



HOW-TO GUIDES

IN AGRICULTURAL MARKET SYSTEM DEVELOPMENT

Facilitating Business to Business (B2B) Relationships

Building commercial relationships
between farmers, buyers, input retailers
and other value chain actors



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CHAIN

How-to Guides in Agricultural Market Systems Development

Facilitating Business to Business (B2B) Relationships

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Foreword

Cambodia's agricultural sector shows continued growth both in production and export, despite the COVID 19 pandemic. Nevertheless, poverty remains largely a rural phenomenon, as about 80% of the 2.5 million poor people live in rural areas. Cambodian smallholder farmers' low productivity is the result of limited access to quality agricultural inputs, technical knowhow and innovation, as well as limited marketing opportunities and market information. Pressure on water resources and the effects of climate change are additional challenges. Limited involvement of the private sector in agricultural extension services and weak cooperation with public sector actors restrain the development of prosperous smallholders. Cambodia is not self-sufficient in vegetables and fast economic growth has resulted in a higher demand for safe and quality local fruits and vegetables. This provides a huge opportunity for smallholder farmers and processors, particularly women, to increase income and food security. Moreover, improved rural infrastructure has increased the mobility of rural poor people, providing them access to diversified markets and job opportunities.

Responding to these challenges and opportunities, the Swiss Agency for Development and Cooperation (SDC) has developed the Cambodian Horticulture Advancing Income and Nutrition (CHAIN) 2014-2022 programme in close cooperation with the Ministry of Agriculture, Forestry and Fisheries through the General Department of Agriculture (GDA) and the provincial departments of Agriculture, Forestry and Fisheries (PD AFF). CHAIN has used a market development approach aimed at strengthening the inclusion of poor people (with a strong focus on women) in the market to secure better access to agricultural goods and services and to gain higher incomes. The key element of this approach is a facilitation process for involving private and public partners as well as civil society organisations in the delivery of goods and services on the input and output side of the horticulture value chains (e.g. extension, inputs, marketing and market information) that appropriately meet the needs of poor farmers and processors. Over the past eight years, we were able to achieve impressive results. Cambodia vegetable production has increased remarkably over the last 3 years and is now covering 68% of domestic market demand (700,000 Mt in 2020) compared to 422,000 Mt in 2013. **Great achievement!**

This How-to Guides in Agriculture Market System Development Book is a collection of tools, principles, practices and approaches developed during CHAIN implementation. It shall provide a reference for all stakeholders in agricultural value chains from public and private sector as well as the civil society. It is also a guide book for sustainability that is at the core of CHAIN as it aims at strengthening horticulture market systems and the capacity of the sector actors to provide services to the targeted farmers. The established networks, policies and market systems will continue to function, as sector actors and farmers will have reached a critical mass large enough to become a profitable and self-sustaining market.

I would like to thank MAFF, GDA, Provincial Authorities, PD AFFs, and SNV and all involved people for an excellent collaboration and for actively contributing to the implementation of the CHAIN Project.

Markus Buerli

Director of Cooperation

Swiss Agency for Development and Cooperation, SDC

Other guides in this series

- Introduction to Market Systems Development
 - Farmer videos for digital extension
 - Facilitating Cluster Development
 - Facilitating B2B Relationships
 - Lead Farmer Incubator
 - Rural Business Accelerator
 - Developing Crop Budgets
 - Smart Water and Climate-Smart Solutions for Horticulture
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1. Introduction

The Cambodia Horticulture Advancing Income and Nutrition (CHAIN) project has produced a series of How-to Guides (HTGs) that are meant to be practical, informative instruction manuals for those who wish to replicate and further develop the successful approaches used during the three phases of CHAIN. We hope that these HTGs will be useful to many organizations globally, especially those engaged in agricultural development projects that apply a market systems development approach (see Box 1). However, we have written the HTGs with Cambodian stakeholders in mind, mainly the Ministry of Agriculture, Forestry and Fisheries (MAFF), the General Department of Agriculture (GDA), the Provincial Departments of Agriculture, Forestry and Fisheries (PDAFFs) and local NGOs.



The present HTG focuses on CHAIN's business-to-business (B2B) approach. We treated vegetable farmers as businesswomen and men who need to develop their business capacity and build economically productive relationships with other business actors in the market, including vegetable traders, input retailers and technical service providers. Although our primary focus was the farmer, we worked hard to ensure that all B2B relationships facilitated by CHAIN were win-win and that everyone involved achieved a higher income and therefore had an incentive to sustain these relationships after CHAIN's conclusion.

This guide should be considered a living document that will evolve and improve over time. Those who wish to apply the approaches described below should adjust and tailor the methodology to meet their specific needs based on a variety of factors, such as geography, timeline, human and financial resources, partner availability and interest, specific characteristics of the market and sector maturity.

Box 1

Market Systems Development (MSD)

The MSD approach covers the entire system that surrounds a market. In the case of horticulture, this holistic view of the market includes all the relevant participants ('actors' or 'players'): the farmer who grows the crops, the retailer who sells seeds and other inputs to the farmer, the trader who buys the crops once harvested, and the wet market sellers who sell the vegetables to consumers. It may also encompass services that support the core market, such as government extension agents who provide advice to farmers and the local market structures that make physical space available for buyers and sellers to meet.

MSD aims to address poverty by improving the performance of markets in an inclusive manner, especially by modifying the incentives and behavior of businesses and other market players to ensure large-scale change that is lasting and beneficial.



2. Background

Horticulture is an important part of the agricultural economy of Cambodia due to the rapidly increasing urban consumption of fruits and vegetables. Until recently, more than 50% of all vegetables were imported from neighbouring countries capable of year-round production and equipped with better logistical networks and were thus more competitively priced. Imported vegetables, however, contain significant amounts of pesticide residue and are therefore a food safety concern. In phases 1 and 2 (2014–2020), CHAIN worked on promoting safe, locally produced vegetables in four northern provinces of Cambodia (Oddar Meanchey, Preah Vihear, Stung Treng and Kratie).



To date, CHAIN has achieved the following overall results:

- Local supply of vegetables in the four target provinces increased from 50% to 65%.
- The project reached 10,000 households in 400 farmer groups. (Over 70% of the farmers reached were women.)
- About 6,000 farmers have transitioned from household subsistence farming to semi-commercial or commercial operations.
- 65 traders across the target provinces have increased local sourcing.
- 25 input retailers (most of them women) across the target provinces have increased their sales.
- 14 business clusters have been created and incubated.



3. Methodology Overview

What was the problem?

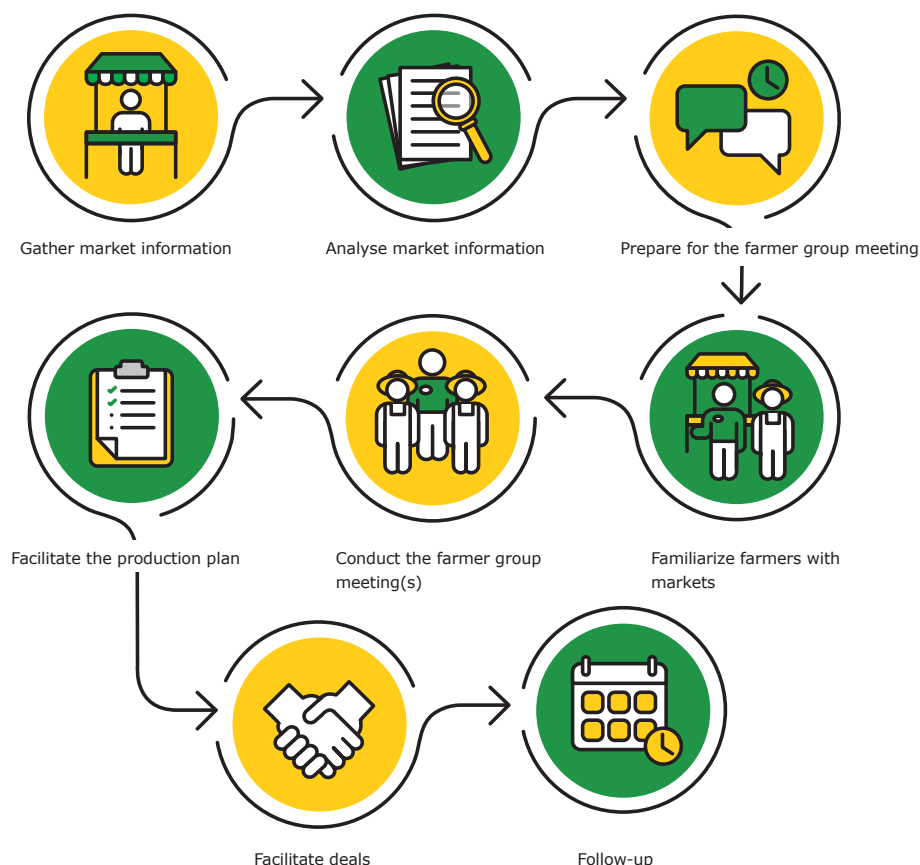
We found that farmers in some of Cambodia's poorest provinces faced several challenges: they often were unable to sell their excess production because they were not connected to buyers, they sometimes ramped up production of certain crops but then faced low demand and/or prices in the local market, and there was a shortage of market actors interested and active in providing horticultural inputs. The CHAIN team began to think about how to improve the linkages between market actors and how to generate interest and activity within the horticulture sector at the provincial level.

What did we expect to achieve?

