GARDENING IN SACKS

HANDBOOK

A technique of vertical agriculture

SOLIDARITÉS INTERNATIONAL

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THIS HANDBOOK WAS PRODUCED BY THE **TECHNICAL AND PROGRAMME QUALITY DEPARTMENT OF SOLIDARITÉS INTERNATIONAL**.

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The annexes of this handbook are available on the Intranet of SOLIDARITÉS INTERNATIONAL or on request from the Technical and Programme Quality Department at: technicaldepartment@solidarites.org.

INTRODUCTION

You are currently intervening or wishing to intervene in a dense urban context to respond to issues of food security and improve livelihood conditions? This handbook is for you!

Following the evaluation of all of its sack-gardening projects, SOLIDARITÉS INTERNATIONAL (SI) wished to formalise its experience through this technical handbook.

NGOs, including SI, are increasingly led to intervene in contexts of high density (whether in camps or in slums): this handbook is thus set within this dynamic.
It provides the keys for assessing the relevance of a sack-gardening project, as well as the tools for its implementation. Nonetheless, all methodologies and tools proposed in this handbook shall be further contextualised in case of a replication of this project.

OBJECTIVE

This handbook is part of the culmination of SI Technical and Programme Quality Department's will to capitalise on its experience of sack-gardening in different countries.

The first projects of this kind implemented in Kenya have proved successful, giving SOLIDARITES INTERNATIONAL a solid reputation on the domain. The NGO has since developed this sack-gardening project in 6 countries of intervention: Haiti, Thailand, Sudan, Myanmar, Cameroon and Somalia.

This handbook thus aims at formalising these 8 years of experience, proposing a structured overview of the whole project cycle, from the assessment to the design and then the implementation of the sack-gardening activities. It identifies the different steps to follow and provides practical tools to best develop an implement the project.

FOR WHOM IS THIS HANDBOOK?

The evaluation of the sack-gardening projects has pointed out the need for a common and comprehensive document aimed at supporting the SI field teams.

In parallel, following the success of sack-gardening in Kenya, the NGO has been often called upon by external organisations and individuals.

Hence, to respond to these internal and external requests, the NGO has decided to produce a technical handbook to share the specific sack-gardening technique to a wide audience.

This handbook is therefore aimed both at SI teams in the field and humanitarian professionals that wish to develop such a technique.

HOW TO USE THIS HANDBOOK?

This handbook has been written in order to be user-friendly: it consists of different worksheets to provide you with technical and methodological guidance at every stage of the sack-gardening project cycle. A series of tools and guides are annexed to this handbook.

It is important to adapt these guidelines to the specific context and objectives of your project.

WHAT IS SACK-GARDENING?

SACK-GARDENING IS AN URBAN AGRICULTURE TECHNIQUE. SUCH A PROJECT IS TO BE IMPLEMENTED IN AN URBAN CONTEXT (SUCH AS A SLUM) OR IN A PLACE OF HIGH DENSITY (LIKE A REFUGEE CAMP) FOR A POPULATION VULNERABLE TO FOOD INSECURITY.

The particularity of this type of intervention context is the **dependence of people** on markets or on food aid to eat. It sometimes happens that people are unable to purchase vegetables, either by a lack of availability on local markets, either due to their very high price. In fact, this project aims to provide them with innovative production means: **gardening in sacks**.

The bag in itself is a production medium used within the frame of vertical agriculture. It enables to maximise the use of ground space by using both the top of the bag as well as its sides for cultivation.

Sack-gardening projects meet two main objectives:

- Diversifying the diet of targeted households through the self-production of vegetables;
- The possibility for households to make small savings from the reduced purchase of vegetables induced by self-production.

This project therefore acts on the households' nutritional status as well as on their budget.

In addition, there are three other important results of sack-gardening projects (results that are found in all urban agriculture projects). First of all, beneficiaries can boost their self-esteem through the practice of gardening: by having an activity that occupies them in moments without work or for some of them, because they reconnect with their rural origins. Moreover, social links between beneficiaries can be created, or reinforced, thanks to the sack-gardening activities: participants meet during training sessions and are also able to share cultivation tips and recipes. Finally, the presence of plants improves the visual environment of the beneficiaries and therefore their well-being.

Gardening in sacks is thus a solution to both the **lack of arable land** and the **lack of space**. It allows the more vulnerable households to grow vegetables they would otherwise struggle to purchase, to diversify their diet, to save on the purchase of vegetables, while practicing an activity that brings them well-being.

A - WHICH VEGETABLES TO GROW?

Because of the verticality, it is better to promote the culture of **leafy vegetables** (such as kale and mustard) and herbs on the sides of the bag. Moreover, leafy vegetables usually allow for several harvests at different times on one single plant, which is not the case for root vegetables (carrots, beets, etc.) and bulbs (onions, shallots). Tuber vegetables and those with long roots are however not suitable for sack-gardening (such as promoted by SI) since they require a significant depth of soil to develop properly.

Fruit vegetables are not recommended either because they may destabilise the bag and have less important yields when grown on the sides of the bags. If beneficiaries prefer to grow fruit vegetables, other cultivation mediums than bags should be considered. Adaptations are however possible:

SI example In Kenya, the teams tested associations between fruit vegetables (tomato) on the top of the bag and leafy vegetables (spinach).

SI example In Myanmar, the growing of gourds/squash (of small caliber) and winged bean were cleverly adapted to the bag. The addition of three bamboo sticks around the bag, tied together at the top, helped to stabilise the bag and served as support for the beans planted on the sides. Bags containing gourds/squash were placed against a wooden grid on which the plants could climb.

