** | | | | | | |
| House building | | | | | | |
| Child care | | | | | | |
| Cooking | | | | | | |
| Laundry | | | | | | |
| Cleaning the house | | | | | | |
| Medical needs of family | | | | | | |
| Children's education | | | | | | |
| Earning income | | | | | | |
| Keeping income | | | | | | |
| Controlling the income | | | | | | |
| Access to credit | | | | | | |
| Who decide on the amount of credit? | Proceed to B. (Decision-making) | | | | | |
| Who decide on the purpose of the credit? | Proceed to B. (Decision-making) | | | | | |
| Who makes major decisions in the family? | Proceed to B. (Decision-making) | | | | | |
| Participation in farmer group/association activities | | | | | | |

| **C. GROUP PARTICIPATION AND LEADERSHIP** | |
|---|---|
| **Questions** | **Explanation** |
| Are you a member of any association/group? What is your position? | |
| Do you have a leadership role in building market linkages in your association/group? | |

| | |
|---|---|
| Who makes major decision in the association/group? | |
| Do members of the farming community seek advice from you to solve farm-related problems? | |
| Have you provided assistance to farmers in your community in terms of:<br>1. Information<br>2. Technical assistance | |
| Do you require approval from your spouse to participate in farmer group/association activities? | |
| Are you comfortable to speak with the buyers? | |
| Are you comfortable to speak in large gatherings like farmer meetings? | |
| Are you comfortable to speak in large gatherings like farmer meetings dominated by the opposite sex? | |

**D. MOBILITY**

| Questions | Explanation |
|---|---|
| Who often travels in your family? How often and how long? | |
| How does your mobility influence your participation in the value chain? | |
| Does information and communication (ICT) like use of mobile phones support participation in the value chain? | |

**E. TIME ALLOCATION**

| Questions | Explanation |
|---|---|
| How many hours per day do you allocate for value chain activities? | |
| Please mention any obligations that restrict you from participating in value chain activities. | |
| How do these obligations influence your decision making related to value chain activities? | |

# 6 Achievements against activities and outputs/milestones

**Objective 1: Understand capacity of farmer associations through livelihoods framework with an emphasis on social and human capital.**

| No. | Activity | Outputs/ Milestones | Completion date | Comments |
|---|---|---|---|---|
| 1.1 | 1.1 Focus group discussions to understand community capitals with emphasis on social and human capitals using sustainable livelihood framework. | Report on all 5 capitals with emphasis on social and human capital.<br><br>1. A report on **Social Network Analysis (SNA)** through **FGDs** across different project sites:<br><br>- 1 in LUFA (Oct 5, 2019)<br>- 1 in GALFA (Oct 6, 2019)<br>- 1 in SICAVFA (Oct 8, 2019)<br>- 1 in LIVEFA (Nov 11, 2019)<br>- 1 in CAFA (Oct 29, 2019)<br><br>2. A report **on Community Resources** that identifies physical and environmental resources and **VC Criteria/ Situation Analysis** that identifies human and financial capitals<br><br>Attachments:<br><br>Appendix 1. Consolidated Activity Report on Social Network Analysis of all project sites<br><br>Appendix 2. Consolidated Activity Report on Community Resource Mapping and Situation Analysis of all project sites | December 2019 | Social Network Diagramming and Community Resource Mapping with Value Chain Situation Analysis were conducted through FGDs in Brgy. Cabintan, Brgy Liberty and Brgy. Gaas, Ormoc City.<br><br>A planning workshop was conducted to develop the methodology for Resource Mapping and Value Chain (VC) criteria/ situational analysis. FGD guide questions were formulated.<br><br>Number of FGD participants for the SND and community resource mapping,<br>LUFA: 2 male, 5 female<br>GALFA: 4 male, 6 female<br>SICAVFA: 4 male, 5 female<br>LIVEFA: 5 male, 5 female<br>CAFA: 2 male, 4 female<br><br>Appendix 3. contains the Consolidated Project Instruments and Guide Questions. |

Final report:

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| 1.2 | Semi-structured interviews with key informants in the value chain and community to assess pathways to livelihood adaptation and outcomes addressing vulnerability and shocks (5 interviews per site, i.e. 5x2=10 semi-structured interviews). Using snowball technique, key informants in the community and value chain were identified for an interview. | A report on pathways to livelihood adaptation and outcomes addressing vulnerability and shocks<br><br>Appendix. 4 A report on A Qualitative Assessment of COVID-19 Shock to Smallholder Vegetable Growers in Ormoc City, Philippines | May – June 2020 | Number of respondents:<br>12 farmers, 1 LGU, 5 market players.<br><br>Due to Covid-19 restrictions, mobile phone interviews were used in data collection<br><br>Initial results show that marketing activities were greatly affected by the pandemic.. Farmers face price fluctuations and uncertainty in the volume and type of vegetables bought by succeeding market players. Surprisingly, farmers mentioned that their daily routines were unaffected. |
| 1.3 | Review farmer-to-farmer learning models from literature and reports. | Review and report on learnings from learning alliance. | June 2021 | Completed<br>Peer to peer learning was simulated in an interactive and flexible approach.<br>Appendix Review & observations on farmer to farmer learning Model<br>https://drive.google.com/file/d/1Db6k2MaourkEz-Zimikmectx0qhSEn3B/view?usp=sharing |

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| 1.4 | Document in detail outcomes and implications of reviews, consultations and findings from Activities 1.1, 1.2 and 1.3. | In conjunction with Objective 1.1<br><br>Appendix 1. Consolidated Activity Report on Social Network Analysis of all project sites<br><br>Appendix 2. Consolidated Activity Report on Community Resource Mapping and Situation Analysis of all project sites<br><br>Report on pathways to livelihood adaptation and outcomes addressing vulnerability and shocks<br><br>Appendix 4. A report on A Qualitative Assessment of COVID-19 Shock to Smallholder Vegetable Growers in Ormoc City, Philippines<br><br>Reported on Women's Participation and Leadership Barriers to Participation<br><br>Reported on Development of Human and Social Capitals | May – June 2021 | Completed |

*PC = partner country, A = Australia*

**Objective 2: Develop capabilities and assets of entrepreneurial farmers in communities to support vegetable value chain development.**

| No. | Activity | Outputs/ milestones | Completion date | Comments |
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| 2.1 | Conduct farmer learning activities:<br><br>Participatory Field Trials in each season (1 per season in 1 site ie 1x2x2=4 trials) to improve farmer vegetable production capacity;<br><br>Farmer Field Schools (1 site 4 crops ie 1x4 farmer field schools);<br><br>Post-harvest Training ( 2 trainings);<br><br>Financial Literacy and Record Keeping training (1 training module for a period of 3 months);<br><br>Leadership training ( 1 training module for a period of months); | 4 Participatory Field trials<br><br>Appendix 5. Consolidated report of Participatory Field Trials<br><br>Appendix 6. Consolidated Report of the Farmers Field Day<br><br>4 Farmer Field Schools and Post Harvest Training<br>Appendix 7. Report on Farmer Field School<br><br>1 Financial Literacy and Record Keeping Training<br>Appendix 8. A report on Farm Business Literacy Training<br><br>1 Leadership Training<br>Appendix 9.A report on Communication and Leadership Training | August 2020<br><br>March 2021<br><br>August 2021 | Highlights:<br><br>**1. Participatory Field Trials (PFT) in Cabintan, Ormoc City.**<br>- PFT started with one young farmer. His success was shared to 26 other farmers willing to participate in lettuce production through participative learning trials.<br>- This was the first time for all 26 farmer co-operators to produce Romaine lettuce in an open field area and market their produce.<br>- Initially, the project funded the seeds for the first production trial. After sharing the results, farmers financed their own production and the succeeding cropping.<br>- Lettuce production was organized, and a planting calendar was developed to sustain regularity of production.<br><br>- Average yield/ $m^2$: 0.67kg<br>- Average cost/ $m^2$: PhP38.00/kg<br>- Average producers selling price: PhP 141.00/kg<br>- Average Profit earned/ $m^2$: PhP56.00/kg<br>- Average Producer's Share in Consumer's Price: 67%<br><br>Post-Harvest:<br><br>-To improve the quality of lettuce, farmers used paper to wrap the lettuce for selling. This intervention was also suggested by the traders in order to avoid damages on the leaves during packing and delivery. This resulted in a lesser percentage of rejection and losses.<br><br>Marketing:<br>- During the pandemic, farmer co-operators were engaged in various marketing activities to sell their produce such as online (facebook) marketing, market on wheels (in partnership with City Agriculture office), and direct selling to HRIs.<br>- Farmer co-operators were linked to new buyers including HRIs, primary wholesalers, and various retailers.<br>- Farmers had an increasing interest to produce lettuce over other crops because of market price, demand, and income returns.<br>- There was an increased understanding of varietal preference based on the market feedback.<br>- Market quality standards and preference were identified through direct communication and engagement with buyers.<br><br>New knowledge and skills acquired:<br>- Record keeping<br>- Market negotiation<br>- Direct selling<br>- Lettuce seedling production<br>- Online selling<br>- Social relations and knowledge sharing<br><br>**2. Farmers Field School (FFS) training in Liberty, Ormoc City.**<br>- Completed the FFS modules covering the following topics with the number of participants:<br><br>● Module 1: Importance of Vegetables, Seedling production, vegetable grafting; 19 participants<br>● Module 2: Transplanting, irrigation, fertilizer application, trellising;16 participants |