We designed a solution that we believed would (1) build better relationships between farmers and other market actors, such as vegetable buyers, input sellers and technical private and public sector service providers; (2) increase the collaboration between farmers and these market actors; and (3) improve trust between those involved. By focusing on business relationships, we hoped to encourage farmers to think about themselves as businesspeople. With this in mind, we named the methodology 'B2B', and some members of our team and representatives of our partners – PDAFFs, Provincial Departments of Women's Affairs (PDoWAs) and local NGOs – became known as B2B Facilitators.

What were the solutions/methods?

To achieve the project's goal using the B2B approach, we developed a seven-step method that involves gathering and analysing market information, holding planning meetings with farmer groups, familiarizing farmers with the operations of wet markets and other distribution and retail outlets, and helping them to make business plans with other market actors. These steps are described in detail in Section 4.



RESULTS

The B2B method – combined with other CHAIN interventions – produced strong results in the target provinces:

- 3,400 commercial farmers (50% female) saw their production increase by 50%. Net annual income increased by USD 600 on average.
- 20 vegetable traders and 25 input retailers worked with CHAIN-supported farmers and expanded their business relationships.
- 6 national-level private sector companies worked formally and informally with CHAIN-supported farmers and expanded their business efforts in the target provinces. Some companies increased sales tenfold in the target provinces.
- 41 staff from local institutions (such as PDAFFs, PDoWAs and local NGOs) received a combination of technical and business training. Their knowledge of B2B work was poor (3 out of 10 in CHAIN's own knowledge assessment) before project engagement and almost doubled (6 out of 10) after training and involvement with CHAIN.
- A quarter of the input retailers who participated in CHAIN activities reported a significant increase in sales, especially because they are now able to provide technical and market production advice to the farmers who buy their inputs.
- Several local partners reported that their views had changed over the life of CHAIN, and that they saw the benefit of encouraging farmers to think like businesspeople and connecting all the actors within a market.
- Project visitors and evaluators noted dramatic changes over the years of CHAIN: where there was little focus on horticulture before, there is now a dynamic and growing horticulture sector in the target provinces.



The CHAIN B2B experience



THE FARMER

Chav Yum is a commercial farmer who lives in O-Run village, Oddar Meanchey province. He describes CHAIN as a "broker" (mai underk), a euphemism for a marriage matchmaker. Since being "matched" by CHAIN, Chav Yum and his farmer group members get together regularly to discuss what they want to do. They agree on production quantities and harvesting dates to ensure a steady supply to the provincial market. *"To trade near is better than to trade far,"* he says, so he and his fellow farmers prefer to work with trustworthy local traders, some of whom they met through CHAIN. They also pool their purchases from input suppliers:

"Before we only purchased seed in small quantities, but now we ask each other before we purchase anything. We can get a big can of seeds rather than small bags. It's cheaper, and we can distribute the inputs among ourselves."



THE VEGETABLE TRADER

Vat Sopheap is a vegetable trader in Oddar Meanchey and regularly communicates with several farmer groups. These relationships started in CHAIN B2B meetings, during which farmers, input retailers and traders sit together to make cultivation and business plans. "In the beginning I asked everyone about the production process, who is producing what, who is starting to prep their land, and so on," she says. "Now I make a schedule of what vegetables I need and when I need them, and I discuss it with each farmer group. This is how I make sure there's always enough to buy."

The farmers see the advantage of collaborating with Sopheap:

"We exchange ideas during the meetings and Pheap helps us decide what we should plant so we don't all grow the same things at the same time. We all sell to her because she often comes to the meetings."



THE INPUT RETAILER

Yous Sothida, 35, is a mother of two and lives in Stung Treng town. A few years ago she was a teacher, but she was inspired by another input retailer to set up a shop. By attending CHAIN's B2B meetings she learned what farmers need and which inputs to sell, and she exchanged contact details with many of them.

"I've been selling materials and equipment for four years already, but this has been my most successful year. First, more farmers got to know me through CHAIN, and since CHAIN came here, more farmers are growing vegetables, so I have more customers."

Mrs. Sothida now works closely with a network of reliable companies such as East-West Seed, Angkor Green and Green Eagle, from which she can source a wide variety of agricultural inputs, including irrigation systems, seeds, fertilizers, agro-pesticides, trellising nets, plastic mulch and seedling trays.



PARTNER STAFF AND B2B FACILITATOR

So Chantha, a PDAFF staff member in Stung Treng, has been a B2B Facilitator since CHAIN 1 and often shares her knowledge and experience with other facilitators. She notes that she has participated in several other rural development projects which focused primarily on crop production and agricultural theory, without providing the opportunity for practical learning.

Her experience with CHAIN has been quite different. The B2B approach offered hands-on training in creating production plans together with farmer groups and brokering business deals with various market actors.

"My work as a B2B Facilitator benefits not only the farmers with whom I collaborate but also my own skills development," she says. Therefore, she integrates the B2B concept into all aspects of her work at the PDAFF. ***"The term B2B has become more popular among Cambodian farming communities,"*** she adds.

4. B2B Steps

The table below summarizes CHAIN's eight-step B2B approach, including the purpose and output of each step.

Methodological Step	Purpose/Objective	Output
1 Gather market information	To understand market demand within the project target area, including variables such as volume, price, quality, variety and seasonality.	Market study
2 Analyse market information	To understand the difference between market demand and supply, including overproduction and production shortfall. To generate a list of "top crops" for the project area, disaggregated geographically. ¹	- Demand/supply comparison - List of "top crops"
3 Prepare for the farmer group² meeting	To determine the best way to facilitate farmer groups, review market information and decide on a group production plan and business plans (both individual and collective).	- Farmer group planning facilitation guide - Visual aids to share market information - Production plan template - Business plan template
4 Familiarize farmers with markets	To introduce farmers to different markets and expose them to different types of businesses and business relationships.	- Visits to markets/buying companies - First discussions with market actors
5 Conduct the farmer group meeting(s)	To present market information to farmers in a group setting and facilitate a process through which farmers agree on collective production plans and related individual and group business plans. ³	- Farmer group production plan - Individual and group business plans
6 Facilitate the production plan	To ensure that farmers produce what the market needs.	Farmer group production plan
7 Facilitate deals	To facilitate formal and informal deals between farmer groups and other market actors, including traders and input retailers. To involve market actors in co-financing arrangements to mitigate risk and catalyse investment along the supply chain.	- Deals (formal and informal) between farmers and other market actors - Co-financing deals between the project and relevant stakeholders
8 Follow-up	To provide additional support and troubleshooting to farmer groups and other market actors engaging in B2B relationships with farmer groups.	- Farmer group progress reports - Deal and co-financing progress reports

¹ "Top crops" are crops in high demand that are possible for local farmers to produce.

² The process of forming farmer groups and working with them over time is covered in another CHAIN How-to Guide.

³ Production plans are group plans that outline which farmers will grow which crops at which times, including how much land will be dedicated to each crop. Business plans cover investments and finance and can be either individual (e.g., a single farmer invests in drip irrigation) or collective (e.g., a group of farmers buy inputs in bulk to benefit from reduced prices).

5. STEP BY STEP GUIDANCE

5.1 Gather market information

Understanding demand in the project target area is essential for any commercial development project.

- How do local markets work?
- What are their failures?
- How can reliable, up-to-date market information be conveyed to all actors along the value chain?
- How can farmers obtain accurate demand information (such as volume, variety, price and seasonality)?



While there are several ways to acquire this information, we recommend that you train your team to collect it directly by visiting and interviewing traders in the markets. The goal is for the team to understand market demand better and build relationships with the buyers in the market.⁴

To compile this information, your team will need to ask traders about the vegetables that are most sought after by buyers, can be produced by the farmers and have good profitability. These surveys should be performed before each growing season (depending on the crop and/or the location) to understand the expected demand of vegetable buyers. The CHAIN team conducted a market actor survey twice a year, in June and December. More frequent surveys will give you more accurate information, but too many surveys can become difficult for the team to manage and could become burdensome for the traders. We suggest surveying a representative sample of vegetable traders to generate a solid understanding of local demand by approaching a combination of small, medium and large traders, including both wholesale and retail traders.⁵ Surveying traders will provide your team with demand-side market information, that is, the quantity

of vegetables that traders intend to buy from farmers. In addition, you will need supply-side information – information about the vegetables produced by farmers, including what crops and varieties they grow, when they grow and harvest them, and what quantities they tend to produce.



This information may be available from local government agencies (e.g. the relevant PDAFF). If not, you may have to survey farmers in the target area.

When surveying traders, try to obtain projections by asking forward-looking questions, such as 'What do you think you'll need to buy from farmers this season?' When surveying farmers, on the other hand, you must ask backward-looking questions that rely on their recollections, such as 'What did you grow last year during this same season?'

⁴ Although we recommend that your team perform the survey directly, you may also choose to hire an external team to perform the market study on your behalf. If you do this, the market study should collect both demand and supply information. See Section 5.2.

⁵ Wholesale vegetable traders sell to other traders, while retail traders sell directly to consumers. Some traders do both.

Below are steps that can be followed to collect market information. They apply to both demand and supply-side market information.

- 1.** As a team, discuss and agree on clear objectives for the survey. This will help you determine the right survey methodology, including sampling method, sample size and questionnaire.
- 2.** Delegate one or more team members to develop the survey methodology. (See **Annexes 1, 2, and 3** for examples of methodology, sample size estimation and survey questionnaire, respectively.)
- 3.** Train the team on the survey methodology and questionnaire using role-plays.
- 4.** Perform the survey, following the chosen methodology as closely as possible.
- 5.** Enter the data into a digital spreadsheet such as Excel or Google Sheets. Do this soon after collection, when surveyors' memories are fresh and they can answer follow-up questions about the data.