Once these technical constraints are taken into account, the vegetables you suggest to the beneficiaries should be locally available and frequently consumed. The final selection of vegetables must be done in a participatory way.

B - HOW TO MAKE A GARDENING SACK?

For an optimal production, it is best to use bags with a containing capacity of 50 to 100 kilos.

NECESSARY MATERIAL FOR ONE BAG OF 100 KILOS

- 1 polyethylene or jute bag (food-safe bag. ie: rice bag)
- 50 kilos of soil
- 25 kilos of fertiliser (compost, manure), to be dosed according to the quality of the soil
- 15 kilos of stones (3 to 7 cm width)
- A pipe of the height of the bag, a can or a plastic bottle opened at both ends, 15 to 20cm long

STAGES OF PRODUCTION

1 Wash and dry your bag.

Place at the bottom of your bag a layer of about 10 to 15 cm of stones.

2 Place vertically on the stone layer your tube (or bottle or can). Fill it with stones.

Pack the soil mixed with manure and compost around your stone column.

3 Repeat the operation until you have reached the top of the bag.

If you are using a can or a bottle, carefully remove it as you process upwards by layers.

When you are finished, remove the container and leave only the column of stones.

If you are using a container that does not reach the top of the bag, you can place a cloth over the top when filling the bag with soil in order to prevent it from falling inside.

4 Pierce holes in the sides of your bag with a sharpened piece of wood. Pierce these holes 15 cm apart from each other.

Be careful not to make holes in the stone layer at the bottom of your bag.

5 Water the bag thoroughly, on top of the stone column and on the sides of the bag. The soil must be well moist.

6 Carefully place the plants (produced previously in a nursery) in the holes of your bag. Be careful not to damage the roots.

Water again.

7 Your bag is ready!

You have now to take care of the plants: water twice a day if the weather is dry and once a day if the weather is humid. Use organic insecticides and take out ill plants and weeds.

Within a few weeks, you will have produced your own vegetables!

ASSESSMENT: KEY INFORMATION TO COLLECT

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GARDENING SACKS ALLOW HOUSEHOLDS TO PRODUCE THEIR OWN VEGETABLES, THUS LIMITING HOUSEHOLD FOOD EXPENDITURE.

The difficulty for the most vulnerable households to access vegetables comes from two specific situations: a sudden and significant increase in prices, especially food prices; and/or the happening of a shock leading to the loss of income sources.

Both situations lead to considerable loss of purchasing power for the lowest incomes categories. One of the possible coping strategies to face this shock will be to limit the meal quality and quantity, and particularly the consumption of vegetables (product made inaccessible by its price perceived as prohibitive).

If within the urban context in which you operate, you encounter one of these situations, perhaps the gardening sacks are a solution to reach the food security of the most vulnerable. To find out whether it is the case or not, your assessment should include key information which you will find in the following pages.

The following key aspects are specific to urban agriculture and must of course be part of a classic Food Security and Livelihoods (FSL) assessment to properly understand the problems related to food security and livelihoods faced by the targeted population.

A - DATA TO COLLECT DURING THE INITIAL ASSESSMENT

FIRST YOU NEED TO LEARN ABOUT THE SHARE OF FOOD IN HOUSEHOLD EXPENDITURES AND THE SHARE OF VEGETABLES IN THE HOUSEHOLD FOOD BUDGET BEFORE AND AFTER THE CRISIS THAT HAS INDUCED THEIR LOSS OF PURCHASING POWER. ALSO IF YOU ARE IN A CONTEXT OF HIGH INFLATION, YOU NEED TO FIND OUT ABOUT THE EVOLUTION OF PRICES BEFORE AND AFTER THE CRISIS.

The following data are to be collected from the vulnerable urban population, whose share of expenses related to food is high (over 50% of the total expenditure), and that would be likely to set up a sack-gardening activity. This list of questions is to be completed depending on the specificities of your intervention context.

- Are vegetables part of their basic food diet? If so, which ones (Top 5)?
- For each of the 5 vegetables mentioned, what are the prices, the frequency of purchase, the quantity purchased and the season during which these vegetables are consumed?
- Do they consume enough vegetables according to them? If not, why don't they eat more vegetables?
- Does the consumption of vegetables differ among family members?

- Are the inhabitants at home every day and throughout the year?
- Do they have some availability to care for crops?
- How often do they go to the market to buy food?

- Do they have technical knowledge of vegetable gardening?
- Do they know the importance of eating vegetables in a diet?

- Are there available plots of land near beneficiaries' living area where they can cultivate in the ground? If yes, what surface are they and for what rent?
- Do they have easy access to water throughout the year and in sufficient quantity for irrigation?
- Do they have the ability to find and transport soil, fertilisers, gardening tools and polyethylene or jute bags?
- Are there spaces where beneficiaries can place their bags? If yes, do these spaces get enough sunlight?

1. For more information on the vulnerability of populations, refer to Chapter 4 section B.

The following information is to be collected from local stakeholders in the area. This list of questions is to be completed depending on the context specificities.

Local authorities	• Is the practice of urban agriculture legal? If yes, are there specific conditions to be met? • Can they be involved in the implementation of a sack-gardening project?
Ministry of Agriculture	• Is the practice of urban agriculture legal? • What are the challenges faced by urban farmers and how to respond to them? • What are the regulations in place in the country on seed certification? On access to agricultural land?
Other NGOs and organisations	• Do they do urban farming? How and with which population? • What are the challenges they face and the lessons learnt?
Owners of available plots of land for urban farming	• Is it possible to use their plots of land to implement vegetable gardens? Under which conditions? • Is it possible to dig in their land to collect soil to fill the bags?
Vegetable producers in the region	• What vegetables do they grow? • What are their cultural practices? • If they use organic practices, which ones? • What other actors are involved in the sale of locally produced vegetables?
Vegetable market vendors	• Where do the main vegetables that are sold come from? • Are there any difference in terms of quantities sold and prices depending on the season?