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| | | | | ● Module 3: Crop maintenance, control of pest and diseases; 14 participants and<br>● Module 4: Harvesting and Post-harvesting; 13 participants<br><br>-This training was conducted face-to-face following the Inter Agency Task Force (IATF) safety protocols in line with the COVID-19 situation imposed by the Local Government of Ormoc, City.<br><br>- Established demonstration farm (816m$^2$) for practicum exercises, planted with tomato, sweet pepper, bitter gourd, and Romaine lettuce.<br>- Installed one low tunnel structure (1m width x 10 m length x 0.61m height)<br>- Identified two commercial farmers who were willing to adopt their learnings in their own fields.<br>- Farmers acquired new skills and knowledge on vegetable production cultural practices such as: appropriate fertilizer application, pruning, and trellising, drenching, appropriate identification and differentiation of plant pests and diseases, and proper installation of plastic mulch |

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| 2.2 | Conduct Walking the Chain with entrepreneurial farmers (from 2 sites to jointly observe and to conduct interviews with actors in the chain);<br><br>and inform other fellow farmers at 2 sites to jointly make decisions. | Report on farmer association's decisions.<br><br>Appendix 10. After Activity Report- Walking the Chain & Consumer Value Workshop (CAO Office) | March 2021 | Highlights:<br>**Walk the Chain (WTC) Activity**<br>- Conducted last March 15, 2021 with 3 selected participants from Brgy. Cabintan and 4 participants from Brgy. Liberty, Ormoc City<br>- interviewed 6 different market players: 2 wholesalers, 1 representative of Supermarket, 1 online sellers and 2 representative of restaurants<br><br>Results:<br>- Farmers acquired direct information from the buyers related to: Identification of types of vegetables required (lettuce), volume demanded, quality sought, prices paid, sources, seasonality, competitors/ suppliers, and market challenges/issues/ opportunities.<br>- VSU team conducted feedbacking and reflective exercise with farmer- participants after the WTC activity, and developed a chain map indicating the following: (1) customer's value, (2) primary issues faced by different market players in meeting customer's value, (3) barriers in meeting the value sought by the customers, and (4) problem analysis.<br>- Results of WTC activity were also shared by the farmer-participants to their respective farmer association and groupings last March 25, 2021, attended by 14 farmers in Brgy. Liberty and April 6, 2021, attended by 9 farmer co-operators in Brgy. Cabintan, Ormoc City.<br>- |

<table>
<tr>
<td>2.3</td>
<td>Conduct market orientation among entrepreneurial farmers to understand consumer value and to plan to become a preferred supplier.</td>
<td>Appendix 17. Report on market orientation</td>
<td>April 2021</td>
<td>The VSU team conducted Evaluation of Intervention Activity on April 6, 2021 in Brgy. Cabintan with 9 participants and on April 30, 2021 in Brgy. Liberty with 13 participants.<br>- This activity was conducted to identify the interventions feasible to the farmers to address the identified market issues during the conduct of WTC activity.<br>- Interventions identified by the farmers includes the following:
<table>
<tr><th>Issues</th><th>Intervention Identified</th><th>Remarks</th></tr>
<tr><td rowspan="3">Quality Issues (production and post-harvest level)</td><td>Used paper cutter for efficiency (provided by the project)</td><td>Already practiced by the farmers</td></tr>
<tr><td>Developed a standard guide with pictures of lettuce following existing buyers quality reference</td><td>Already Followed/ practiced by farmers</td></tr>
<tr><td>Set a standard quantity limit of vegetables packed per bag to avoid overpacking.<br>(5kg/ bag)</td><td>Already Followed/ practiced by farmers</td></tr>
<tr><td>Delayed delivery of products to market</td><td>Set regular delivery schedule following the schedule set by the buyer</td><td>Practiced</td></tr>
<tr><td>Inconsistent supply and volume</td><td>Developed planting calendar</td><td>Already implemented</td></tr>
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| 2.4 | Develop implementation plans for value chain improvements to improve the net incomes of smallholders and follow up on the value created along the chain | Report on the outcome of value chain improvements. | May 2021 | In conjunction with objective 2 and 3.<br><br>Plans/interventions introduced and Outcome:<br>Participatory Field Trial:<br>- Identified additional crop (lettuce) suitable for production and marketing<br>- Encourage farmers to participate<br>Facilitate Farmer-to-Farmer Learning Approach:<br>- Facilitated extension services to spread effective and efficient farming practices and improve farmers' capacities.<br>- Knowledge sharing<br>- Facilitates coaching and mentoring.<br>- Resource mobilization<br>- Encourage leadership<br>- Build social relationship (trust, communication, coordination, respect, cooperation, etc)<br>Walk-The-Chain, Identification of market issues and opportunities:<br>- Identified buyers and established market linkages<br>Farmers Field School:<br>- Conducted trainings that will enhance production knowledge and skills of the farmers<br>Regular monitoring and field facilitation<br>- Enhances feedback.<br>- Regularization of monthly meeting and "pintakasi<br><br>Scheduling of planting among the farmer co-operators in Cabintan to avoid oversupply |

*PC = partner country, A = Australia*

## Objective 3: Improve community livelihood from vegetable value chain development through farmer-to-farmer learning facilitated by research stakeholders

| no. | activity | outputs/ milestones | completion date | comments |
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| 3.1 | Entrepreneurial farmers to form a learning group in Cabintan and Liberty as a farmer- to-farmer learning group. | Report on farmer- to-farmer learning group.<br><br>Appendix 11. Network of Influence Diagram | August 2020-21 (progressive) | Stage 1: Formation of Nuclear Farmer<br><br>The team initially conducted 2 PFT to 2 selected nuclear farmers in different sitio within Brgy. Cabintan to engage in open field lettuce production.<br><br>After the 1st cropping cycle, learnings on production and marketing were then shared to "farmer followers" within the community.<br><br>Selection of "farmer followers" followed the following guidelines:<br><br>Can be a family member, relatives, neighbour, or friend of the "nuclear farmer" that is willing to learn from the experience of the nuclear farmer.<br>The nuclear farmer must select at least 3 farmer- followers that he/she<br>Selection of Farmer Leader(s)<br>Selected 2 farmer leaders (nuclear farmer) within Brgy. Cabintan (1 male; 1 female)<br>Completed 1 cropping cycle of lettuce production trial in open field.<br>Linked with a new market outlet: samgyupsal (restaurant), online seller, and wholesaler.<br><br>B. Formation of the Farmer Group(s)<br>- 2 groups were formed. (Group 1: 2 members; Group 2: 8 members)<br>- All of them agreed to have a monthly meeting every 1st Tuesday of the month.<br>- During meetings, these 2 groups all together meet to plan and discuss their next activities; share production and marketing experience and consult other group members for production improvements.<br>- Key points discussed during meetings includes:<br><br>Production challenges (pests and diseases, environmental effects on production, inputs to be used, etc.)<br><br>Marketing opportunities, quality standards, and price settings<br><br>Delivery schedules, transportation<br><br>Payment and saving scheme.<br><br>- Aside from their regular |

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| | | | | meetings, farmer leaders coach their farmer members, render farm visits across member's fields, and employ direct communication with one another.<br><br>Farmer-to-farmer Scheme<br><br>- Generally, it links farmers to allow them to operate interactively. It is a way for the farmers to teach each other the important production and marketing concepts and information.<br>- Farmer (nuclear) begin by working alone, next they collaborate with other farmers and form a group eleven farmers |
| 3.2 | A learning agenda based on action research will be planned for each season and observations will be made in field reports, reflections to be recorded during meetings for emergent adjustments in practice with respect to market signals (Learnings documented every crop cycle). | Report on learnings from farmer to farmer learning group and analyse farmer benefits<br><br>Appendix 12. Compiled Agenda of Activities<br><br>Appendix 13. Consolidated Farmers Reflection of the Activities | August 2020<br>November 2020<br>February 2021<br>June 2021 | Reflections:<br>Farmer reflections:<br>- planning the production based on buyer's demand,<br><br>farmers did not just grow together to supply consistently but also to avoid over and under supply through crop scheduling. |

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| 3.3 | Conduct meetings with farmers, researchers, govt officers to scale out (1 meeting) and scale up (1 meeting) results of VC initiatives to improve community livelihood. | Report on scale out and scale up activities.<br><br>Appendix 14. Consolidated Monthly Minutes of the Meeting_Farmer Cooperators | August 2021<br>October 2021 | Conducted 4 farmer field day activities in Brgy. Cabintan, first at Angelo's Field , second was at Bebith's Field, the activity attracts 7 interested farmer learners to join the PFT through sharing of learnings and experiences of the farmer co-operators<br>- 2 farmer leader has finished 2 production cycle<br>- (5 )first generation farmer follower has also finished 1 production cycle<br>- (5) second generation farmer follower, currently, has an going production<br>Scale-out<br>- Snowball process through the nuclear farmers<br>- Sharing the success of Cabintan to Liberty<br>- 2 Farmer Field Day in Brgy. Cabintan (Bebith's Field, Angelo's Field)<br><br>Scale-up<br>- Presenting the results of FFT to City Agriculture, and the CA is supportive of selling the produce through the market on wheels.<br>-<br><br>Report---on linkages and support provided.<br>Walk the chain-invitation of participants/venues.<br>Market on wheels-market tie up.<br>Monthly meeting- Cabintan (Jan-May)<br>Monthly meeting- Liberty |
| 3.4 | Participatory methods such as resource mapping, community timelines, social network diagramming and focus group discussion (1 in each site) to identify perceptions of community livelihood and | Report on community perceptions on community livelihood. | August 2020 | Completed |