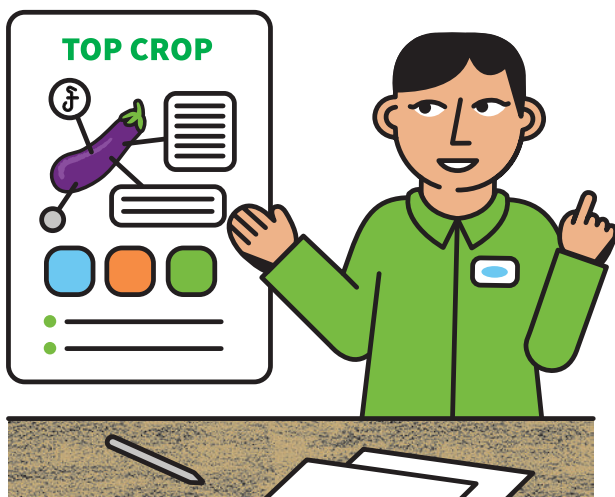
TIPS

- 1.** Traders are often busy and may not have the time to answer a long survey, so keep it as short as possible. Consider performing the survey at times when traders are less busy and be flexible.
- 2.** Test survey questionnaires on a small number of traders first, then improve the survey before using it more broadly on your full survey sample.
- 3.** Some traders move around, selling at multiple locations (as opposed to a fixed stall in the market). To survey these traders, the team may need to make appointments in advance.
- 4.** Collecting market information from traders is a good first step to working with farmers on demand-based production decisions. However, over time, it is more sustainable to link farmers directly with traders so they can keep track of market demand independently of project staff.
- 5.** Ask traders if they are interested in having their contacts shared with other farmers/suppliers. Build a database of trader information, which may be useful for later cluster development.

5.2 Analyse market information

If your team has collected market information through a series of surveys, you will need to analyse it and decide how to present it to the farmers.

The purpose of the analysis is to (1) help your team understand the market in which you are working, and (2) help farmers understand the market and make better decisions about what crops to grow, in what quantities, and when.



For the second objective, we found the concept of "top crops" to be useful. Top crops can be defined as crops in high demand that are possible for local farmers to produce. The identification of top crops can take into consideration additional variables such as price, cost and ease of production, nutritional value, and the government's prioritization and agricultural strategy.

Ideally, the analysis should be performed by the project team, but depending on time and the availability of human resources, projects may also opt to hire external consultants. The results of the analysis can be printed and presented as an information card for farmers, including estimated price per crop, demand by trader per crop, supply by farmer group per crop, crop cultivation area and active farmers per vegetable, and demand and supply per vegetable.

We suggest the following steps to analyse the market information:

1. Decide what information you wish to present to the farmers. We recommend presenting only relevant 'top crop' information to reduce the amount of information to be discussed.
2. Decide how to present information to the farmers and generate the corresponding visual materials. This can consist of handwritten information on large poster paper, professional printouts on posters, or smaller, individual handouts.
3. As a team, discuss the crops and months where there could be a surplus if farmers make the same planting decisions they made last year. A surplus is when the supply of a vegetable exceeds demand in the market. It is important to warn farmers about this potential surplus and discuss alternative production plans with them.
4. As a team, discuss the crops and months that are likely to experience a shortfall. A shortfall is when the supply of vegetables is insufficient to meet the demand in the market. It is important to alert farmers to potential shortfalls as they present an opportunity to grow more of a crop or to change production timelines to meet market demand.

See **Annex 4** for examples of market analysis outputs.



TIPS

1. When presenting information to farmers, keep in mind challenges such as literacy and numeracy. If some of the farmers cannot read or write, choose visual presentations that use colorful graphs to communicate basic information.



2. Spreadsheets such as Excel or Google Sheets offer data visualization options (e.g., charts and graphs) that will help your team analyze market information. However, we highly recommend that you work with an expert to build a data visualization system. Ideally, the system will allow you to adjust data visualizations based on variables such as year, season, crop, province, district and village.

3. We used a powerful software application called Power BI to analyze and visualize the data for both internal learning and external distribution to farmers and other stakeholders. There are many other applications that are suitable for this purpose, but we recommend that you choose one that can integrate with your monitoring and evaluation (M&E) system so as to make donor reporting easier.

4. Vegetable prices change rapidly, so it is hard to predict the per-kg buying price in the market months in advance. But it is still helpful to ask traders whether the buying price of each vegetable is "high", "normal", or "low" in each month. Even such simple categories can give farmers a better sense of when to expect a higher price for specific vegetables.



5.3 Prepare for the farmer group meeting(s)



At the next farmer group meeting you will present the market information you gathered and analysed – demand, supply, surplus and shortfalls – and work as a group to determine production plans for the coming season. You will also develop business plans for investments in technology and mitigation of risk.

The recommended steps are listed below.

1. As a team, discuss and agree on the objectives for the meeting. Once the objectives are agreed upon, design a meeting agenda that will accomplish them. See **Annex 5** for a sample meeting agenda.
2. For each agenda item, decide how long it should last, who will facilitate, what meeting methods will work best, and whether any materials are needed. The "meeting methods" may be a combination of presentations, small group discussions, and games. By 'materials' we mean items such as posters, handouts, flipchart paper, markers, tape, pens, notebooks, water and snacks.
3. Train your team on how to run a farmer business plan meeting by creating role-plays in which one trainee acts as the B2B Facilitator and other team members pretend to be farmers. See **Annex 6** for instructions on how to conduct the role-play.
4. If farmers will be asked to create production plans and/or business plans during the meeting, prepare the necessary document templates before the meeting. See **Annex 7** for sample templates.
5. Anyone who will facilitate a portion of the agenda should have the opportunity to role-play their part once or twice. During these role-plays, the rest of the team can pretend to be farmers.



TIPS

- 1.** Find an appropriate time for farmers in the village to meet, taking into consideration travel time, meal preparation, childcare and other factors.
- 2.** Select a meeting space that is conveniently located and adequate for the expected number of participants and the activities you have planned.
- 3.** Make sure that the village chief is aware and supportive of the meeting.
- 4.** If PDAFF representatives are available, involve them in the event.
- 5.** In addition to the initial invitation, send several reminders to ensure a good turnout.
- 6.** Let your best facilitators conduct the first few meetings so that other team members may learn from their example.
- 7.** Debrief each meeting; discuss what went well and what can be improved.
- 8.** If your staff have little or no experience facilitating farmer group meetings, organize a "training of trainers in facilitation" first.
- 9.** Meetings should not be overly serious; they tend to be more effective if everyone is having fun. Therefore, try to include games, stories, and physical activities during the meeting.
- 10.** Invite a trader, input retailer, and/or technical representative of a private company to speak with farmers directly about investments in inputs and technology.
- 11.** Bring a digital camera and assign a team member to take photos during the meeting.



5.4 Familiarize farmers with markets

Most farmers live far away from urban centres and have little understanding of how much a market can sell in a day, what specifications and quality requirements there are for different types of customers, and how much they should produce to meet the market demand.

Therefore, before meeting with farmer groups to formulate the first production and business plans, we led representatives of each group (two farmers per group) on tours of several markets. This allowed them to see markets in action, observe what types of vegetables were being sold and estimate how much traders can sell and at what price.



We recommend the following steps to familiarize farmers with markets:

- Brief the farmers on retail and deal-making skills in advance. This basic knowledge gives them the confidence to speak with traders/buyers at the market.
- Arrange a meeting between the target group farmers and more experienced farmers who are willing to discuss their trading experiences. B2B Facilitators can facilitate this first discussion.
- Set a date and a meeting point for the visit. To avoid overcrowding the market and blocking the traders' retail space, allow only a limited number of farmers' representatives to attend the visit, or break out into small groups.
- When visiting each trader's stall, introduce the farmers to the trader and let them chat with each other. Farmers may want to interview traders on where they buy vegetables, in what quantities and at what prices, and whether there are differences between days of the week, months, etc.
- Remind the farmer representatives to take written notes and/or make a mental note of what they have seen so that they can share their experience with group members at the next meeting.



TIPS

1. During the market visit, let farmers interact directly with consumers on behalf of the trader so that they can experience a typical retail exchange and gain an understanding of the challenges faced by traders and the added value they bring to the supply chain.

2. If there are no input suppliers in the region, invite suppliers from farther afield to attend a meeting with farmers. If there is an input depot in the provincial capital, organize a visit there so that farmers may see what choices are available.



3. If the main buying company is in Phnom Penh, arrange for the farmers to visit the wholesale center or supermarket, especially the cleaning and packing stations, to see what such venues look like and how they handle, clean and store the produce.



TIPS

Organise exchange visits between market actors

Exchange visits are a great way of exposing farmers and other actors to new business ideas and technologies. In CHAIN we organised many exchange visits between farmer groups within the same province as well as from different provinces.

We also realised that many market actors, especially input retailers, had little experience with horticulture inputs, such as quality seeds, drip irrigation equipment, soluble fertilizers and specific pesticides. Farmers themselves were often unfamiliar with these products. So we organised trips for PDAFF staff, input retailers and farmer representatives to visit more advanced horticultural production and trade areas in Battambang province. We managed the logistics and contacted input technology companies, cooperatives, provincial PDAFF offices and input retailers to set up exchange visits. This was a very successful exercise as people shared experiences, learned about new technologies and inputs, and exchanged contact information. Many input retailers followed up with their peers to obtain contact information of the supplying companies so that they could become their agents or distributors.