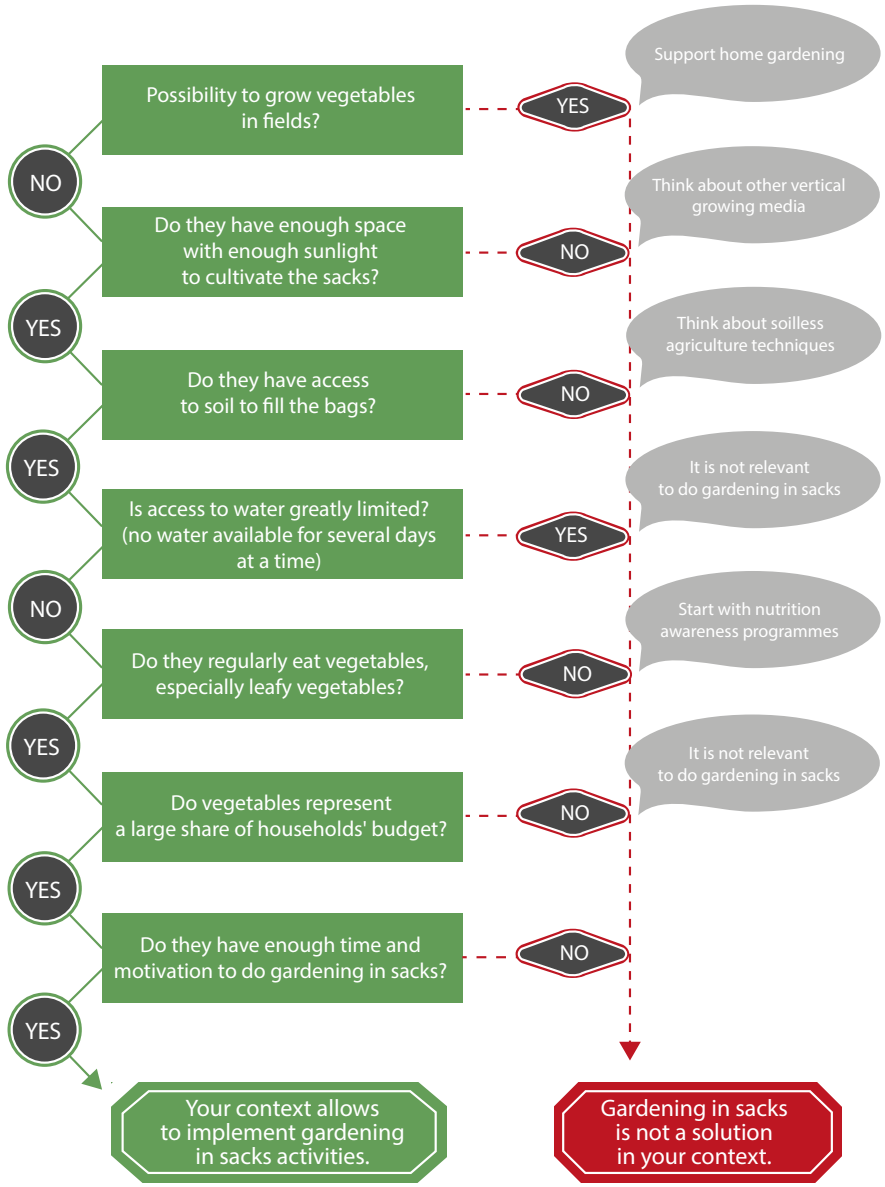
Annex 1 - Focus Group Discussion guide for an initial assessment

Annex 1 bis - Field observation check-list for an initial assessment

Annexe 2 - Brochure to present sack-gardening to stakeholders or to potential donors

B - IS YOUR CONTEXT ADAPTED?

The data collected during the initial assessment should allow you to use the decision-tree below. You will then know if your context is adapted or not to the implementation of a sack-gardening project.



DESIGN OF THE PROJECT

Your assessment has been done and you have decided to implement a sack-gardening project. In this section you will find different tools that will allow you to design your project, from your logical framework to the sizing of your team.

A - LOGICAL FRAMEWORK TEMPLATE

IN THE LOGICAL FRAMEWORK BELOW, YOU WILL FIND A NUMBER OF POSSIBILITIES IN TERMS OF INDICATORS AND ACTIVITIES. ALTHOUGH THIS LIST INTENDS TO BE EXHAUSTIVE, YOU ARE FREE TO DEVELOP OTHER ACTIVITIES AND INDICATORS TO FOLLOW YOUR PROJECT AT BEST.

Note that this logical framework can also be incorporated in a larger food security and livelihood programme.