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| 3.5 | Collaborative journal article writing. | Appendix 15. Publication "A Qualitative assessment of COVID 19 shock in Ormoc City Philippines" | December 2020<br><br>June 2021<br><br>November 2021 | Submitted the manuscript, "A Qualitative assessment of COVID 19 shock to smallholder vegetable growers in Ormoc City, Philippines" to Review of Socio-Economic Research and Development Studies and to Springer's Journal Agriculture and Human Values. |

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**Objective 4: Recognize women's contribution in horticulture value chains.**

| No. | Activity | Outputs/ milestones | Completion date | Comments |
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| 4.1 | Conduct individual interviews with entrepreneurial men and women to identify barriers to women participation in horticulture value chains (up to 20 participants) | Appendix 18. Report on barriers to women participation in horticulture value chains. | August 2020<br>June 2021 | Conducted interviews to identify gender roles and decision making on April 7-11, 2021 with the following respondents:<br>- Brgy. Cabintan: 2 male and 6 female<br>- Brgy. Liberty: 2 male and 11 female<br><br>Results:<br>Membership in Farmers' Association (FA)<br>- 13 of 7 females and 2 of 4 males were members of the FA because they were interested to attend the activities and gain access to government services and support,<br>- 3 females were not FA members because they did not want to experience the hassle of attending meetings and participating in cooperative work and other activities. They focused on their domestic responsibilities.<br>- 1 female was interested to join the FA but her husband would not allow her to.<br>- On seeking approval from the spouse to participate in FA activities, 13 females sought approval from the husband to avoid conflict and misunderstanding and as a sign of respect. One wife did not ask permission from her husband because she could decide on her own, while another wife said she did not ask permission from her husband because he might not allow her to join association activities. Meanwhile, the four males did not give any reason why they did not seek approval from their wife to attend FA activities.<br>Leadership and Decision Making Roles in the FA<br>- 10 females were officers. They were aware of their responsibilities.<br>- 3 females were members and they were familiar with their responsibilities toward the association.<br>- 7 females and 3 males believed that major decisions were made by the president. 6 females said that the president made final decisions after consulting the officers and members. 1 female said that decisions were agreed upon by the members.<br>- 3 female leaders had a leadership role in building market linkages. They made decisions on selling their produce. 11 women and 2 men relied on the president and other officers to make marketing decisions.<br><br>Leadership Roles in Farming<br><br>- 9 females and 1 male, having experienced vegetable farming for commercial trade, tried being consulted by other farmers on production techniques.8 female and 3 male respondents did not experience giving advice to others.<br>- 13 females and 1 male experienced giving assistance to other farmers such as production techniques and market information.<br><br>Communication Skills<br>- 5 females were comfortable talking to buyers of their vegetables as it was necessary to do so, while 2 females felt shy and let other family members do the talking. All the 4 males were comfortable talking with the |

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| | | | | buyer, with one of them saying that he nonetheless delegated the task to his wife.<br><br>- 9 females and 2 males felt comfortable speaking to large audiences like meetings owing to their experience in attending trainings and similar activities. The remaining number felt uncomfortable speaking to large audiences but they hoped to develop the skill over time. Two males felt shy as they were still new to the association.<br>- 9 females and 1 male felt comfortable speaking in large gatherings dominated by the opposite sex because it was necessary to speak out their mind, and the women said that men are harmless and belong to the community anyway. 8 females felt shy and feared that they might be mocked by men if they made mistakes. They also felt uneasy if the gathering was dominated by males. 3 males also said that they were not confident speaking at large gatherings dominated by females.<br><br>Mobility<br><br>- 8 females did not travel often and relied on the husband or family members to purchase household and farm needs. 6 female respondents, who were mostly single, said they could travel to the city if they had money. 3 females said that both husband and wife travelled to the city to purchase their needs.<br>- 11 females and 1 male were mobile. This influenced them to gather market information, observe what vegetables are demanded in the market, canvass and buy farm inputs, and find an opportunity to market their own produce. 2 females said that because of their mobility, they can no longer monitor their farm. 4 females and 3 males did not travel as they focused on their farm activities.<br>- All male and female respondents perceived mobile phones as very useful especially when contacting buyers and gathering price information from buyers and other farmers in the community.<br><br>Time Allocation for Value Chain Activities<br><br>- 9 females spent 7-10 hours for 5 days a week. 7 females allocated 2-6 hours daily as they had household chores to perform and children to take care of. The males said they allocated a maximum of 8 hours daily for value chain activities.<br>- 12 females and 1 male perceived their value chain obligations as affecting their participation in field activities. They could no longer monitor their fields and assist their husband in the field which caused delays in farm works. They also could not immediately attend to the damaged crops. Nonetheless, these obligations such as attending meetings, training and seminars also help them improve production practices and learn new production techniques.<br>- 4 females and 3 males did not mention any obligation that influenced their decision making related to value chain activities. |

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| | | | | - On changes they wished on gendered roles, 13 females and the 4 males were already content with the existing arrangement regarding their gendered roles. 4 females desired changes such as the ability to work full time in the field, husband and son helping in the field, and husband not relying on the wife to make decisions. |
| 4.2 | Conduct gender mainstreaming and follow up workshops to address barriers identified in 4.1 (1 gender mainstreaming workshop and 1 follow up workshop) | Report on Gender mainstreaming.<br><br>Appendix 8. Report on Communication and Leadership Training<br><br>Appendix 9. Report on Farm Business/Financial Literacy Training | October 28, 2021<br><br>November 29, 2021 | Conducted trainings to build the capacity of women in leadership, communication and record keeping for them to participate in the VC<br><br>- Communication and Leadership Training<br>Participants:<br>Cabintan, Ormoc City: 6 male & 8 female<br>Liberty, Ormoc City: 1 male & 5 female<br><br>- Farm Business/Financial Literacy Training<br>Participants:<br>Cabintan, Ormoc City: 6 male & 7 female<br>Liberty, Ormoc City: 1 male & 4 female |

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# 7 Key results and discussion

**Objective 1. Understand the capacity of entrepreneurial farmers and farmer association through livelihoods framework with an emphasis on social and human capitals.**

**1. A. Farmers Capacity**

The report on Community Resource Mapping and Social Network Diagramming (Appendix 1 and 2) reports on community's assets and environmental resources that support their vegetable production enterprise. In general, it provides an overview of the community characteristics. It also illustrates and discusses the social network and linkages of the community to various stakeholders that support farming communities' access to production, marketing, education, finance, and others. In general, this report enabled us to obtain a holistic picture of the community and understand farmers' situation on production, marketing, and organizational development aspects. Community resource mapping is sometimes referred to as asset mapping or environmental scanning. Mapping out the community in the selected site helped identify the resources available within the community and the challenges and opportunities posed by these resources. Identifying resources helps create and build capacity to support a more comprehensive community system for serving the farmers. The main implications of the Community Resource mapping and its network analysis for vegetable producers are summarized below.

***Barangay Gaas.*** The barangay has sufficient natural and physical resources to sustain agricultural production, which is the community's principal source of income. Streams and vegetative soil can be found there. Traditional farming practices are used on most farms, cultivated on an open field. Due to the various groups performing initiatives, knowledge sources in vegetable production are widely available in this farming community. However, due to financial constraints, Gaas Farmers Associations (GAFA) could not adopt new technologies. They do, however, have access to a market where growing more vegetables is not a problem. The community is not isolated because it has reliable access to essential services like water and electricity. Social Net Work diagram's findings also revealed that they had positive interactions with various organizations. The organization has ties to other organizations and receives funding from them. However, the organization continues to rely on donations from outside sources. We can observe from their actions that they have no internal initiatives other than volunteer work "pintakasi" and that much of their activity is based on programs introduced by other groups. The massive influx of aid during the recent disasters may have contributed to them becoming passive aid recipients. This indicates a lack of organizational capability. This indicates that members have a low level of organizational ownership. For them, membership is merely a means of gaining access from aid programmes.

However due to the pandemic, Gaas Farmers Associations (GAFA) was not functional and did not participate in the project.

***Barangay Cabintan***. Cabintan is one of Ormoc City's 110 barangays. It is situated on the city's north-eastern outskirts, at 2,750.6 feet above mean sea level (www.philatlas.com). The barangay is 21 kilometres from the city centre and is accessible by a jeepney. It has nine sitios that are categorized as protected areas under the jurisdiction of the Energy Development Corporation (EDC), a geothermal firm, and are placed on a slightly sloping plain with a total area of 277 hectares. Cabintan's primary source of income is farming. In fact, 107.42 ha of land, or nearly 40% of the total land area, is devoted to agriculture. Farms can be found everywhere in the barangay; some are close to residential areas, while others are two kilometres away or more. Women are also involved in farming and play a role in deciding which crops to grow during the seasons.