Co-invest with market actors

CHAIN repeatedly asked national input supply companies to set up distribution networks and train retailers in the provinces, but they were unconvinced. We then offered to accompany them to the provinces, at the project's expense, to see the potential for themselves. We matched company technical staff with government extension staff to visit the provinces in pairs and meet vegetable farmers and input retailers.

The government staff knew all the farmers and input retailers, while the company staff had all the technical knowledge. Good mutual learning was achieved; the government staff learned practical solutions to farmers' problems, while the company staff were able to estimate potential demand and identify retailers who could become their distributors. We offered to co-invest in market development with selected companies: the company would develop a training and product promotion campaign targeting farmers and input retailers and run it for six months, and costs would be shared evenly. Five of the 20 national input companies we contacted agreed to collaborate in this manner. For some companies this resulted in successful market development, with sales in target provinces increasing by over 1000%.

5.5 Conduct the farmer group meeting(s)



Once preparations are complete and the team is ready to engage with the farmer group, it is time to schedule and organize the meeting. We recommend the following steps based on our experience:

1. The day before the meeting, check all materials, visit the meeting location to see if any adjustments are needed to make the space suitable for your agenda and the number of participants, confirm all participants over the phone, and review the agenda one last time as a team to make sure everyone understands the vision for the event and each individual's roles and responsibilities.

2. On the day of the event, arrive 30 minutes early and set up for the meeting, including seating, snacks, and materials. As farmers arrive, greet them warmly. If possible, seat everyone in a circle or semi-circle so they can see each other and the presentation materials. Start with words of welcome and introductions. Briefly run through the agenda and the objectives of the meeting.

3. Facilitate an activity that focuses everyone on their personal and family aspirations. This helps tap into their motivations for improving farming income. (We used an exercise called 'Income Dream', in which farmers had to describe their vision of how they would develop their vegetable business and grow their income.)

4. Provide information about vegetables and explain why they are a better source of income than more commonly grown crops like rice and cassava, using some examples with gross margin analysis. Discuss some of the challenges of growing vegetables and suggest that good planning can overcome these challenges.

5. Do a simple cost/benefit analysis for each vegetable. This consists of listing all activities necessary to produce the crop on a standard area (say, 100 m²), such as land preparation, installation of mulch and a drip irrigation system, sowing and transplanting seedlings, weeding, pruning, pest control, and harvest, and then listing all the inputs and hired labour days needed for each activity and their respective costs. Discuss the expected yield and the average market price at the farm gate, then compare the cost of all inputs with the gross sales (yield in kg from the standard area x sales price/kg). Gross sales minus gross cost gives the gross

margin. Compare the gross margins for each crop in each season. Detailed instructions on how to conduct such a cost-benefit analysis can be found in another *How-to Guide: Developing Crop Budgets*.

6. Present vegetable demand information; point out surpluses, which are a signal to grow less of an oversupplied vegetable (e.g. cucumbers), and shortfalls, which are a signal to grow more of other vegetables (e.g. kale, tomatoes, eggplant).

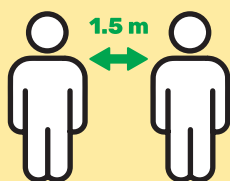
7. Facilitate a decision-making process where the group select the top crops they will grow. It must be a group decision so that production plans can be coordinated. In a coordinated production plan, not everyone grows the same crop, and farmers who do grow the same crop time the harvesting of that crop so that they do not produce too much at the same time. The top crops depend on their market demand, and production risks. (See **Annex 8** for criteria to select top crops). **See also Step 5.6 for details on production planning.**



8. The group should also elect a Group Leader who will help coordinate production during the upcoming season and serve as the primary contact for the project team and for other partners who wish to work with the group.

9. Once all planning is finished, review the next steps with the group, including who will do what and when. Conclude the event with words of encouragement and celebration.

TIPS



1. Social distancing and other safety measures should be observed if the Covid pandemic is still ongoing. Ensure that participants sit at least 1.5 m away from each other and distribute face masks.

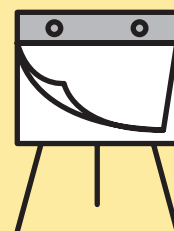
2. Some participants may bring their children, so make sure suitable snacks are available, as well as a play area. Assign someone to supervise the children during the meeting.



3. If the farmer group already has a leader (perhaps from a previous initiative), he/she can help organize the event, invite participants and even take charge of certain agenda items.

4. Meet with the farmers before the group session in order to get to know them individually and establish a relationship with them. Ask them about their farming experience, the challenges they faced in the past and their hopes for the future.

5. Use large flipchart paper to capture the business plan. The Group Leader should keep it in a place where everyone can access it at a later date.



6. Work closely with the Group Leader before, during and after creating the business plan. The leader will help make sure that the rest of the farmers are working well together.

7. Make trust-building an objective of every farmer group meeting and support trust-based relationships between farmers. This could include encouraging more communication outside the meetings and non-farm related social events.

8. Many farmers might not be familiar with the costing of activities, but they do know about the steps to produce and can list those easily. Focus on that list and then the market facilitator/extension staff can indicate what typical costs are. Farmers will also be able to identify selling prices for each vegetable and how they differ per season.

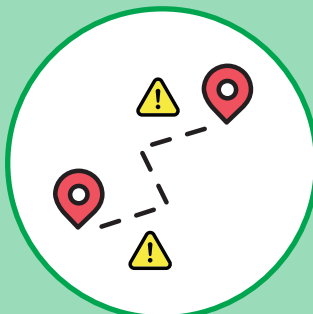
BOX 2: Gender-inclusive considerations

To promote understanding of the challenges faced by women farmers, CHAIN organized community and household dialogues (co-facilitated by the PDoWA) between men and women to discuss time usage, decision-making and market relationships. In B2B meetings we stimulated discussions on gender inclusivity by asking buyers, traders and input suppliers whether they thought there are differences between female and male clients, and if they were aware that different strategies are needed to cater to women farmers.

Through these discussions and in our interactions with hundreds of women farmers, we identified some of the challenges they face:



1. Women have multiple roles in the household, including vegetable production, childcare and other domestic chores. They often work longer hours than men, so they have limited time and mobility. This prevents them from participating in group meetings and establishing business relationships, so they have less access to market information.



2. Women are often concerned about their safety when traveling far from home, and this may impede their participation in trainings, farmer group meetings, field demonstrations and/or meetings with buyers and input suppliers.



3. Women often have no credit history, so they are not treated as priority customers by MFI loan officers.



4. Although female farmers often enjoy equal decision-making rights as men in the household, this is not the case at group level.



These differences call for a well-defined empowerment strategy for women when promoting commercial business relationships. For example, meetings, demonstrations and training sessions should be held at times and locations that are convenient for women to attend.

In B2B interactions women were especially interested in inputs for crops that do not require too much labour and in buyers of such crops, as well as in labour-saving technologies. Therefore, discussing these crops and technologies during farmer meetings and demonstrations is a good investment of time.

5.6 Facilitate the production plan

Production planning is a critical process to successful crop production and marketing, and it must be thought of before you make a contract with buyers. The production plan indicates who will produce which crop and harvest how many kg in which months. This to ensure that farmer produce what the market wants.

Production planning starts with the selection of the right crops for the farmer group to grow. To plan effectively, vegetable growers need to understand the risks and opportunities of each crop type. Pricing is very difficult to estimate and risky since it can vary widely depending on (over)supply. Farmers can estimate the expected price of sales based on what they know from past experience and on the market research and analysis (see Sections 5.1 and 5.2). Choosing a favourite crop may be easy, but selecting one that fits the market demand and can be produced at an acceptable cost is difficult. Therefore, before making any decisions on crop type, farmers should ask themselves which crop is suitable for the local area, whether they are familiar



with growing it, and what the off-season risks are. It is important to have access to the right market information during production planning, so it is advisable to invite relevant traders and/or buyers with whom the farmer group wants to strike a deal to the planning meeting.

Steps to formulate and agree on a production plan:



1. Write down the chosen top crops and their market demand per week (kg/week) and per season. In case the demand differs throughout the year, make a simple graph to show which month or season needs high or low volume.
2. List all farmers of the group and how many square metres (m²) each individual has for year round water and how many production areas they have only for part time production– identify the weeks of production.
3. Make a crop sheet per quarter/half year with the months on the horizontal axis and the name of the farmers on the vertical axis. Allow each farmer to choose the crops they want to produce and let them indicate on the planning sheet how many m² they plan to devote to each crop in each month.
4. List the production plot size (m²) at harvest time for each farmer per week and calculate how many kilograms each farmer will harvest. Calculate the total volume and adjust to match trader demand.

Yard-long beans – Production calendar (m²)

Farmer	Jan	Feb	March	April	May	June
Thy						
Vakanak						
Ly						
Sokunthea						
Socheata						
Total						

Farmer	July	Aug	Sept	Oct	Nov	Dec
Thy						
Vakanak						
Ly						
Sokunthea						
Socheata						
Total						

Yard-long beans – Harvesting calendar (kg/day)

Farmer	Jan	Feb	March	April	May	June
Thy						
Vakanak						
Ly						
Sokunthea						
Socheata						
Total						

Farmer	July	Aug	Sept	Oct	Nov	Dec
Thy						
Vakanak						
Ly						
Sokunthea						
Socheata						
Total						

Box 3: How to improve trust between company buyers and farmers

Contracts between farmers and buying companies can be formal or informal. Contracts are advantageous for both parties because they guarantee a market for the farmer and a product for the buyer. Contract breaches happen often (side-selling by farmers, or buyers who promise to buy a certain volume at a certain price but don't comply afterwards), so contracts should be built on trust relationships between buyers and farmers. If farmers grow a new crop, allow for a couple of try-out cycles. Make clear agreements on volumes, and the company should check whether the farmers have enough land, water and capacity to produce the contracted volumes. The company can request support from NGOs or local government through a Public-Private partnership whereby they decide to collaborate and coordinate in a contract farming arrangement. Side selling by farmers to other buyers is a frequent problem – often at slightly higher prices. If there is an oversupply of produce in the market, companies sometimes refuse to buy the agreed amounts.