	Logic of intervention	*Objectively Verifiable Indicators*	*Means of verification*	*Risks and assumptions*
Overall objective	**Contribute to improving the living conditions of the most vulnerable people affected by** (*complete with the crisis causing the vulnerability*)	/	/	Field is accessible throughout the whole duration of the project. There are no major climatic events. Local authorities and local leaders endorse the project. Beneficiaries do not migrate to another area during the project period.
Specific objectives	**Improve food security in** (*complete with the name of the area of intervention*) **OR** **Improve access to diversified food for vulnerable populations affected by** (*fill with the crisis causing the vulnerability*)	X% of targeted households do not use more than Y negative coping strategies (after a crisis or during the hunger gap). The proportion of households with the highest score of Coping Strategy Index (CSI) decreased by X%. X% of the beneficiaries reach an acceptable Food Consumption Score (FCS) by the end of the project. The average Household Diet Diversity Score (HDDS) of the target population increases by X% over the duration of the project.	Baseline/ endline study	
Results	**R1: Household diet diversification is improved through sack-gardening.** **AND/OR** **R2: Targeted households make savings by having easier access to food.**	• <u>Indicators related to access to food</u> N households have been trained on sack-gardening and have planted the seedlings provided by SI. At least M nurseries are installed and produce seedlings. • <u>Indicators related to nutrition</u> N beneficiaries/households have increased their consumption of vegetables (in quantity and/or in variety). Beneficiaries are able to name at least 3 key nutrition messages. • <u>Economic indicators</u> During harvest season, households' share of monthly income dedicated to vegetable purchases increases from w% à z%. x% of households have saved y% of their total food expenditure. % of households who used their savings to cover basic need (health, education).	Post-distribution monitoring survey Post-harvest monitoring survey	
Activities	1. Baseline survey 2. Selection of community mobilisers 3. Selection of nursery managers 4.Training of the teams 5. Selection of beneficiaries	Number of beneficiaries who cultivate vegetables using the sack-gardening technique. Quantity produced for each variety of vegetable at the end of the project. Number of beneficiaries who attended the training on sack-gardening techniques. Number of beneficiaries who attended the training on organic pesticides and compost.	Distribution report Post-distribution monitoring survey Post-harvest monitoring survey KAP survey Pre and post-training test	

Activités (suite)	6. Community mobilisation activities 7. Implementation of nurseries and of gardening sacks for demonstration 8. Training of the beneficiaries 9. Seedlings distribution 10. Technical support and monitoring of activities 11. Endline survey	Number of beneficiaries who apply the techniques they were taught during the trainings.		

B - SIZING OF THE MATERIAL TO BE PURCHASED

BETWEEN THE INITIAL ASSESSMENT AND THE BEGINNING OF THE PROJECT, IT IS NECESSARY TO SIZE THE BUDGET AS CLOSE TO REALITY AS POSSIBLE. YOU HAVE TO COORDINATE WITH THE LOGISTICS AND FINANCIAL DEPARTMENTS TO PLAN THE PURCHASES (PURCHASING WORKPLAN AND PROCUREMENT TABLE), BUDGET AND CASH FLOW, ESSENTIAL TO THE GOOD IMPLEMENTATION OF YOUR PROJECT.

You will be asked to complete a Bill of Quantity (BoQ), a document that brings lists the quantities of tools and materials needed for the implementation of your project.

To help you size your budget, you will find the complete list of what is needed to make and grow a gardening bag. You will also find the list of materials and equipment related to the establishment and maintenance of nurseries. Remember to take into account in your BoQ the necessary equipment for the training of your staff and beneficiaries.

It is essential for the appropriation of the technique and project by the beneficiaries that they bring all or part of the equipment or material required for sack-gardening. You will find below the information needed to decide which materials should be provided by the teams and which equipment should be brought by beneficiaries.

MATERIAL TO MAKE A GARDENING BAG
(DO A FIRST TEST ON ONE BAG BEFOREHAND)

Items	Characteristics	Quantity
Empty bags	Polyethylene or jute, capacity of 100 kilos	3 to 5 per beneficiary to start with
Watering can	10 litres	1 per beneficiary
Fertile soil	preferably loamy or humus-bearing soil	50 kg per bag
Fertiliser	organic, such as compost, manure...	25 kg per bag
Fencing	net, bamboo	depending on the space to fence
Stones	preferably limestone or volcanic 3 to 5 cm width	15 kg per bag

MATERIAL FOR THE NURSERIES

Items	Characteristics	Quantity
Empty bags	Polyethylene or jute, capacity of 100 kilos	6 bags for the demonstrations
Fertilisers	Manure or compost	To be determined according to the soil used
Protective cover (tarpaulin)	This protection is not mandatory but it can protect seedlings and plants from bad weather conditions or it can prevent animals from trempling them.	
Spade		2
Shovel		2
Rake		2
Watering can		2
Rope	To draw the plots	1 ten meter roll
Vegetable seeds	Leafy or aromatic vegetables, chosen according to the preferences of beneficiaries	
Production of natural pesticides	Dried chili pepper, tobacco, soap, garlic, neem[2], buckets, protection gloves, sprayer	
Cups (*for the beneficiaries to transport seedlings*)		equal to the number of seedlings
Wheelbarrow (*if you wish to transport the seedlings straight to the beneficiaries*)		2 or 3

15m² are required to produce 1,500 seedlings for 50 beneficiaries.

Annex 3 - Recipe for organic insecticide

2. This product is extracted from the neem tree, native to India; it can today be found in numerous countries, particularly in Asia and Africa.

WHAT TO DISTRIBUTE TO THE BENEFICIARIES?

Analysing the context allows us to know which inputs the beneficiaries have easy access to. These inputs can be the following:

- Access to soil;
- Access to compost or manure (or any other type of organic matter);
- Access to polyethylene bags of a capacity of 100 kilos maximum;
- Access to small stones;
- Access to gardening tools (watering can, wheelbarrow for transporting soil, shovel).

It is preferable that beneficiaries are encouraged to purchase the material needed to make the gardening bags themselves. It optimises their involvement in the project and demonstrates their motivation.

However, the choice of whether or not to distribute these items depends on the context. For example, if the soil is sandy, a greater amount of fertiliser will be required to ensure the production of vegetables: this quantity will perhaps be too important for beneficiaries to be able to supply it themselves. In this case, SI can distribute a portion of the necessary fertiliser while encouraging them to obtain more to improve their yields.