Cabintan is known for growing vegetables with market outlets within Region 7 (Central Visayas) and Region 8 (Eastern Visayas). However, vegetable growing is difficult from November to January due to the high rainfall and typhoons. Cabintan's weather is wet (February to June) and very wet (July to January). An average of 10 to 15 storms strike the Philippines each year. Sandy loam is the most common soil type in Cabintan, whereas volcanic soil with a pH of 3.5 to 5.6 is the parent material. Cabintan gets its irrigation water from the Buro-buro and Mag-aso Falls, and household water from the Ormoc Waterworks System Administration (ORWASA). Drinking water is stored in water tanks in some homes. The barangay has several tourist attractions. The Tres Aguas, Heaven's Peak, Hot Spring, Alto Peak, and Sulfatara or Lake Janagdan are the names of the peaks. The barangay has the following infrastructure: barangay hall, barangay health centre, gymnasium or covered court, elementary school, secondary school, chapels, and postharvest facilities or multipurpose building owned by CAFA. In addition, Cabintan has two tramlines located in Purok 1 and Sitio Catmonay, provided by the Ormoc City Agriculture Office (CAO). CAFA operated the tramline in Purok 1, but it is presently non-functional and needs repair.

***Barangay Liberty.*** The barangay is situated at the end point of Ormoc City (south-eastern part) and is a popular adjacent point for Waray areas, approximately 11.0166, 124.7501, in the island of Leyte. Elevation at these coordinates is estimated at 754.1 meters or 2,474.1 feet above mean sea level. Being the farthest barangay from the city proper, it has a disadvantage over nearby barangays in commercial, transport, and recreational facilities. It is one of the barangays that are far from a convergence point for business people, traders, civic groups, and industrialists.

With a total land area of 1,996.53 hectares, Barangay Liberty is a warm-cool upland rural village located 34.991 kilometres east of the city centre. In the barangay, forest areas are the most common land use. Liberty has a total land area of 261.281 hectares set aside for alienable and disposable land. Groundwater and springs are the primary water sources for community water supply systems. In addition, the community members constructed a surface water impounding facility, and they also use tanks and pipelines in main distribution areas connected to water reservoir facilities located in Puroks 1 and 7. In addition, Barangay Liberty is engaged in small-time commercial fishing and or subsistence farming, acquiring irrigation from tributaries of Panilahan River, Mahun-ag River, and Dalid River. The barangay is located 34.991 km from the city proper. It is accessible by land transportation. Community members use public jeepneys as their primary mode of transportation. Other vehicles used for transportation include private vehicles such as motorcycles and multicab. It takes three to four hours of travel time to reach the barangay. The primary public utility jeepneys also traverse two more barangays to drop off passengers in Barangays Lake Danao and Gaas before reaching Barangay Liberty. There is only one jeepney trip servicing the barangay, which is a major constraint of the producers to bring their produce to Ormoc Market. Farming is the main source of livelihood in the area. Few also work for construction sites or laborers in other farms. The community is majorly protected forest land. Still, most of the residents in the barangay have farmland planted with different types of vegetables, banana, and root crops such as gabi, sweet potato, and cassava. Operating a small sari-sari store is a significant merchandising activity in the area.

**Stakeholders Mapping and Analysis**

Farmers and other community members engage with one another in the process of vegetable farming to meet a variety of needs, including gaining advice on production and post-harvest practices, market requirements and prices, finance sources, and financial management tactics, among others. Through the conduct of social network analysis, the relationship of the farmers and community members to various organizations was identified. The table below presents the degree of influence and level of importance of each stakeholder to scale-out smallholder profitability and sustainability in vegetable value chains.

**Table 16 Stakeholder Mapping**

| Level of Importance | | |
|---|---|---|
| | **High importance and Low influence stakeholders** | **High importance and High influence stakeholders** |
| | EDC (Energy Development Cooperation)<br>DOLE (Department of Labor and Employment)<br>BIR (Bureau of Internal Revenue)<br>East-West Seed Company<br>LAMAC (Lamac Multi-Purpose Cooperative)<br>VSU (Visayas State University) | City Agriculture Office |
| | **Low importance and Low influence stakeholders** | **Low importance and High influence stakeholders** |
| | DENR (Department of Environment and Natural Resources)<br>DPWH (Department of Public Works and Highways) | LGU (Local Government Unit) |
| | **Level of Influence** | |

## Conclusion and Recommendation

Thorough understanding of the farmers' perceptions on their community characteristics was established through discussions. Enforcing characteristics such as abundant water source and supply, available area of production, soil, and climatic condition to support vegetable production was identified as drivers of agricultural undertakings in the community. Natural and physical resources are an opportunity to sustain agricultural production in three barangays such as availability of streams, rivers and healthy soil conditions, among others. However, being isolated, Barangay Liberty has lack of transport, poor road condition, remote location, poor access to phone and internet receptions, and distant from market as the limiting factors to farmers' vegetable production enterprise. While Barangays Cabintan and Gaas are relatively situated in closer distance and have access to transportation and markets, these also have better access to communication facilities and other farm structures. Participants concluded that bad weather conditions highly affected their crop production. Although rain serves as one of the major source of irrigation, too much rainfall, however, damages their crops and consequently results in poor yield.

*Pintakasi* or unpaid and voluntary works were employed by association members across sites and were considered as opportunities for collective development. Low prices of vegetables and inability to command higher prices due to suppliers' poor bargaining power are also identified across the sites. It is further concluded that farmers, especially in Barangay Liberty, lack skills in production and pest and disease control management, hence, the need for capacity building especially on technical support.

Aside from farming, men are engaged in construction projects, or tricycle driving. Women help men in farming or are hired as farm workers while also doing household chores and caring duties. In this case, demand for domestic work and care limits women's participation in production activities and paid work. Identification of gender roles and their barriers to and opportunities in participation in the vegetable value chain is part of this project. Also, women generally take the minutes in association meetings and rarely contribute to the discussions leading to key decisions. Training to improve leadership, communication and vision are identified among the associations in all sites. Social Network Diagram also revealed that farmers have positive interactions with various organizations in varying influence and level of relationship. The organizations were unable to support members in production, marketing and finance thereby, a need for a model to provide such support was reported.

**Objective 2. Develop capabilities and assets of entrepreneurial farmers and one farmer association in communities to support vegetable value chain development.**

**Walking the Chain Result:**

This activity covered a variety of vegetable value chain businesses. Farmers were able to increase their awareness of the vegetable production and selling system through key informant interviews, observation, and group discussion. Farmers were also taught how to utilize the value chain method to analyse a production and marketing system, as well as how to use value chain analysis to find potential for productivity and efficiency improvements that benefit small-scale vegetable growers.

Participants in the 'Walking the Chain' initiative were small farmers from Cabintan and Liberty. Following the value chain analysis, small farmers collaborated with the project team in data collection and analysis of customers value, quality challenges that exist in the chain, and what opportunities were available. Following the value chain analysis, small farmers collaborated with the project team to identify all viable actions to address the value chain problem. Finally, farmers assessed all the proposed interventions in terms of their practical and economic feasibility, potential risk, and management. The small farmers made the ultimate decision on which intervention to implement. Tables 17 to 18 summarises the focal points tackled during the workshop.

**Table 17 Value Creation Cabintan farmer group**

| What do CONSUMERS value? | What do RETAILERS value? | What do WHOLESALERS value? | What do VIAJEDORS value? |
|---|---|---|---|
| **Leafy**<br>· Visually attractive appearance<br>· Fairly clean and tender<br>· Practically free from damage caused by pests<br>· Practically free from damage (bruises, cut, discolorations)<br>· Intact, fairly well-formed<br>· Fresh in appearance<br>**Fruit**<br>· Similar varietal characteristics<br>· Mature (not overripe)<br>· Fairly clean, well-developed, and smooth<br>· Free from decay, damages, injury or misshapen<br>· Reasonably well formed | · Freshness of the product<br>· Longer shelf life<br>· Consistency in delivery/supply<br>· Availability of different crops aside from lettuce (assortment of supplies)<br>· Proper classification of vegetables according to maturity, sizes, variety, form, etc.) | · Visual attractiveness of the products<br>· Practically free from damage (bruises, cut, discolorations)<br>· Consistency in delivery/supply<br>· Affordable price<br>· Appropriateness of packaging used to avoid damages and losses during transport<br>· Intact<br>· No moisture for leafy vegetables to minimize deterioration<br>· Proper classification of vegetables according to maturity, size, variety, form, etc.) | · Visual attractiveness of the products<br>· Specific variety<br>· Longer shelf life<br>· Affordable price<br>· Appropriateness of packaging used to avoid damages and losses during transport |
| **What do RETAILERS do to create consumer value?** | **What do WHOLESALER do to create consumer value?** | **What do VIAJEDORS do to create consumer value?** | **What do FARMERS do to create consumer value?** |
| · Checking of the product before delivery to ensure quality assurance | · Checking of the product before delivery to ensure quality assurance | · Maintenance of communication among suppliers and buyers to identify market | · Spraying of fungicide seven days before harvesting to preserve the quality of the vegetables |

| | | | |
|---|---|---|---|
| · Removal of outer damaged leaves<br>· Proper classification of vegetables according to maturity, size, variety, form, etc.) | · Ensure consistency and appropriateness of the crop variety<br>· Proper classification of vegetables according to maturity, size, variety, form, etc.)<br>· Proper post-harvest handling (washing, sorting, & packing)<br>· Sustained delivery/supply<br>· Financial support for farmers to ensure supply sustainability | requirements (price and supply availability)<br>· Handling of direct delivery to wholesalers<br>· Checking of the product before delivery to ensure quality assurance<br>· Price monitoring | · Weekly application of fertilizers<br>· Maintenance of cleanliness and sanitation in the farm<br>· Not harvesting when it rains so as not to damage the vegetables<br>· Following proper post-harvest handling<br>· Diversified cropping to maintain the supply |