Companies should be willing to assign field staff to supervise farmer contracts, including regular monitoring of cultivated fields, offering production advice to farmers and being available on site to resolve any problems or recommend changes. Without such staff, the likelihood of failure in contracts is high.

Pre-harvest price agreements in contracts can be discussed, but it is best to agree on a minimum price and volume according to prevailing market prices. (For instance, market price + 5%.) The buying companies and farmers should treat each other as partners who want a long-term relationship, not just as sellers and buyers. Both parties should be proactive in communicating market information, have regular meetings to discuss what is going on in the fields and maintain intensive telephone contact.

Differences in interpreting quality standards is another frequent problem. The buyer should have a clear understanding with the farmer regarding the required quality specifications, in order to avoid arguments.

5.7 Facilitate deals



Once farmer groups have prepared production and business plans, and they have clarity on the potential buyers, they will need help to facilitate a deal. If no buyer has been identified they might need help in reaching out to some buyers, and some input retailers who can supply the necessary inputs at attractive prices, and with a volume discount. Such business deals are also a key element in the B2B approach. It is important that all participants understand all aspects of the deal, including roles, responsibilities and commitments, and abide by them. Deals should be win-win, benefitting all parties involved.

Your project can help build capacity and mitigate risk for those participating in deals by deploying the financial resources to de-risk the deal. For example, a trader wanting to work with more farmers may first need to invest in a vehicle to increase transport capacity. As part of the deal between that trader and the target farmer group, the project could offer to co-finance the purchase of a cart or truck for the trader, or to pay for the first try-out transport costs.

Below is a list of steps that support deal-making.

1. Analyse opportunities for deals that arise from the farmer group meetings. Additionally, you can meet with relevant market actors – traders, input retailers, large buyers and financial service providers – to identify other opportunities.
2. During meetings with market actors, get to know their aspirations for the future (how do they want to grow their business?) and constraints (what is holding them back from achieving business growth?). These aspirations and constraints will point the way to win-win deals with other market actors. For example, if an input retailer wants to increase sales and a farmer group would like to start buying high-quality seeds in bulk, perhaps a deal can be facilitated whereby the retailer offers a discounted price to the farmers in exchange for a large order.
3. Before moving forward with any deals, perform a light due diligence on the market actors involved. What is the history of each business? What is its reputation in the market?
4. Begin to facilitate deals between the relevant market actors. This will likely be a multi-step process. You might start by setting up an informal "get to know you" meeting between a trader and one or more farmer groups, and then, over the course of several meetings, work out the details of the agreement. Even if the deal is informal, write down all the details and review them with each party to ensure clear understanding and commitment.
5. Once a deal is made, remain involved. There will inevitably be issues to solve.
6. If the project has committed any human or financial resources, the team should ensure that they are delivered as expected and that any key information needed for reporting is collected from the parties involved in the deal.

Box 4: The difference between spot-market agreement and contract farming/supply agreement

Spot-market agreement

A spot-market deal is an informal arrangement to trade vegetables as and when they become available. It is often made over the telephone and near harvest time as farmers and traders communicate in order to align supply and demand. In this type of transaction, farmers prefer to sell to trusted traders, even though they may already have made informal deals with others. If the yield is lower than expected, for example, they may be unable to fulfil all their agreements and will default to the trader they trust the most or who offers the highest price. To gain a farmer's trust, a trader should pay promptly for spot trades, pick up the purchased produce on time, buy at reasonable prices, and be helpful by offering to buy vegetables that have been overproduced.

Contract farming agreement with a buying company

In a contract agreement, a company pledges in advance to buy specific vegetables from a farmer or a group of farmers when the vegetables are harvested. This type of agreement creates expectations and obligations between the farmer and the company, so it requires more than a verbal commitment or a handshake. A detailed, binding legal document must be signed by both parties. Signing a contract is a business decision that brings both benefits and challenges. For example, with a production contract farmers may obtain price or volume guarantees from the buyer, receive technical assistance during cultivation, and learn about quality standards such as CAMGAP and CAMorg. However, they may have to deal with people or companies they do not know well, and they may not be able to take advantage of price fluctuations.

TIPS

1. Deal-making is often a new skill for staff, so it is important to provide classroom training as well as on-the-job coaching as they begin to analyze, facilitate, and troubleshoot deals. A more senior, experienced staff member should always be involved.

2. To help avoid friction between the parties to the deal, try to involve the village chief and/or local government officers (such as PDAFF). If they know the parties involved, understand the deal, and agree to support it, they can help avoid and manage future troubles.

3. When facilitating deals, discuss risk and risk mitigation with all parties, particularly with lower-income farmers.

5.8 Follow-up



The work of B2B facilitation does not end with the brokering of a deal. To ensure that the farmers follow through with what they planned and agreed on, the B2B Facilitator must follow up continually, either as and when issues arise or by scheduling a meeting of all stakeholders at regular intervals, such as once every quarter.

At these follow-up meetings the B2B Facilitator can raise any problems that they noticed or were reported. Participants can listen to the issues and share ideas to solve these problems together.

We suggest the following approach:

- Gather market information at least annually, but preferably seasonally. When analysing information, look for changes over time to identify trends that you can discuss with farmers, partners and other relevant market actors.
- Meet regularly with farmer groups to provide continuing support, give them opportunities to support each other and create forums where other market actors can be invited for discussion, exchange, training, planning and possibly deal-making.
- Between farmer group meetings, check in with group leaders and individual farmers who may need additional support.
- Follow up regularly with other market actors (input sellers, local traders, technical service providers and government officials), as this will help the team understand needs and opportunities in the market and how they change over time.
- Although relationship-building and support are invaluable and will unlock opportunities, it is important to remember that the project team is a temporary force. They are facilitators of positive change, but they must not create dependency in the market actors they support.



TIPS

1. As farmers try new crops, varieties, inputs, methods and technologies, they will likely need a great deal of advice. While it is good practice to supply as much of this advice as possible through other market actors, staff may need to fill information gaps while the market evolves. They will need continuous training to provide this technical follow-up to farmers.

2. As farmers and other market actors seek to expand their businesses, they will also need financial support. Access to finance should be facilitated responsibly - we do not want farmers to take on more debt than they can manage, yet we also want to open doors to investment opportunities. Proper crop budgets (cost/benefit analysis) for different crop cycles and investment decisions should be discussed with farmers and financial institutions.

3. Good record-keeping is often a challenge and a low priority for farmers. One form of helpful follow-up is staff-supported recording of input costs, yield, prices, quality and revenue; these records can be used to improve future production and business plans.



6. Conclusion



While the principles and methods outlined here are applicable to many different development initiatives, we hope especially that they will stimulate NGOs and local government agencies in Cambodia and elsewhere to undertake projects in agricultural development that adopt the MSD model, which has delivered valuable results for CHAIN.

B2B is a powerful tool to enhance the market relationships between different market actors. It can help to create trust among them which is the underlying basis of any long lasting business relationship. B2B has opened markets to farmers, and enabled consistent supply for local markets. As a result, local markets have increased the amount of local vegetables from less than 30% before CHAIN started to 70% nowadays (CHAIN market actor survey and baselines 2015-2021). Farmers benefitted from coordinated production planning and marketing with better constant prices. Government and NGOs have an important role to play in facilitating these B2B relationships through playing an impartial role. Quantitative market assessments (calculating demand, supply), re-iterative planning, good facilitation and promoting dialogues are key skills needed to get successful B2B established.

For more information on CHAIN's multiple phases, including manuals (in Khmer) on specific technologies and horticultural techniques, please visit our web site at <https://elibrary.maff.gov.kh>.

The Annexes in the following pages provide samples of various materials that were developed by CHAIN for its B2B activities, including a market survey questionnaire and templates for production and business plans. Soft copies of these documents can be downloaded from <https://elibrary.maff.gov.kh>.

ANNEXES

ANNEX 1

Methodology for the Trader Survey

1. Identify the target market(s)

The target market is the end-user retail market where the members of the farmer group usually sell their produce, directly or indirectly. It is typically in close proximity to their farms and/or in the nearest town. Any other market where the farmers may potentially sell their produce can also be targeted in the survey. Secondary data (i.e. information compiled by the Ministry of Commerce, the district or the PDAFF) can provide estimates of the number of traders in a particular area.

2. Determine and select your sample

Surveying every trader in the target market would be too laborious, so you should interview only a sample of traders. The sample should include traders that are both large and small, mobile and non-mobile, who deal in wholesale and in retail, and traders who come from different parts of the district. How many traders constitute an adequate sample? That will depend on the aggregate size of all the markets you plan to survey. See **Annex 2** for instructions on how to determine the correct sample size.

3. Interview traders

Record information from your sample of traders in a Market Survey Questionnaire/Trader Interview Tool (see an example in **Annex 3**).