Do not forget that some of these inputs have a limited lifespan. The bag, depending on its use and on weather conditions, can deteriorate within one to two years. Similarly, the fertility of the soil diminishes if not enough fertiliser is regularly added to it ; the soil must then be renewed after several agricultural seasons.

C - ACTIVITY WORKPLAN

The following workplan is based on the optimal duration of 18 months which provides enough time to test the gardening sacks over several cropping seasons. **Annex 4** is a seasonal calendar to be filled in. It will enable you to determine on what date to start your project in order to be ready for the agricultural periods.

	Year 1												Year 2					
Activities	Semester 1						Semester 2						Semester 3					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Conducting baseline survey																		
Recruitment and training of the team																		
Project inception workshop with all involved stakeholders																		
Identification of the beneficiaries																		
Door-to-door visits to check available space																		
Selection of the beneficiaries																		
Identification of places to implement the nurseries and of nursery managers																		
Purchase of the equipments and materials for the nurse-ries, of seeds and agricultural inputs																		
Installation of the nurseries and distribution of tools to nursery managers																		
Training of nursery managers																		
Sowing in the nurseries																		

Annex 4 - Seasonal calendar template

	Year 1												Year 2					
Activities	Semester 1						Semester 2						Semester 3					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Distribution of seedlings to beneficiaries																		
Training of the community mobilisers																		
Community mobilisation																		
Training of beneficiaries (sack gardening technique, organic insecticides)																		
Technical follow-up																		
Monitoring																		
Conduction endline survey																		

D - HUMAN RESOURCES SET-UP

PROJECT COORDINATION

At this level, sack-gardening projects do not differ from the other projects of SOLIDARITÉS INTERNATIONAL:

- 1 Project Manager,
- 2 Activity Managers (or Team Leaders): one working on community mobilisation and one in charge of agricultural activities.

FIELD TEAMS

In a sack-gardening project, it is recommended to have two distinct teams.

A team of **community mobilisers**: this team is in charge of community mobilisation and is committed to growing gardening bags by itself in order to sensitise the neighbourhood. They should be well-known but not necessarily with a leading role. They must be identified with the help of community leaders or local authorities (e.g. people known for their voluntary commitment). Mobilisers should be selected in order to reach a gender balance and should represent all age groups and all social/political/religious categories. Ideally, they should have some notions in vegetable gardening (but this is not a mandatory criterion).

It is not recommended that this team shares its time between several projects, as community mobilisation for a sack-gardening project is essential and requires time and effort.

We suggest you plan one community mobiliser for 100 households, in case distances to reach these people are short.

A team of **agricultural technicians**: they should have specific knowledge in vegetable gardening.

This team is responsible for the maintenance of the nursery, the demonstration sacks and the technical follow-up of the beneficiaries. During their visits, the technicians must ensure that the sack-gardening technique has been well assimilated and that benefiaries do not encounter major problems when preparing the sacks and growing their vegetables. If this is the case, the technicians advise the beneficiaries and must share with the coordination the information on the major problems frequently encountered by beneficiaries in the cultivation of their vegetables. With regards to the training and monitoring of the beneficiaries, these can be provided by the two teams separately or jointly.

The number of technicians is calculated according to the number of beneficiary households, to the distances to travel, the number of visits to make and the trainings to be delivered.

IMPLEMENTATION

This is it, the design of your project is finished! You are now coming to the heart of the project.
This section is structured according to the different key steps to implement a sack-gardening project.
You will find here all the useful information about the specific activities of such a project.
You will also find ideas stemming from the different experiences of SOLIDARITÉS INTERNATIONAL since 2008.

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A - COMMUNITY MOBILISATION

WHY THE NEED FOR COMMUNITY MOBILISATION IN A SACK-GARDENING PROJECT?

Gardening in a sack is a recent agricultural technique. When they first hear about it, beneficiaries' impressions vary from curiosity to scepticism.

It is therefore necessary to sensitise beneficiaries on the possibility for them to cultivate their own vegetables in an urban context as well as on the advantages and utility of gardening vegetables in sacks. This will mainly be the role of community mobilisation.

Moreover, community mobilisation is essential to ensure the widest dissemination possible of the sack-gardening technique. The aim of this project is not only to train the most vulnerable people to this technique, but also to reach as many people as possible. Community mobilisers therefore try to motivate all the inhabitants of an area to engage in a sack-gardening activity.

WHAT MESSAGES TO CONVEY?

Once your community mobilisation teams have been set up, it is essential that you define the key messages you want to diffuse during these mobilisations.

During these mobilisation sessions, you must communicate on two very different aspects.
Firstly, it will be necessary to present the project and its objectives to the inhabitants in the area of intervention. To illustrate and demonstrate the sack-gardening method, you can, for instance, make demonstration bags.
Secondly, through your mobilisation actions, you will have to arouse beneficiaries' interest and encourage them to start gardening in sacks. To do so, you will need to provide more detailed information and communicate the place and date of the trainings, the modalities to participate in the project, the follow-up methods, etc.

MOBILISATION TECHNIQUES

1 The first step consists of identifying the main barriers and the main drivers that could prevent or encourage beneficiaries to adopt the sack-gardening technique.

2 The second step is to identify community mobilisation techniques best tailored to the target population. For example, if people are not used to listening to the radio, broadcasting radio messages will not be useful. You can however favour other communication media such as the distribution of flyers, direct communication, animations on the market, theatre sessions and even articles on social networks, etc. What is important here is to rely on the local means and modes of communication and on socio-cultural specificities.