**Table 18 Barriers in meeting the value sought by the customers (Cabintan Farmer Group)**

| What inhibits retailers from creating consumer value | What inhibits WHOLESALERS from creating consumer value | What inhibits VIAJEDORS from creating consumer value | What inhibits FARMERS from creating consumer value |
|---|---|---|---|
| · Lack of supply<br>· Poor quality of supply (Sometimes they received rotten or nearly rotting products.) | · Lack of supply<br>· High percentage of damage<br>· Inferior quality delivered by the supplier<br>· High buying price from the supplier | · Lack of supply<br>· Unavailability of supply<br>· Low selling price<br>· High acquisition cost and low selling price (Wholesalers receive lower price while they purchase vegetables from farmers at a higher price.)<br>· Improper post-harvest handling, which caused more damages<br>· Incurred damages during deliveries and transportation<br>· Received inferior quality of vegetables from the farmers | · Uncontrollable weather condition (strong winds, continuous rain and typhoons)<br>· Capital (inputs)<br>· Availability of inputs<br>· Low price<br>· Occurrence of pests and diseases<br>· Oversupply |

**Table 19 Value Creation Workshop (Liberty Farmer Group)**

| What do CONSUMERS value? | What do RETAILERS value? | What do WHOLESALERS value? | What do VIAJEDORS value? |
|---|---|---|---|
| · Visually attractive appearance<br>· Fresh in appearance<br>· Practically free from damages caused by pests and diseases<br>· Consistency of size<br>· Proper sorting and grading<br>· Reliable supply<br>· Less exposure to chemicals | · Consistency of delivery/ supply<br>· Specific variety<br>· Proper classification of vegetables according to maturity, size, variety, form, etc.)<br>· Visually attractive vegetables<br>· Size/proper sorting and grading<br>· Affordable price | · High value crops (vegetables with high demand and high price)<br>· Good quality vegetables | · Good quality vegetables<br>· Consistency of size<br>· High market demand vegetables<br>· Affordable price<br>· Assortment of vegetable types. |

| What do RETAILERS do to create consumer value? | What do WHOLESALERS do to create consumer value? | What do VIAJEDORS do to create consumer value? | What do FARMERS do to create consumer value? |
|---|---|---|---|
| · Proper grading and classification<br>· Asking wholesaler on the source of the vegetable<br>· Maintain freshness of vegetables upon delivery Deliver vegetables fresh. | · Outsourcing (volume) to ensure availability of supply<br>· Acquire market information (highly demanded vegetables)<br>· Maintain freshness of vegetables upon delivery Deliver fresh | · Maintain communication among suppliers and buyers to identify market requirements (price and supply availability)<br>· Gather price information<br>· Visually attractive vegetables | · Continuous production to sustain the demand in the market<br>· Proper crop management<br>· Sorting and Grading |

**Table 20 Barriers in meeting the value sought by the customers (Liberty Farmers Group)**

| What inhibits retailers from creating consumer value | What inhibits WHOLESALERS from creating consumer value | What inhibits VIAJEDORS from creating consumer value | What inhibits FARMERS from creating consumer value |
|---|---|---|---|
| · Lack of supply<br>· Easily damaged vegetables<br>· Buyers do not pay cash. | · Lack or inconsistent supply<br>· Low price<br>· Damages | Lack of supply<br>Vegetables get damaged easily. | Lack of capital<br>Failure of production due to unfavourable weather condition<br>Occurrence of pests and diseases |

**Table 21 Problem Analysis (Liberty Farmer Group)**

| PROBLEM | CAUSE | IMPACT | SOLUTION |
|---|---|---|---|
| Capital | Limited income, other household expenses | Cannot plant, stop production<br>Could no longer buy farm inputs, could not afford to pay labor expense | Apply for credit and loans, look for financiers, plant in smaller area, rely on donations |
| Weather Condition | Inappropriate production/ not suitable crop production, unmatched seasonality | Unproductive crops, easily damaged, failure of production, low volume of harvest | Crop rotation<br>Plant according to seasonality<br>Plant leafy vegetable during rainy season |
| Occurrence of pests and diseases, quality | Lack financial and technical capacity to purchase pesticides, not practicing crop rotation | Low to zero harvest, damage crops, failure | Attend training and seminars on proper crop management (e.g., Department of Agriculture and Visayas State University), use organic pesticides |
| Transportation | Farm is far from the city, poor road condition in the area, no available public transportation | Damaged crops during delivery, could not harvest on time until the crops get damaged, less market opportunity, low income | Hire private motorcycle, contact viajedors before harvest |
| Low selling price | Oversupply | Less income | Sell vegetables at lower price, plant different types of crops |

| | | | |
|---|---|---|---|
| Credit | Buyers do not pay cash | Could not purchase inputs for the next production | Look for buyers who pay cash |

**Objective 3 - Improve community livelihood from vegetable value chain development through farmer-to-farmer learning and facilitated by research stakeholders.**

**Training on Lettuce production through Participatory Field Trial (PFT).**

In line with the project objectives to develop the capabilities and assets of farmer communities to support vegetable value chain development, this project conducted Participatory Field Trials (PFT) in Cabintan, Ormoc City. PFT aims to conduct field trials with the farmers on their production area. It highly factors in what is feasible for the farmer and local condition. Collaboration with farmers in doing research activities provides the research team a more comprehensive way of developing interventions to develop value chains. It also aimed to develop farmers confidence and skills to plant and market a new crop

The project team looked for a farmer co-operator who was willing to engage in the lettuce production field experiment at the start of the activity. A series of meetings was held to allow the team and the farmer to collaborate on planning activities. During meetings, the trial design with feasible strategies that the farmers can employ was agreed upon.

The PFT objectives, training plan, and prerequisites for each task were also discussed with the farmer co-operator. Farmer co-operators also recognized that they play a key part in the PFTs implementation and that they are the direct beneficiaries of the training activity; as a result, they took ownership of these activities, and must fully understand all their tasks during the whole process. For this activity, 1 male and 1 female farmer co-operator were identified. Both farmers were engaged with lettuce (romaine) production.

**Implementation of market led planting activities**

This refers to the actual conduct of the lettuce production activities that include seedling preparation, land preparation, transplanting, and maintenance of the farm (weeding, irrigation, fertilizer application, & pest control), harvesting and post-harvest activities. To showcase the benefits and advantages of having protective structure, a trial on lettuce production on open field versus protective cropping was also conducted. Results are presented in Appendix 16. To ensure organized production, a production calendar was developed by the farmers factoring in the weekly demand of lettuce of lettuce supply expressed by the identified buyers. Buffer supply was also encouraged to augment shortage, damages or losses. Production calendar also encouraged equal opportunity for all farmer members of the group to plant according to their schedule. Planting of lettuce was conducted at farmers' individual fields, but collective marketing was done to aggregate supplies for delivery. Farmers practiced regular monthly meetings and consultations to: update the group on production plans, marketing and financial status of their shared resources. Challenges and opportunities relating to production, marketing and organizational development were also taken up during meetings.

**Computation of Cost and Return**

Knowing how much it costs to produce a kilogram of lettuce or any other crop is fundamental to any successful vegetable production enterprise. Accurate costing allows the farmer co-operators more informed agronomic and financial decisions to be made. This in turn helps the enterprise overcome challenges posed by changes in commodity prices and cost of inputs, or threats on unfavourable weather conditions and prevalence of pests and diseases. The farmer co-operators were taught to record farm activities and its cash inflow and outflow. A record keeping template was provided and discussed to farmers as a guide.

The advantage of detailed cost analysis is identifying problem areas within the farm business, especially when costs are benchmarked against others. Fixed costs, associated with equipment and depreciation are common issues on many farms, but yield variations also make a big difference to cost per kilogram. Understanding the cost of production per sqm. or per kilogram helped farmers make better decisions about what to sell, when to sell it, and how much to sell it for. The "breakeven price" guarantees that a product was able to be sold at a feasible price to make a profit and that losses are kept to a minimum.

**Reflection and Learning**

Farmer's reflections and learning plays a significant role in reshaping their farm enterprise. It provides them a basis for decision making and calculating benefits and rewards. This activity allows farmer co-operators to identify the differences between farmer's practices and recommended production protocol, then discuss with other farmers or research teams to find out the reasons which lead to these differences. It also allows farmers to draw lessons learnt from a particular cropping season to improve their next production seasons. Farmers suggestions and ideas for the next production cycle such as which variety should be grown, input optimization were developed and discussed. Consolidated Farmers' reflection is presented in Appendix 13.

**Market linkages**

Apart from the "walk the chain activity" as discussed above, the project also conducted activities to connect the farmers to the market. Dialogue with buyers, phone calls, online meetings, and face-to-face transactions was employed by the project team and the farmers to understand market needs.