4. Data entry

Once you have completed the survey of all traders in the sample, you can input the data in spreadsheets using Excel or Google Sheets. If the data collection was done using an app, then this is not necessary, as the app will tabulate the data automatically. Two popular survey apps that work on smartphones and tablets are KoBoToolbox (<https://www.kobotoolbox.org/>) and Google Forms (<https://www.google.com/forms/about/>). Once the data has been tabulated, it can be analysed and presented in visual form using charts and graphs.

ANNEX 2

Determining the Sample Size for the Trader Survey

The trader survey sample size can be determined using the Krejcie and Morgan formula, which is an approximation of known sample size formulas. You can generate the correct value using an online sample size calculator, such as <https://www.calculator.net/sample-size-calculator.html>.

For CHAIN we used the following values:

Estimated total number of vegetable traders in the target markets in the four provinces: 329

Confidence level: 90%

Margin of error: 5%

Once the ideal sample size (150) had been determined, we divided it proportionally among all the target markets we planned to survey. For example, Samroang market in Oddar Meanchey province had 13 vegetable traders, that is, 4% of the total 329.

Therefore, we planned to interview 6 traders in that market, equivalent to 4% of the desired sample size of 150.

Sample Size Calculator

Find Out The Sample Size

This calculator computes the minimum number of necessary samples to meet the desired statistical constraints.

Result

Sample size: **150**

This means 150 or more measurements/surveys are needed to have a confidence level of 90% that the real value is within $\pm 5\%$ of the measured/surveyed value.

Confidence Level:

Margin of Error:

Population Proportion: Use 50% if not sure

Population Size: Leave blank if unlimited population size.

If the calculated sample for each market was more than 15, it was reduced to 15 to make it manageable for the team. If the calculated sample was less than 5, it was rounded up to 5 to increase accuracy. As a result of these adjustments, the sample size grew to 158.

Province	Market name	Number of traders	Percentage of overall trader population	Calculated sample	Adjusted sample
OMC	Samroang	13	4%	6	6
OMC	Anglung Veng	13	4%	6	6
OMC	O'smach	5	1.5%	2	5
OMC	Bantey Ampel	6	2%	3	5
OMC	Trapoeng Prasat	9	3%	4	5
PV	Chheb	11	3%	5	5
PV	Sroyong	10	3%	5	5
PV	Kulen	6	2%	3	5
PV	Chhey Sen	6	2%	3	5
PV	Kampong Pronak	30	9%	14	14
PV	Rovieng	22	7%	10	10
ST	Orussey	19	6%	9	9
ST	Samaki	36	11%	16	15
KT	Samaki	35	11%	16	15
KT	Chhloung	28	8,5%	13	13
KT	Preak Prasab	10	3%	5	5
KT	Phe Lue	38	11.5%	17	15
KT	Sandan	19	6%	9	9
KT	Sombor	13	4%	6	6
		329	100%	152	158

ANNEX 3

Market Survey Questionnaire/Trader Interview Tool

Fill out one questionnaire per interview and interview only one trader at a time.

There are three parts to the tool:

1. Overview information
2. Information about trader practices
3. Vegetable demand (market) information

The overview information section is meant to capture general information about the trader. Some traders are stationary – they have a shop or fixed market stall – while others are mobile, that is, they may have a cart or spread their produce on the ground, so they can change position within the market or move to a different location.

For the survey of trader practices, the tool has been set up as multiple choice (select one or select all that apply). In some instances, the surveyor must solicit additional information (for example, to explain the choice of "other"). The "Notes" column allows the surveyor to capture any other information that is not related to the question. For example, if a trader says, "Lots of customers ask me about local vegetables because they really want chemical-free produce," this important insight can be captured in the "Notes" column.

The vegetable demand part consists of two tables. Please apply the following guidance:

Question (c)	If the trader answers yes, then continue with questions (d) to (s) for that vegetable. If the trader answers no, skip to the next vegetable.
Questions (d) – (h)	These serve as a baseline for where the trader buys her/his vegetables. Ask the question for the current month. For this series, $(d) = (e) + (f) + (g) + (h)$.
Questions (i) – (m)	These serve as a baseline for where the trader sells her/his vegetables. Ask the question for the current month. For this series, $(i) = (j) + (k) + (l) + (m)$.
Questions (n) – (s)	These are projections, i.e. the trader's estimated demand per vegetable per month.

It is very important to ask these questions carefully so that demand information can be compared across traders, markets and provinces.

Part 1: Overview information

Province: _____ Market: _____

Name of interviewer: _____ Date of interview: _____

Name of trader (English): _____ Name of trader (Khmer): _____

Mobile phone #: _____ Size of the trader (S, M or L): _____

Moving (M) or stationary (S): _____ Wholesaler (W) and/or retailer (R): _____

Part 2: Trader practices

Question	Answer Options	Notes
1. Gender	Circle one: Female Male	
2. Age range	Circle one: 20-30 30-40 40-50 50+	
3. Do you know the origin of the vegetables?	Circle one: a. Yes, I know the origin of all vegetables b. Yes, I know the origin of most vegetables c. Yes, I know the origin of some vegetables d. No	
4. Do you tell your customers about the origin of the vegetables you sell?	Circle one: a. Only if the customer asks b. Proactively tells customers verbally c. Uses physical separation to distinguish local vegetables from imported ones d. Uses signs to distinguish local vegetables e. Other (please explain)	
5. Do you tell your customers about the benefits of local vegetables?	Circle one: a. Trader does not know the benefits b. Trader knows benefits but only shares information if the customer asks c. Trader knows benefits and proactively shares information with customers d. Other (please explain)	

Part 3: Vegetable demand information

Vegetable (English/Khmer) (a/b)	(c) Do you trade this vegetable? (Y/N)	Baseline: How many kilos per day of each vegetable does the trader buy from each source?					Baseline: How many kilos per day of each vegetable does the trader sell to each type of customer?					
		(d) = (e) + (f) + (g) + (h)	(d)	(e)	(f)	(g)	(h)	(i) = (j) + (k) + (l) + (m)	(j)	(k)	(l)	(m)
		(e) How many kg/day come from other traders in this market? (f) How many kg/day come from other traders in this province? (g) How many kg/day come directly from farmers in this province? (h) How many kg/day come from outside the province (local or import)?	On average, how many kg/day do you buy?					On average, how many kg/day do you sell?				
Bitter gourd / ម្រះ												
Bok choy / ត្រៃត្បើ												
Bottle gourd / ឃ្លាត												
Cabbage / ត្រៃត្បើ												
Cauliflower / ផ្កាខាតណា												
Chili / ម្ទេស												
Chinese kale / ខាតណាជើម												
Chinese mustard / ត្រៃត្បើ												
Choy sum / ត្រៃត្បើ												
Cucumber / ត្រៃត្បើ												
Curly mustard / ត្រៃត្បើ												
Eggplant / ត្រៃត្បើ												
Green mustard / ត្រៃត្បើ												
Lettuce / សាឡាត												
Long bean / សណ្តែកគូរ												
Luffa gourd / ននោង												
Round eggplant / ត្រៃត្បើ												
Spring onion / ខ្ទឹមស្លឹក												
Tomato / ប៉េងប៉ោះ												
Water spinach / ត្រៃត្បើ												
Wax gourd / ត្រៃត្បើ												

(a) Vegetable (English)	(b) Vegetable (Khmer)	(c) Do you trade this vegetable? (Yes/No)	Projections					
			Vegetables needed per day in each month (kg/day)					
			(n) Dec	(o) Jan	(p) Feb	(q) Mar	(r) Apr	(s) May
Bitter gourd	ម្រុះ							
Bok choy	ស្ពៃត្បើ							
Bottle gourd	ឃ្លោក							
Cabbage	ស្ពៃក្តោប							
Cauliflower	ផ្កាខាតណា							
Chili	ម្ទេស							
Chinese kale	ខាតណាដើម							
Chinese mustard	ស្ពៃជើងទា							
Choy sum	ស្ពៃចង្កឹះ							
Cucumber	ត្រសក់							
Curly mustard	ស្ពៃក្រញាញ់							
Eggplant	ត្រប់							
Green mustard	ស្ពៃខៀវ							
Lettuce	សាឡាត							
Long bean	សណ្តែកគូរ							
Luffa gourd	ននោង							
Round eggplant	ត្រប់មូល							

ANNEX 4

Market Information Analysis and Presentation

The tables and graphs below are examples of the data analysis outputs that can be presented to farmers during farmer group meetings. They can be shown to farmers in large displays, drawn on manila paper and/or printed on a business information card (BIC) and handed out during meetings. The market data can be elaborated and turned into visuals using a software tool like Power BI, but Excel is sufficient to analyse and visualise the data.