It is essential to ensure the good timing of your mobilisation actions! For example, door-to-door during the day is useless if the inhabitants in the area work far away from their home.

Here are examples of community mobilisations carried out during SI sack-gardening projects in Kenya and Thailand:

Door-to-door visits: community mobilisers went door-to-door in targeted neighbourhoods to sensitise the households on the advantages of vegetable gardening sacks. This method gave priority to the targeted households identified as vulnerable.

Demonstration sessions: households were also invited to attend demonstration sessions in the nurseries. During these sessions, the advantages of sack-gardening and how to prepare the bags were presented.

Mobilisation through local partners: partner organisations (local NGO, religious centres, schools, etc.) can play a role in spreading the sack gardening technique by mobilising their teams and organising their own demonstrations during events.

Road shows: the entire community mobilisation team walked through the streets wearing their SI T-shirt to trigger the curiosity of inhabitants. This method was chosen to sensitise the inhabitants living far from the nurseries where the demonstrations were taking place. This walk was accompanied by the distribution of leaflets explaining the sack-gardening method and the place and date of the trainings. Megaphone messages can also be broadcasted.

Community mobilisation is a time-consuming activity that requires imagination from your teams. Be sure to take into account the time required to design, prepare and carry out their mobilisation activities when sizing the tasks for them.

B - BENEFICIARY SELECTION

AS FOR ANY HUMANITARIAN AND DEVELOPMENT PROJECT, THE DEFINITION OF BENEFICIARY SELECTION CRITERIA IS A COMPLEX STEP AND MUST BE BASED ON A SOUND UNDERSTANDING OF YOUR INTERVENTION CONTEXT.

At SOLIDARITÉS INTERNATIONAL, the definition of selection criteria must be based on the understanding of the different groups within the population (livelihood groups), of their socio-economic categorisation, of their vulnerabilities and capacities.

There are two possible ways of defining these criteria:

1. the collection of secondary data, from vulnerabilities and needs assessments conducted previously by SI or other organisations, followed by an internal workshop,
2. the collection of primary data obtained during the assessment or the baseline study through focus groups.

These criteria can be defined with the representatives of the communities or simply validated by these representatives. In both cases, these criteria must be fed back to the communities.
In addition to the selection criteria that you will have defined through the analysis of your context, you will find below suggestions of inclusion and exclusion criteria for sack-gardening activities.

Exclusion criteria	Inclusion criteria
Have previously benefited from a gardening project	Have space available to store the bags
Is an employee of SOLIDARITÉS INTERNATIONAL or of another NGO	Have previous knowledge of vegetable gardening
Is a member of local authorities	Is motivated
Have no access to water	Have a specific vulnerability (single-headed female household, household with malnourished children, etc.)
Is absent too often to look after the bags	

The vulnerability criteria allow making a first selection among the population, the people or households who should be mobilised and supported for sack-gardening activities in priority. However, the whole population living in the area of intervention can be later encouraged to attend the trainings and build gardening sacks by their own means. Free distribution of seedlings can be ensured at first.

WHO ARE THE BENEFICIARIES OF SACK-GARDENING PROJECTS?

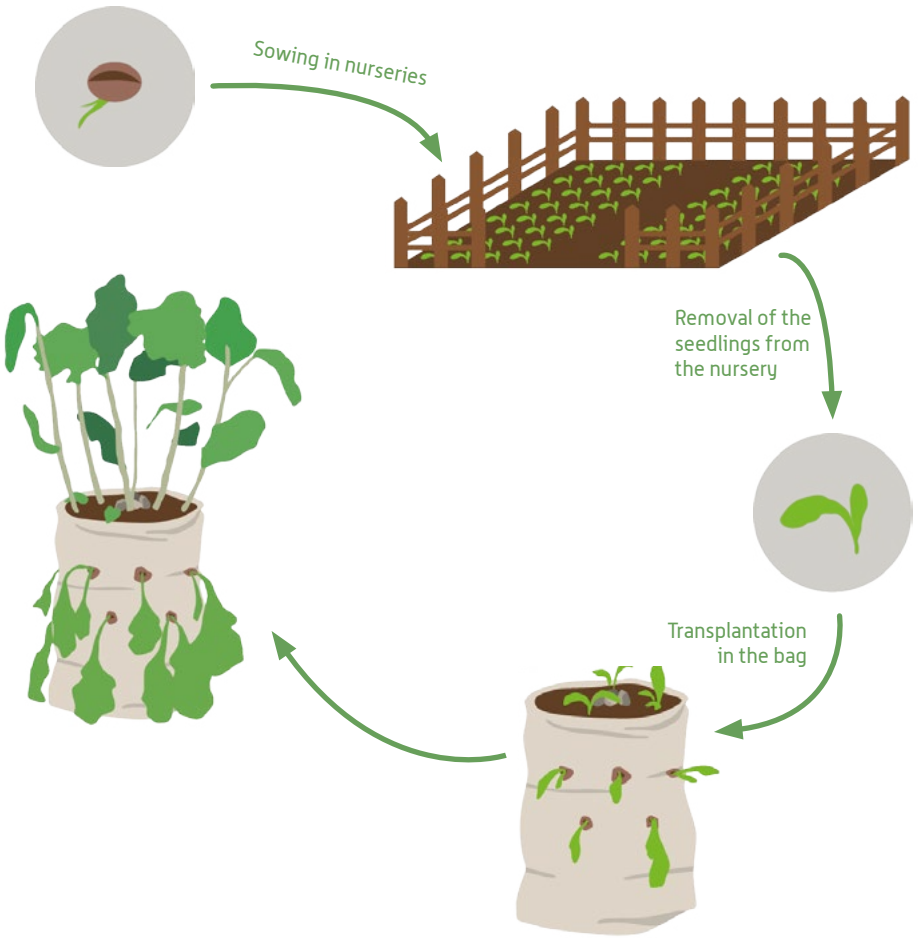
The primary beneficiaries are community mobilisers living in the area of intervention. They are encouraged to make gardening sacks at home. They serve as showcases for the demonstration of the advantages of vegetable gardening bags.