**Nuclear Farmers and Forming of Farmer Groups**

Upon completion of one cycle of a Participatory Field Trial (PFT), adoption and application of learnings came in. Two farmers as initially identified as a farmer co-operator for the PFT have now been referred to as "Nuclear Farmer" and served as farmer leaders to their farmer members. As a leader, adoption and application of learnings and research outputs was used. The first PFT of the project was conducted in August 2020 to January 2021.

The second PFT was held, at the farmer leader's field and the farmer leader shared what they learned from their previous experience to follower farmers. To facilitate this, two groups were formed. One group was created by one of the two farmer leaders, and another group by the second farmer leader. Selection of the group members (other farmers) was done by the farmer leaders based on the following criteria: (1) They are trusted by the farmer leaders and can work collaboratively with them, and (2) They may be a friend, relative, or neighbour who already has a rational relationship with the farmer leader. Two groups were formed with one farmer leader having three farmer members and the other farmer leader having two farmer members. Each group set a common schedule among themselves to meet, develop plans, and discuss the implementation of lettuce supply. Farmer members are then referred to as "farmer followers or learners" (Figure 1).

The first generation of learners was formed from December 2020 to March 2021 which formed the 1st group, and March to May 2021 the second group was formed. This period covered the completion of the first cycle of lettuce production from planting to harvesting of all the five farmer members under the two groups. Within this period, simultaneously, farmers' field days (FFD) were also conducted to: (1) showcase the benefits

of value-adding through following “best practices” of lettuce nursery production and farm management, (2) raise interest amongst farmer participants, and (3) to establish a network with other farmers in the community.

As part of the preparation before the FFD, the research team analysed all the following data with the farmer leaders and followers: crop development indicators, yield, yield components, total cost, total income, and total net benefits, tabulate these for presentation to the other farmer participants.

Farmer Field Days were attended by the farmer co-operators and other interested farmers in the community, selected lettuce buyers, as well as representatives from the Ormoc City Agriculture Office. A separate consolidated report on the Farmers Field Day conducted by the project is in Appendix 6. During the FFD, participants gathered at the fields of the farmer leaders. The research team clearly explained to all participants the evaluation activity and the need to organize it. The FFD objectives were also presented. The farmer learners, together with the research team, shared to all participants about their lettuce production practices and techniques employed, computation of cost-benefit per $m^2$ area of production, calculation of effective plants and ineffective plants as well as yield components, and how to record all these calculated data. The farmer learners also shared their personal learnings and reflections. The research team made sure that the data was presented and clarified to the participants. The research team facilitated discussions on the differences between farm results amongst farmers. Participants were further engaged in learning through evaluation of activities. This fostered learning for the farmers to improve their cropping for the next season. Before ending the FFD activity, expressions of interest for new farmers to join the group of learners were encouraged and the reasons for joining were documented.

The formation of the second generation of learners covered the period June to August 2021, while the third generation transpired in December 2021 and is ongoing as of this writing. From two nuclear farmers/ farmer leaders, two groups have been created and are referred to as the first generation of learners. Group members were then referred to as “farmer followers”. The cycle went on to the second generation where another three groups were formed. This time, some farmer followers have now evolved as farmer leaders. In summary, the second generation has 3 farmer leaders and 14 farmer followers in 3 groups: Group 1 with 2 members; Group 2 with 6 members, and Group 3 also with 6 members. For the third generation, a total of 4 groups were formed with a total of 20 farmer-learners amongst them are 11 female farmers, 9 male farmers, and 4 farmer leaders including 2 male and 2 female farmer leaders. More youth farmers are interested in lettuce growing, as amongst the 20 farmer – learners there are 5 male youths and 2 female youths.

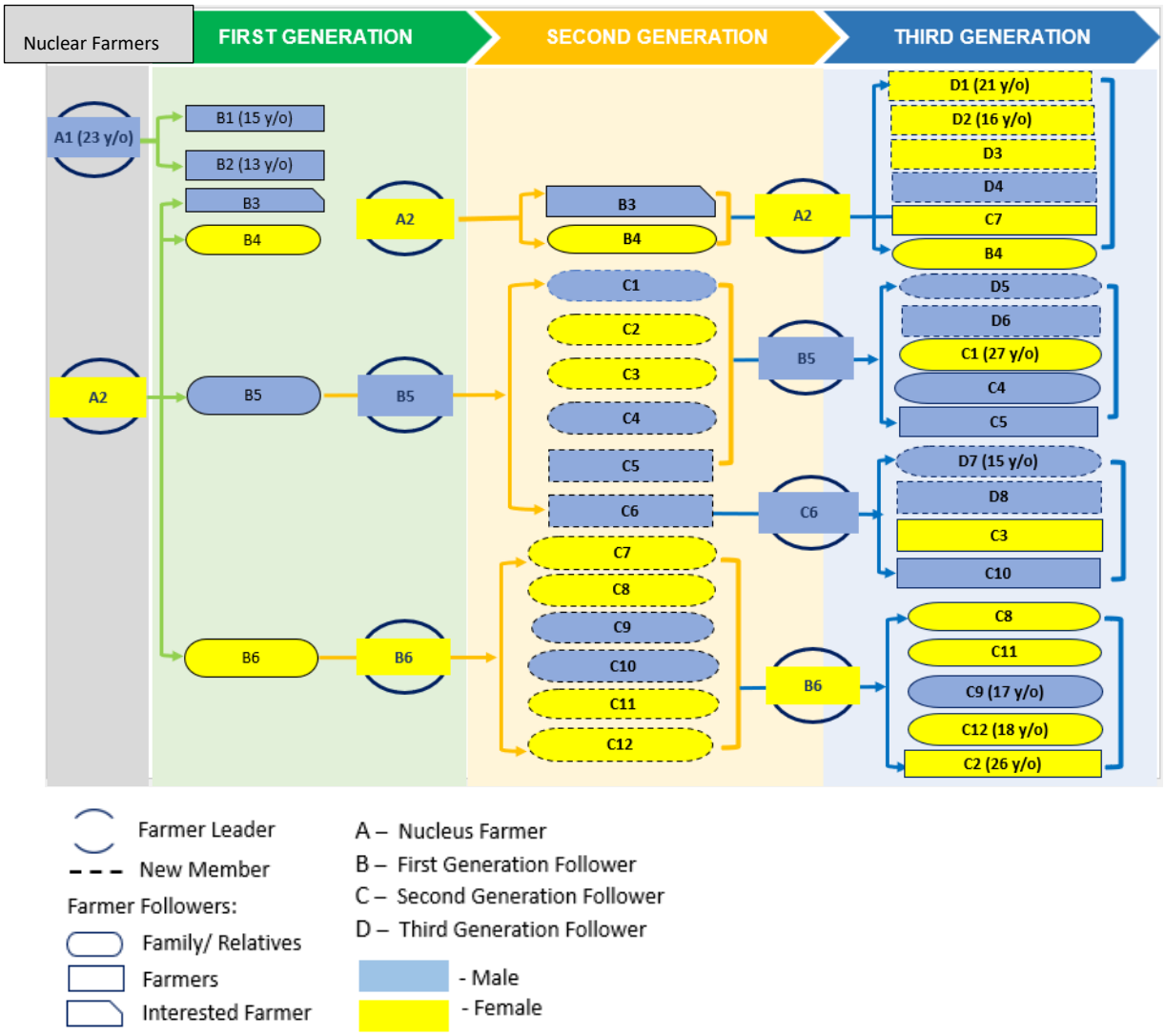


**Figure 1 Pictorial Representation of Farmer-to-Farmer Learning**

## Financial benefits of farmers in nuclear groups

Table 22 presents the cost-benefit data of nuclear farmers as well as first and second generation of followers. The total cost and profit between farmers vary mainly due to the land size farmers allocated for growing lettuce. All farmers within the nuclear groups have generated significant profit with the average gross profit of 8559.32PhP. The average gross profit from per square meter of land is 69.25 PhP.

The average net profit per square meter for nuclear farmers was P 71.36 while a lower value was observed among 1st and 2nd generations with P68.48 and P69.02, respectively. However, t-test analysis shows that the profit observed between the three generations of learners have no significant difference. This provides evidence that the application of learning skills does not degrade as it is passed on to the next generations. This supports the observation that peer to peer learning can be an effective method of passing skills to other farmers.