1. Farmer group information

Location

Farmer Group	Province	District	Village	Number of members
KRCB-BLK2 (unique identification name or number)	Kratie	Chetr Borei ចិត្របុរី	Bos Leav Kraom បុសលាវក្រោម	18

Farmer group (FG) selected top vegetables and current production:

Top 5 grown vegetable	Average plot size (m ² /farmer)	Cycles/year	Yield (kg/m ²)	Number of FG members	Total production per farmer (tonnes/year)	Total production in group (tonnes/year)
Cucumber	1,030	1.7	1.3	6	2.3	13.7
White cabbage	2,500	1.0	2.4	13	5.9	76.9
Tomato	820	1.1	1.3	13	1.1	14.6
Yardlong bean	815	1.6	1.5	13	2.0	25.4
Curly mustard	200	2.2	1.3	13	0.5	6.9

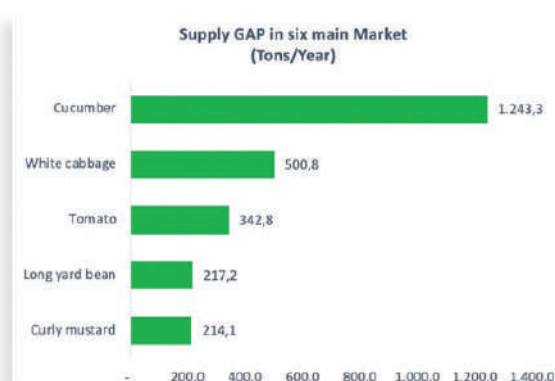
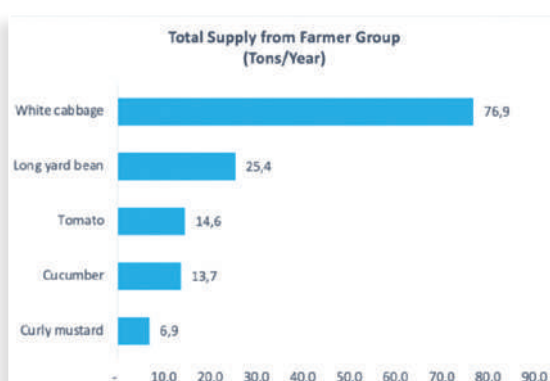
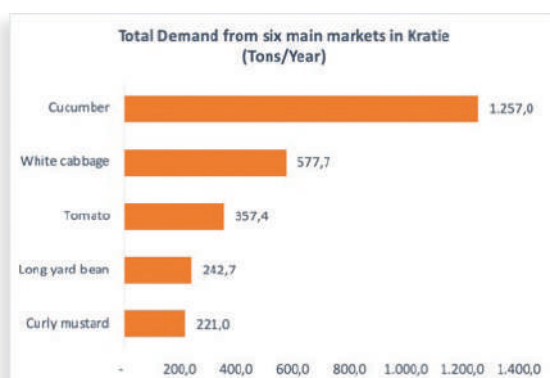
Top problem and solution strategies for each vegetable:

Vegetable	Problem	Solution Strategy
Tomato	Limited knowledge of pest and disease control	• Introduction of new technologies (grafting) • Access to agriculture technical solution recommended by input provider • Seek advice from PDAFF/input retailer
Cucumber	Limited knowledge of pest and disease control Market information lacking	• Introduction of yellow trap technologies in commercial gardens • Talk to traders/PDAFF about volume needs
Curly Mustard	Limited knowledge of pest and disease control	• Seek advice from PDAFF/input retailer • Explore nethouse solution
Yardlong bean	Water shortage in the area	• Seek support to smart water solution

2. Farmer group current supply vs supply gap

The supply gap is the difference between the quantity of vegetables that the surveyed traders reported they need (demand) and the quantity the farmers are producing and supplying to traders.

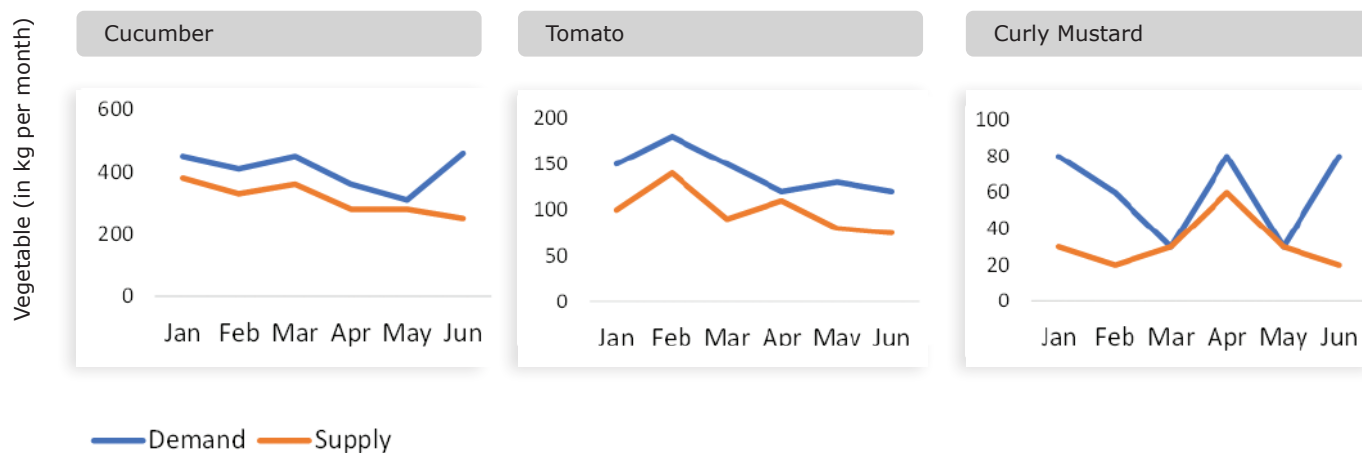
Top 5 vegetables	Total demand from six main markets in Kratie province (tonnes/year)	Total demand from Kratie town market (tonnes/year)	Total supply from farmer group (tonnes/year)	Supply gap in Kratie town market (tonnes/year)	Supply gap in six main markets (tonnes/year)
Cucumber	1,257.0	209.5	13.7	195.8	1,243.3
White cabbage	577.7	96.3	76.9	19.4	500.8
Tomato	357.4	59.6	14.6	45.0	342.8
Yard-long bean	242.7	40.4	25.4	15.0	217.2
Curly mustard	221.0	36.8	6.9	29.9	214.1



3. Issue per vegetable and number of affected farmers

Problem	Cucumber	Cabbage	Tomato	Yard-long bean	Curly mustard	Total
Flooding	3	–	2	7	5	17
Lack of information on market demand	5	8	–	–	1	1
Limited knowledge of pest and disease control	10	–	14	16	6	52
Water shortage in the area	3	–	2	3	2	10
Total times	21	8	18	26	14	80

4. Demand vs. supply by vegetable (kg/month)



5. Estimated price per crop (USD/kg)

Estimated price (USD/kg)		Cucumber	Yard-long bean	Cabbage	Tomato	Curly mustard
Farm gate	High	0.25	0.50	0.30	0.30	0.30
	Low	0.12	0.25	0.15	0.10	0.10
Wholesale	High	0.30	0.60	0.40	0.50	0.40
	Low	0.20	0.40	0.20	0.15	0.20
Retail	High	0.50	1.00	0.75	1.25	0.60
	Low	0.30	0.60	0.25	0.30	0.30

ANNEX 5

Farmer Group Meeting Agenda

The following is a four-and-a-half-hour agenda for discussing and creating a production plan with farmer groups based on market information.

Time	Activity	Responsible Person	Notes
8:00 am	Welcome and introductions	Farmer group representative or PDAFF staff	
8:15 am	Icebreaker	Staff	
8:45 am	Roles and responsibilities in market linkages	B2B Facilitator	PowerPoint with Q&A
9:15 am	Market information presentation	B2B Facilitator	PowerPoint with Q&A
9:45 am	Role-play between farmers to understand markets	Staff	Group role-plays
10:00 am	Discussion	Staff	FGBP template review, facilitation tips, and Q&A
10:45 am	Introduction to production planning	Market expert	
12:00 pm	Group work	Farmer group	Individual surveys
12:15 pm	Presentation of each production plan	Farmer group	
12:30 pm	Comparison of production plan with market information and adjustment	B2B Facilitator	
	Agreements & closure		

Resources Required

The following resources are needed for this meeting:

- Icebreaker activity
- Workshop PowerPoint slides, including:
 - Title
 - Objectives
 - Agenda
 - Icebreaker instructions
 - "Roles and Responsibilities" slides
 - "Farmers as Entrepreneurs" slides
 - FGBP facilitation tips slide
 - Role-play instructions
 - Survey instructions
 - Closing slide
- Laptop for facilitators, projector, screen
- FGBP template handout (6 copies per workshop – 4 for participants and 2 backups)
- Role-play scenarios (6 copies per workshop – 4 for participants and 2 backups)
- Whiteboard and whiteboard markers, or flipchart paper with flipchart stand and markers
- Tape
- Post-It notes

ANNEX 6

Training Guide (Role-Play) for Farmer Group Business Plan (FGBP) Meeting

This guide provides instructions on how to train your team to facilitate a business plan meeting with a farmer group (FGBP meeting).

Instructions for the trainer:

1. Explain to the whole group how the role-play will work (you can use PowerPoint slides).
2. Ask for a volunteer to practice facilitation first. Invite the volunteer B2B Facilitator to leave the room and let him/her know that you will come out in five minutes to provide more instructions.
3. Stay in the room and distribute the farmer roles (see below) to the group. Assign one farmer role to each person. Tell them to read the description and ask you about any confusing points. Give everyone this advice: they should raise challenges during the role-play, but the challenges should not be overly difficult. We want the B2B Facilitator to have a positive experience overall.
4. Now go outside the room and prepare the trainee B2B Facilitator. Review the role with him/her. Remind him/her that it is more important to build consensus among the farmers than to speed through the FGBP template. Advise him/her to rely on the farmer group leader to help keep the meeting positive and moving forward.
5. Conduct the role-play as described below:
 - a. Ten minutes of practice
 - b. Five minutes of feedback
 - What did the B2B Facilitator do really well?
 - What could the B2B Facilitator do better next time?
 - c. Repeat the cycle a few times, depending on how much time you have.
 - d. At the end, try to generate a list of best practices with the whole group.