The second beneficiaries are the selected people who are the most vulnerable to food insecurity. These persons are the first to benefit from gardening sacks. They can receive specific assistance (e.g. SI can provide them with all or part of the necessary equipment to make their bags).

Finally, the other beneficiaries (indirect beneficiaries) are all the inhabitants of the area of intervention. The latter are free to come and be trained on the technique of gardening bags and thereby to integrate the project. These people however need to find the material themselves to make their bags. Once trained and registered as beneficiaries, they will be able to obtain seedlings and to receive technical support by SI teams.

C - THE INSTALLATION OF A NURSERY AND OF A DEMONSTRATION BAG

THE NURSERIES PLAY A KEY ROLE IN SACK-GARDENING PROJECTS. THEY DISPLAY THE TECHNIQUE AND THE ADVANTAGES OF THE BAGS, THANKS TO THE INSTALLATION OF A DEMONSTRATION AREA. THEY CAN ALSO BE A TRAINING VENUE. FINALLY, THE CONTINUOUS PRODUCTION OF SEEDLINGS CAN ENSURE THE SUSTAINABILITY OF THE PROJECT.



Annex 5 - Example of an SI nursery

The sub-activities to carry out are:

1. Identification of the sites on which to install the nurseries. This includes negotiating with the landowner as well as selecting the managers of the nurseries;
2. Creation, site layout and first sowing;
3. Training of managers;
4. Training of beneficiaries in the nursery demonstration area;
5. Maintenance of the seedlings by SI and nursery managers;
6. Distribution of seedlings to beneficiaries;
7. Technical follow-up and monitoring of nurseries.

HOW TO SELECT THE NURSERY SITE?

The following criteria can be used to determine if the site is suitable for establishing a nursery.

- The **surface area available**: the area must be large and flat enough to make a dozen seedbeds (a minimum of 15m^2 is needed to produce 1,500 seedlings, with a distance of 10 cm between seedlings). This surface must also be able to accommodate a water tank if access to water is difficult, storage space for fertilisers and tools, enough space to put demonstration bags and to accommodate 10 to 30 people for training, as well as a shelter for mobilisers.
- The **resources available on the site**: the site should be located near a water point if the construction of a tank is not possible.
- **Accessibility**: the nursery must be easily accessible by all the beneficiaries of the project. Ideally, it should be located close to strategic places such as the market. It must, however, be well fenced off to avoid people and animals passing through.

It is important to assess the quality of the soil on the nursery site. Depending on the type of soil, the needs in terms of quantity of fertilisers will vary. If the earth is very sandy, it is necessary to bring more organic matter than for clay soil. In addition, a very heavy and compact soil may require adding sand to make it more draining. Moreover, in urban context especially, soil, just like water, can contain toxic elements (faecal matter, chemical products from industries or washing, etc.). If this is the case, you must ensure that the water and soil used for sack-gardening activities are not contaminated.

HOW TO SELECT NURSERY MANAGERS?

At the beginning of the project, it is preferable that the community mobilisers, with the support of SI agricultural technicians, take full responsibility for the management of the nurseries. In order to support them in their tasks, to replace them (especially on weekends), and to ensure that nurseries are taken over by community members, they can be helped by community organisations. These organisations are chosen according to the following criteria:

- **Previous experience and skills in agriculture;**
- **Will, motivation and availability** of the members**;**
- **Values and mission of the organisation**.

TRAINING THE MANAGERS

Training of managers should include the following issues:

- Making and maintaning seedbeds;
- Constructing and looking after a vegetable gardening bag;
- Transplanting seedlings into a bag;
- How to train, sensitise and transmit information;
- Natural methods for insect contnol and composting;
- Nutritional importance of vegetables;
- Small business management (to sell seedlings after the end of the project.

Training should include both theory AND practical components.

THE SUSTAINABILITY OF THE NURSERIES

In order to make the nurseries sustainable, managers must gradually take over from SOLIDARITÉS INTERNATIONAL teams. Nursery managers are usually paid by SI during the project duration. First distributions of seedlings are free but a payment system must be installed to be functioning after the end of the project, in which beneficiaries pay for the seedlings. The objective is to ensure regular income for the nursery managers to allow them to maintain the nursery. Be careful, however, that the landowner does not charge a rent to the managers.

With regards to buying the vegetable seeds, it is possible to train the nursery managers on seed production. However, due to the difficulty of finding non hybrid seeds locally, this solution is not recommended.

Community take-over constitutes the **exit strategy** of the NGO for sack-gardening projects, just as in any other project. This take-over can be done through nursery management; if the nursery managers take over the management and the production of seedlings, the sustainability of the project is ensured. Moreover, nursery managers are generally trained to carry out sack-gardening demonstrations.

If the continuity of the nurseries is ensured, the project will then be sustainable.

D - TRAINING ON SACK-GARDENING

TRAINING YOUR TEAMS FIRST THEN THE BENEFICIARIES IS A CRUCIAL PART OF YOUR PROJECT.

SOLIDARITÉS INTERNATIONAL promotes participatory methods during the training sessions. It is important to divide the trainings into theoretical sessions and practical sessions.

This handbook focuses on the trainings linked to sack-gardening activities, that is to say the trainings on the sack-gardening technique and on the technical follow-up of the beneficiaries.