**Table 22 Cost-Benefit Analysis of farmers in nuclear groups**

| | Farmer Co-operator | No. of Production Cycle | Land size ($m^2$) | Total Cost (PhP) | Total Revenue | Total Gross Profit | Gross Profit/$m^2$(PHP) |
|---|---|---|---|---|---|---|---|
| NUCLEUS FARMER | A1 | 1 - Completed | 40 | 2,426.18 | 5,515.00 | 3,088.82 | 76.18 |
| | | 2- Completed | 223 | 2,856.65 | 9,750.00 | 6,893.35 | 38.98 |
| | A2 | 1 - Completed | 100 | 3,642.45 | 12,150.00 | 8,507.54 | 85.08 |
| | | 2- Completed | 175 | 11,345.00 | 28,500.00 | 17,155.00 | 98.03 |
| | | 3- Completed | 225 | 6,335.00 | 19,500.00 | 13,165.00 | 58.51 |
| | Ave | | 152 | 5,321.06 | 15,083.00 | 9,761.94 | 71.36 |
| FIRST GENERATION OF LEARNERS/FOLLOWERS | B1 | 1- Completed | 50 | 2,640.98 | 5,850.00 | 3,209.02 | 64.18 |
| | B3 | 1- Completed | 135 | 3,623.28 | 11,025.00 | 7,401.73 | 54.83 |
| | | 2- Completed | 50 | 3,265.60 | 8,250.00 | 4,984.50 | 99.69 |
| | B4 | 1- Completed | 81 | 2,787.50 | 6,900.00 | 4,112.50 | 50.77 |
| | | 2- Completed | 85 | 3,995.00 | 13,000.00 | 9,005.00 | 105.94 |
| | B5 | 1 - Completed | 162 | 2,738.80 | 3,850.00 | 1,111.20 | 6.86 |
| | | 2- Completed | 180 | 6,985.00 | 23,730.00 | 16,745.00 | 93.03 |
| | | 3- Completed | 60 | 1,764.50 | 4,733.75 | 2,969.25 | 49.49 |
| | B6 | 1- Completed | 120 | 4,280.50 | 8,200.00 | 3,919.50 | 32.66 |
| | | 2 -Completed | 225 | 6,687.50 | 30,050.00 | 23,362.50 | 103.83 |
| | | 3 -Completed | 130 | 8,094.00 | 20,050.00 | 11,956.00 | 91.97 |
| | Ave | | 116 | 4,260.24 | 12,330.80 | 8,070.56 | 68.48 |
| SECOND GENERATION OF LEARNERS/FOLLOWERS | C1 | 1- Completed | 200 | 9,063.75 | 31,910.00 | 22,846.25 | 114.23 |
| | | 2- Completed | 60 | 1,764.50 | 4,733.75 | 2,969.25 | 49.49 |
| | C2 | 1- Completed | 130 | 7,195.00 | 19,985.00 | 12,790.00 | 98.38 |
| | | 2- Completed | 130 | 4,660.00 | 10,520.00 | 15,180.00 | 116.77 |
| | C4 | 1- Completed | 60 | 1,764.50 | 4,733.75 | 2,969.25 | 49.49 |
| | C5 | 1- Completed | 150 | 6,055.00 | 10,800.00 | 4,745.00 | 31.63 |
| | | 2- Completed | 60 | 1,764.50 | 4,733.75 | 2,969.25 | 49.49 |
| | C8 | 1- Completed | 84 | 2,255.00 | 5,700.00 | 3,445.00 | 41.01 |
| | C9 | 1- Completed | 120 | 9,382.00 | 17,865.00 | 8,483.00 | 70.69 |
| | Ave | | 110 | 4,878.25 | 12,331.25 | 8,488.56 | 69.02 |
| Total Average | | | 121 | 4694.89 | 12881.40 | 8559.32 | 69.25 |

## Change of Practice

Most respondents stated that they have improved their production, increased yields, and improved the quality of their produce by implementing the project's learnings and techniques. They used to suffer losses in product quality because of incorrect fertigation and pesticide application; they just applied any amount they wanted without considering whether it was sufficient or exceeded the plant nutrient requirements. They also practiced inappropriate delivery and post-harvest management, packing and compressing a maximum of 80 kilos of vegetables in a sack, causing leaf damage. But now, they understand that it is crucial to apply recommended quantity of fertilizer and pesticides enough to meet the nutrient required by the crop. Farmers follow nursery management practices to get healthy seedlings and improve germination rate. They are using papers to wrap the lettuce before placing it inside a plastic bag with a maximum of 5 kilos per bag, avoiding compression, damages and maintaining the quality of their produce. Farmers are also investing in protective structures rather than growing in open fields.

## Objective 4 Recognize women's contribution in horticulture value chains.

Inclusiveness and gender equality are only possible when there is equal access to information on markets and technicalities related to production. Also, encouraging more women to participate in lettuce business through joining the farmer group and taking up leadership positions within these structures was essential to achieve gender inclusiveness.

The gender barrier to participate in farmer associations and group activities was explored.

Most women were unable to participate fully in farmer associations and group activities due to domestic chores and caring responsibilities (Appendix 18). Furthermore, women needed to seek permission from male members in the family to participate in such activities. Few women were given leadership positions, but most decisions were made by men. Moreover, women had low self-esteem, lacked confidence to contribute to the decisions, lacked communication and negotiation skills to talk to buyers. Hence, women farmers were dependent on the male members of the family regarding purchase of inputs and selling of the produce. Mobility is a challenge for both men and women due to lack of transport, however it made it worse for women due to the double burden roles (farm work and domestic chores).

Women worked 7-10 hours 5 days a week as compared to men in production and marketing related activities. Due to the double burden roles, women were unable to monitor their fields and assist their husband in the field which caused delays in farm works. Women identified training needs in leadership roles, communication with buyers, farm business and financial literacy.

As a result of project interventions, women can substantially participate in lettuce value chain as they are able to manage all activities of production, post-harvest and marketing by themselves.

# 8 Impacts

## 8.1 Scientific impacts – now and in 5 years

A farmer-to-farmer learning alliance model was demonstrated to farmers and City Agriculture Technicians to scale out learnings and revive farmer associations that are not functional.

## 8.2 Capacity impacts – now and in 5 years

Most respondents stated that their marketing methods have improved. They used to rely on viajedors and wait for them to come to the farm and buy their produce. They also rely on prices set by viajedors and other buyers who come to their farms. The prices are also set by prices charged by other farmers. They grow vegetables depending on what their neighbors are growing as well. They used to sell in bulk and were satisfied that they could sell their products, but they were not in a position to make profit.

Their participation in the walking the chain activity and the various marketing training conducted by the project were the drivers for the improvement of their marketing strategies; they've been able to identify and establish good relationships with new buyers, such as local wholesalers, retailers, and online sellers, to whom they sell their produce directly. Their ability to communicate and negotiate with different buyers has improved. They grew crops in response to market needs. They practiced record-keeping and learned how to calculate the break-even cost and evaluate product quality and use that information to set the price; they were also able to determine if they had generated profit or not.

Farmers have learned a lot from the project, including nursery management, such as preparing and handling lettuce seedlings or preserving lettuce seeds to increase germination rate and minimize mortality. They've learned to take extra care of lettuce seeds as it is delicate and requires special attention. They've also known various cultural practices such as appropriate fertilizer and pesticide application, planting distance, plotting, pricking, and sowing that they've applied for growing other crops as well. Furthermore, they have also learned to adopt protective structure technology, which they find beneficial in maintaining lettuce quality and growth performance. It protects the crops from the damages caused by heavy rains and strong winds. They've also learned post-harvest techniques like appropriate harvesting time and proper packaging.

Additionally, the farmers have learnt how to engage with potential buyers and develop confidence and negotiation skills to negotiate with them. They have learned that good quality also implies a reasonable price and how to calculate the break-even price to decide the best price when selling the produce. They also learned the value of maintaining records to keep track of their income and expenses, which is essential for determining whether they make a profit.

Farmers received various abilities, including seedling preparation, record keeping, computation, negotiation or communication skills, marketing skills, and diverse skills and procedures for growing lettuce and other vegetables.

## 8.3 Community impacts – now and in 5 years

### 8.3.1 Economic impacts

Most farmers indicated an increase in income of about 50-70 percent. Others stated that they have increased their revenue by roughly 25-30 percent. Smallholder farmers have now considered lettuce production as their primary source of income because it only requires low investments yet generates high returns. It is in high demand in the market and can be sold at a premium price.

Few farmer leaders (nuclear farmers) and follower farmers reinvested in the nursery since it will protect lettuce seeds, increase germination rates, and minimize mortality. Moreover, farmers are willing to invest in new technology such as protected structures, bell pepper grafting and post-harvest materials such as crates, papers, and roll bags for packaging. This is a significant change from waiting for free benefits to re-investing in business.
Furthermore, smallholder farmers observed that growth performance and quality of lettuce planted under protective structures vary significantly from open-field cultivation. Their relationship with buyers has given them the confidence to grow high-quality crops at any time of the year, as they are assured of increased income.

Majority farmers in this nuclear farmer group model have improved their relationship with the buyers. They have assigned a marketing focal person to coordinate buyers' orders. They have developed planting schedules and support one another to deliver consistent supply, which is a crucial requirement for the buyer. They can provide constant supply as they have diverse harvest schedules, which is challenging to do while planting alone. They set and agree on the lettuce price. They also work together or exchange ideas to resolve the buyer’s feedback and establish a positive relationship. They ensure to deliver good lettuce quality by following the standard quality reference guide based on buyer’s preference, which they have developed to maintain customer’s trust and loyalty to their produce.

Working as a group, according to the majority of respondents, has improved their relationships with input suppliers such as seed companies like Enza Seeds, which has been their main source of lettuce seed supply, and local agricultural stores like Leyte Samar Agri, which has been their primary source of fertilizer, pesticides, and farm equipment. The nuclear farmer group are in frequent contact with the supplier, making them a top priority when arranging orders. In addition, they order in bulk to satisfy the maximum delivery requirement, which they find hard to accomplish if they order individually.