Instructions for the trainee:

1. Each team member to be trained as B2B Facilitator will be asked to complete one or more sections of the FGBP.
2. You will have ten minutes to practice facilitation while the other staff pretend to be members of the farmer group.
3. There is no rush. Facilitate as much of the FGBP template as possible within ten minutes. It is more important that the farmers agree on the elements of the business plan than to complete the FGBP.
4. In the role-play, your co-workers who are pretending to be farmers will ask tough questions. Do your best to answer them and complete your section of the FGBP.
5. After ten minutes of facilitation, the group will provide five minutes of feedback on what you did well and what you could do better.

6. At the end of the role-plays, work together with the other trainees to create a list of best practices to guide the group going forward.
- What are some best practices we should keep in mind when facilitating FGBPs?
 - What are some obstacles or potentially tricky situations we should try to avoid when facilitating FGBPs?

Farmer roles:

Farmer #1: You're the leader of the farmer group. You're excited about working together on a business plan and like the idea of planning based on market information from traders. If other farmers raise questions or concerns, try to help the B2B Facilitator and keep everyone focused on completing the business plan.

Farmer #2: You're happy to be a member of the farmer group. You especially like the additional training and agricultural advice you get through the project. But when it comes to choices about what crops to grow, you're quite independent. You're resistant to coordinating production as a group, so be a little uncooperative toward the B2B Facilitator (but please don't be too difficult).

Farmer #3: You're happy to make a business plan with all the other farmers in the group. However, you're resistant to the idea that the market should determine what crops you grow. You have your favourite crops; you want to grow them because you're familiar with them and they're easy to grow. You should argue against using market information to make production decisions, but in the end you should grudgingly agree to do what the group wants.

Farmer #4: You like the idea of the business plan and of producing new crops that are in high demand. However, you're nervous about growing different crops, especially the ones you're not familiar with. What if the seeds don't work well? What if you make a mistake and the first harvest is ruined? What if pests attack your crops? You should gently resist the idea of trying something new.

ANNEX 7

Farmer Group Business Plan

Date: _____

Part 1: Basic business information

1. Group name	
2. Name of group representative	
3. Address and mobile number	
4. Number of group members	
5. Focus crops	
6. Total production land	
7. Total group capital for running the business	
8. Time frame of the business (cultivation period and number of cycles per crop)	

Part 2: Objective of the business

Describe your business objectives. For example,

- Improve crop production so as to meet market demand and avoid low prices
- Gather and create a crop production plan
- Support each other in sales and negotiation processes with traders

Part 3: Production plan and marketing

Crop selection

Prior to production planning, the selection of crop type is very important. Before making the selection of crop type, encourage group members to think of the actual market demand rather than focusing on individual circumstances or concerns, like the difficulty of growing a new crop, the amount of time required, the absence of a water source on a particular plot of land, the timing of the harvest, etc. The group can select 3-5 crop types as a priority for the business plan, but members can also choose to grow other crops.

Production plan

The B2B Facilitator helps group members compile a cultivation and harvesting calendar for the selected crops to meet the actual market demand. Develop a separate crop calendar for each farmer, calculate total yield, set specific selling dates, and ensure that they do not grow the same crop simultaneously, which can result in overproduction and oversupply. Sum up the results/data of each crop that was agreed upon by group members in the table below:

Crop	Total production	Number of members involved	Quantity harvested per day (kg)	Harvest date

Each group member should have a clear **production plan** with a specific schedule to grow and harvest. Plan the sowing and harvest dates and calculate expected production. If you know the planted area of each member's plot, use a reference table to estimate the production from that plot:

Expected production (tonnes) = plot area (m²) / 10,000 X reference yield

Taking cucumber as an example, the production plan might look like this:

Member	m ²	Sowing date	Harvest date	Expected production (tonnes)
Phin Phon	3,000	01-02-2022	Daily from 28-04-2022	12
Thrang Dam	1,600	15-02-2022	Daily from 14-05-2022	6.4

Marketing plan

Crop	Where to sell	Buyer's name	Quantity to sell	When to sell	Expected price/kg

Group financial plan

A separate financial plan can be developed for each farmer based on actual expenses calculated together with all the farmers. For the whole group, income and expenses are analysed based on reference information (see HTG Crop Budgets), using selected crop information from each member.

Crop	Group Production (kg)	Expenses		Revenue		Gross Income (USD)
		Cost (USD/kg)	Total (USD)	Cost (USD/kg)	Total (USD)	
Cucumber	80,000	0.10	8,000	0.25	20,000	12,000

Challenges and solutions

Challenges of the group

Challenges	Root cause

Collective action for solving problems:

Challenges	Activities	Time	Stakeholders

Source of capital to invest

Please explain your source of capital: borrowing at interest from a money lender, MFI or bank; remittance from daughter/son or other family member; income from animal husbandry, rice cultivation or other agricultural activity; etc.

Total capital needed: _____

Total capital in hand: _____

Capital expected from third parties: _____

Source of capital	Amount (USD)	Purpose
Bank loan		
Salary		
Remittance		
Other		
Total		

Please describe the risks that your business faces (production and selling).

What is your plan to mitigate these risks?

Issued on _____ Day _____ Month _____ Year _____

Thumb print/signature

ANNEX 8

Critical factors to be considered in crop selection

a. Key points for selecting crop

When vegetable growers plan to make a production plan or making contract with buying companies, they should consider demand, labor availability, yield, price, disease risk and profitability. The detail is in the below:

1. Availability of equipment and labour

Semi-commercial and commercial farmers should estimate the labour required to grow a particular crop and determine whether sufficient family and hired labour is available. If not, farmers should inquire whether suitable machinery is available at an affordable price. If the labour price is high, farmers should choose crops that grow quickly and are easy to harvest. For instance, harvesting chilli requires much labour effort over multiple days because chilli pods ripen unevenly. The chilli plant needs to be checked daily for red, fully ripe pods, which must be picked individually.

2. Availability of water sources

Without water, it is impossible to grow vegetables in the dry season. Vegetable growers should understand well the water requirements for each specific crop; otherwise, it is risky for them to choose those crops which require a lot of water to grow. Many farmers face water shortage during dry season. In this case, the growers should avoid growing leafy vegetable as they mostly require regular watering throughout their growth. Growers may use solar/diesel/electricity pump to collect water from reservoir, nearby pond, and river. In this case, they need to have money in hand to buy those materials. It is suggested farmers should do crop rotation and chose crops depending on water availability and access and replace leafy vegetable to fruit crops such as cucumber or eggplant since they do not require much water nor regular watering.

3. Yield

Growers should understand crop yields before they choose which crop to grow, especially how yields change depending on weather patterns. Some crops have high yields in the dry season but fetch only a low price, while others are riskier to grow but command a higher price. Farmers should estimate how many kilograms of the target crop they can harvest in each season. If the chosen crop gives high yield and can fetch a good price, the grower should consider planting it.

Growers need to know whether they can make a profit by growing known or new varieties. CHAIN provided a list of recommended crops to farmers with core information to help them decide.

4. Price

Price is a key factor for making a production plan. The price of vegetable goes up and down depending on market demand, and in top season or off-season. The marketing information such as how much per kilo and how many kilos is needed per day, can be collected from traders at the market or the market research above. During production planning, we introduced a game for farmers to play and learn about **the cost of production**, i.e., how much to produce 1kg of choy sum, let the farmers estimate and calculate the cost and expenditure for one cycle of choy sum production. Let them list down the price of seed, labour cost, input cost and others for 100 m². Participants then had to divide this production cost by the estimated yield to obtain a per-kilogram estimate of cost.

5. Pest and Disease

Pest and disease can be responsible for a great deal of damage on your vegetable. You should prepare for what insect pest and diseases what commonly happen on specific crop you choose. It is suggested the grower should consider on choosing good seed, good variety, disease resistance, pest resistance and so on. The information of pest and disease can be collected asking technicians, your neighbour, self-experience, and observation.

b. Key criteria for production planning

Production planning is a critical process that must be thought of to ensure profitability and sustainability. Production planning will allow farmers to make a production and harvest calendar and estimate when they have how much volume of each crop. This is to match the supply with the demand and minimize risk of oversupply and provide buyers with the relevant information for aggregation and transport logistics.

Below is a list of criteria to be considered during production planning.

No.	Vegetable	Average Yield (tonne/ha)	Crop cycle period	Estimated Price (KHR)/kg	Labor Requirement	Pest & disease	Water Requirement	Profitability
Fruity vegetable								
1	Cucumber	25	4	1.200	**	**	**	**
2	Yard long bean	22	4	2.000	**	*	*	*
3	Bell pepper	10	2	4.000	*	****	**	***
4	Tomato	30	2	2.000	*	****	**	***
5	Yellow watermelon	35	4	1.500	*	***	*	****
6	Eggplants	33	2	1.500	*	**	*	**
7	Bitter gourd	35-40	3	1.800	**	**	*	***
8	Pumpkin	13	3-4	1.200	*	**	*	**
9	Sponge Gourd	30	2	1.250	*	**	*	**
10	Ridge Gourd	30	2	1.200	*	**	*	**
11	Corn	10	4	1.600	*	*	***	***
12	Wax Gourd	25	3-4	1.300	**	*	*	**
Leafy vegetable								
13	Morning glory	25	8	2500	***	*	*****	****
14	Pack choi	25	8	2500	****	****	*****	****
15	Cabbage or Chinese Kale	30	3 Or 6	3000	**	*****	***	**
16	Green Mustard	30	8	2500	****	***	****	***
17	Choy Sum	30	8	3000	****	****	****	***
Rooty vegetable								
18	Chinese Raddish	24	4	1.300	****	*****	****	***

Note

*Indicates rating level

* = Low

** = Medium

*** = High

**** = Very high

***** = Extremely high





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