### 8.3.2 Social impacts

By working in the group, farmers have received several support from their group members, including providing solutions to their production, post-harvest, and marketing problems. They were taught various strategies to control the damages of the crops caused by pests, diseases, and excessive rains. Other members also train them on the best production practices from seedling preparation to harvesting and provide them with ideas on post-harvest techniques.

Some members provide market information such as buyer preferences for lettuce quality, price, delivery schedule, and different marketing strategies. They collaborate to improve the quality of their products to meet the buyers' demand. Furthermore, they also share information on where to find low-cost, high-quality inputs, and they periodically exchange new ideas, practices, and experiences to improve production and marketing

strategies such as proper seedling preparation, nursery management, accurate pesticide and fertilizer application, adequate packaging, and lettuce handling during delivery. On the other hand, some members offer assistance and advice in deciding when to plant, what variety of lettuce to produce, and continue growing lettuce even if there are some challenges encountered. They work together to make the best decisions for the members and their progress.

Farmer leaders and the first-generation followers characterized their connection with the group as interdependent. They focus on their individual fields while also working together as a group. They organize monthly meetings to discuss, share or exchange ideas to enhance lettuce yield and quality that they can use in their fields. They market their produce collectively and keep members updated on the group operations. They have great working relationships and unity and regard each other as family.

Some members, particularly newcomers, perceive their relationship with the group as dependent, because they still look to the farmer leaders and other members for direction, guidance, and advice, especially in lettuce cultural practices like plotting, transplanting, fertigating, nursery management, post-harvest handling, and others.

Working as a group helped develop decision-making skill of farmers, because they could seek advice and direction from other members. Farmers discussed their issues and concerns during meetings, and they would collaborate to identify the best decision for the circumstances.

Other members have urged and encouraged them to continue producing lettuce; despite having several decision-making failures. The advantage of being in a group has supported members by providing ideas on how to overcome failures in lettuce production.

One member stated that "*If I had not been a part of this group, I would have had no one to express my difficulties with; other members have led me through and assisted me in making decisions."*

Working as a group provided them with various benefits, including developing understanding, trust, teamwork, alliances, and positive relationships among group members. They have developed their connection with new members and strengthened their relationship with existing ones. Someone can lend them inputs if they run out of supplies such as seeds, fertilizer, and pesticides. They have made their work easier by cooperating and assisting one another. They work without competition, and work collectively to ensure that no one is left behind.

### 8.3.3 Environmental impacts

Majority of the farmer avoid usage of toxic and harmful chemicals to protect the environment. They also avoid cutting trees and employ contouring planting of bamboo and fruit trees to prevent soil erosion. They also do proper waste disposal and burying toxic chemical containers.

## 8.4 Communication and dissemination activities

1. The Lettuce Production manual contains best practices in lettuce production and post-harvest handling based on farmer leaders' experience, as well as expertise of project staff and Ormoc City Agriculture technicians. The manual also includes market quality preference. The manual would serve as a guide for new farmers who want to engage in lettuce production not just in Cabintan but in other sites as well. The manual is in the Cebuano dialect.
2. A video was produced to tell the concept of the project, for researchers, farmers and Agriculture Technicians to understand and learn from the project as how the farmer-to-farmer learning alliance and the market helped improve farmer's livelihood. The video also shows the farmers' lettuce-growing experience, as well as buyer feedback on the quality of the product and their interactions with the farmers.
3. The Visayas State University's department of extension will be funded to organize trainings for the City Agriculture technicians on building business models based on farmer-to-farmer learning.
4. Two projects are being developed through Socio-Economics Research Division of Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) to further apply the learnings derived from this project.
5. Publication titled A qualitative assessment of covid-19 shock to smallholder vegetable growers in Ormoc city, Philippines is submitted to the *Review of Socio-Economic Research and Development Studies 2021 Volume 5 No. 1, 40-60*

# 9 Conclusions and recommendations

## 9.1 Conclusions

***Scaling out model developed through farmer-to-farmer learning***

The farmer-to-farmer learning approach used in the project was effective to scale out lettuce value chain development. The Participatory Field Trial (PFT) helped to identify the farmer leaders, who became the nuclear farmer leaders. The Farmer Field Days allowed the farmer leader to demonstrate their learning and identify farmer followers to exchange their knowledge. A rationalised approach to selection of farmer followers based on agronomic conditions was facilitated through project interventions. Furthermore, through project interventions, farmers regularly evaluated their capacity to mentor and share knowledge and supported farmers in the group to take up leadership roles when they were ready to do so. This allowed farmers to increase their members in the group and manage group members efficiently, which is an important learning for revival of farmer associations.

***Women's contribution in horticulture value chains recognized***

The community development approach used in the project clarified women's barriers to participate in the horticulture value chains. The project team trained women farmers to communicate and negotiate with buyers, these changes enabled women's participation in decision making in lettuce production and marketing. The women farmer leaders alongside with male farmer leaders were trained to support male and female follower farmers. This enabled women to make decisions with confidence. Women's ability to substantially participate in lettuce value chain has improved as they manage all activities of production, post-harvest and marketing by themselves was a result of project interventions, such as training in communication with buyers, farm business and financial literacy,

***Farmer's capabilities and assets supported for vegetable value chain development***

Farmer's capacity to experiment and learn growing of a new crop such as Romaine lettuce was achieved through project interventions such as participatory field trials, farmer field days and production related trainings. Farmer's ability to form smaller groups to produce as per the needs of the customer was achieved through building, social relations, knowledge sharing and resource mobilization. As a result, there are 4 farmer groups with 4 farmer leaders including 2 male and 2 female farmer leaders with a total of 20 farmer learners, 4-6 followers per leader. This has drawn more youth farmers in lettuce growing, as amongst the 20 farmer learners there are 5 male youths and 2 female youths. Farmer's ability to substantially develop a business has improved through project interventions, such as training through walk the chain activity, development of planting schedule, building relationship with buyers and evaluation of opportunities.

## 9.2 Recommendations

***Development and validation of a farmer-to-farmer learning model***

The project has successfully established farmer to farmer learning model based on an emergent nuclear farmer leader and follower farmers development approach that incorporated community development and value chain approach. However, this model was never fully developed in the theoretical sense or validated. It was recommended that a future project to be developed and validate the "*nuclear farmer leader and follower farmers*" model that can then be used in other situations to revive farmer associations.

**Development and validation of women leadership for gender equality**

The project has successfully established *women leadership* based on supporting and training women farmer leaders to lead farm business and mentor other farmers. This model

requires further validation and was recommended that a future project to be developed and validate the "*woman farmer leader and equality in value chain participation*" model for better participation of women farmers in diversified value chains.

Two research projects are being developed funded through Socio-Economics Research Division of Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) to validate both models the "*nuclear farmer leader and follower farmers*" and "*woman farmer leader and equality in value chain participation*".

***Development of policy briefs to advocate change in City Agriculture***

The project team established excellent working relationship with City Agriculture and other government institutions for successful implementation of the project. The project influenced City Agriculture to validate the "*nuclear farmer leader and follower farmers*" model and "*woman farmer leader and equality in value chain participation*" model to further develop policy briefs and advocate policy changes at Regional Council levels.

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## 10.2 List of publications produced by project

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Tan, G.N., Bongat, H.N., Catibo, N.J.E. & Ajoc, A.M.M. (2021). A Qualitative Assessment of COVID-19 Shock to Smallholder Vegetable Growers in Ormoc City, Philippines. *Review of Socio-Economic Research and Development Studies,* 5(1), 40-60. https://doi.org/10.5281/zenodo.5843925 https://www.reserds.com/volume-5-paper3/

# 11 Appendices

Appendix 1 Consolidated Activity Report on Social Network Analysis of all project sites
Appendix 2 Consolidated Activity Report on Community Resource Mapping
Appendix 3 Consolidated Project Instruments and Guide Questions
Appendix 4. A report on Qualitative Assessment of Covid -19 shock to smallholder vegetable growers in Ormoc, City
Appendix 5 Consolidated Reports on Participatory Field Trials
Appendix 6 Consolidated Reports on Farmers Field Day
Appendix 7 A report on Farmers Field School
Appendix 8 A report on Farm Business Literacy Training
Appendix 9 A report on Communication and Leadership Training
Appendix 10 After Activity Report on Walking the Chain and Identifying Consumer Value Workshop
Appendix 11 Network of Influence Diagram
Appendix 12 Compiled Agenda of Activities
Appendix 13 Consolidated Farmers Reflection of Activities
Appendix 14 Consolidated Reports on Monthly Minutes of Farmer Co-operators Meeting
Appendix 15 Publication, “Qualitative Assessment of Covid -19 shock to smallholder vegetable growers in Ormoc, City”
Appendix 16 Comparative Cost Benefit of lettuce planted under protective structure versus open field
Appendix 17 A Report on Market Orientation Workshop
Appendix 18 Results on Gender Barriers Interview
Appendix 19 Compilation of Results Walking the Chain Activity
Appendix 20 T-test Results _Comparative Analysis of Farmer Co-operators (net income per sq.m.)
Appendix 21 Evaluation of Opportunities
Appendix 22 FGD Results Gender Assessment and Daily Profile
Appendix 23 Summary of Results_ Impact Assessment
Appendix 24 Report on Exit Planning workshop
Appendix 25 List of Trainings Conducted
Appendix 26 SRA Success Story Video