TRAINING ON THE SACK-GARDENING TECHNIQUE (FOR TEAMS AND BENEFICIARIES)

Learning objectives*:*

- Participants are familiar with the necessary material to make a gardening sack;
- Participants are able to construct a gardening sack by themselves;
- Participants are able to explain the utility of growing vegetables in sacks;
- The participants can name in order all of the technical steps to implement a sack-gardening activity;
- Participants are able to transplant seedlings on the sides of the bags.

TRAINING ON THE TECHNICAL FOLLOW-UP OF BENEFICIARIES (FOR THE TEAMS)

Learning objectives*:*

- Participants are able to identify all the elements that can limit the success of sack-gardening (lack of water, lack of light, absence of holes on the sides of the bags, the stone column is not the right size);
- Participants are able to provide technical advice to beneficiaries;
- Participants are able to properly use technical follow-up tools and build upon lessons learned to continuously contribute to the improvement of the activity.

SUGGESTIONS FOR TRAINING MATERIALS

A large number of media and materials can be used to train your teams: you can use a power point, a video, posters, a leaflet, etc.

The medium used depends on your financial capacities (for printing posters or leaflets for instance), and on your technical and logistical means (need for a film projector to display a PowerPoint presentation). However, there is no limit to your creativity. If you have the will and time to create original images for your training materials, you can always use online tools such as Canvas and Sketchup, or specialised software like Publisher.

DURATION OF THE TRAININGS

To train on the conception of the sacks and on vegetable growing techniques in general, you need at least:

- a **2h** theory session to explain the importance of vegetable farming and the basic concept of gardening in sacks;
- a **3h** practical session to demonstrate how to make a gardening sack and how to transplant;
- a **3h** theory session on vegetable gardening, seedling maintenance, water and nutrient requirements, good practices of recycling grey waters, etc.

Finally, you must also provide training on the making and use of organic pesticides (a **3h** long training with both a theory and a practical part).

Annex 6 - Training poster on the sack-gardening technique

E - THE MONITORING AND FOLLOW-UP OF BENEFICIARIES

In a sack-gardening project, there are two types of monitoring.

The first concerns the classic project monitoring which measures on a regular basis the progress indicators of the project.

The second is specific to projects that introduce new farming practices, that of undertaking the technical follow-up of the beneficiaries, ensuring that the techniques and vegetable gardening management are mastered.

TECHNICAL FOLLOW-UP

The team in charge of this task must visit each beneficiary **once a week**.

During those visits, they should check the following aspects:

- Do the bags receive enough light?
- How many bags is the beneficiary cultivating?
- What varieties of vegetables are grown by the beneficiary?
- Does the beneficiary use the sack-gardening technique correctly? (Size of the stone column, holes on the side of the bag, etc…)
- What are the difficulties faced by the beneficiary and what are the solutions implemented? Teams must then validate the solutions found by the beneficiary or suggest alternatives if relevant.

Annex 7 - Beneficiary follow-up tool

If it is too difficult to organise weekly visits, the supervision and follow-up of the beneficiaries should at least be done rigorously at four key moments:

- A visit following the **making of the bag** to ensure that the technique has been assimilated;
- A visit after the **distribution of the seedlings** to ensure that they have been well transplanted;
- One to two visits per week during three weeks **after transplantation**;
- One visit per week over 2 weeks **before harvest**.

> We recommend you make visits between these steps, but they can be less frequent.

It is possible to ask the beneficiaries to carry out their own self-monitoring with a document to fill out on a daily basis. This allows a better ownership of the project since beneficiaries feel active and invested in the project.
If you wish to develop a self-monitoring tool, it is essential to determine the capacities of the beneficiaries to do so and to provide them with the necessary equipment (scale, notebook, calculators...).

MONITORING OF KEY INDICATORS

Several tools are at your disposal to undertake the monitoring of key indicators (see Chapter 3, section A for a suggested list of indicators). These are the classic monitoring tools such as post-distribution, post-harvest, pre/post-training surveys (which can also be complementary to a KAP survey) as well as a baseline and an endline survey.

You can also use data collected during the technical follow-up of the beneficiaries.

Annex 8 - Example of a household questionnaire to study the impact of a sack-gardening project

TOWARDS OTHER FORMS OF URBAN AND PERI-URBAN AGRICULTURE

OTHER TYPES OF SET-UPS FOR URBAN VEGETABLE GARDENING

Sack-gardening represents only one technique among many other approaches to urban agriculture. Depending on your context of intervention – whether the sacks are adapted or not - you can think about combining these approaches, or replacing the sacks by other instruments such as tyres, large half-cut jerrycans or any other kind of container that would be easily accessible by the beneficiaries.

Media such as walls, roofs and fences also offer interesting options: they can notably serve as support for climbing vegetables such as squashes or cucumbers.

Climbing vegetables on a trellis
© Julie Mayans

ASSOCIATIONS BETWEEN GARDENING AND LIVESTOCK FARMING

It is also possible to associate gardening with livestock breeding and fish farming in high density environments.

Despite their economic cost and technical complexity, aquaponics systems provide an interesting alternative as they allow to simultaneously grow vegetables and to produce fish in a closed circuit. The fish excrement associated to nitrifying bacteria provide nutrients for the plants, which themselves can filter the water before it is returned to the fish tank.

You can for instance combine gardening sacks (or other forms of gardening) with rabbit or poultry farming. Their manure can be used as fertilisers for the vegetables and the vegetables grown can be used to feed the animals.

Rabbit breeding and gardening sacks in the slum of Kibera, Nairobi, Kenya
© Julie Mayans

THE IMPORTANCE OF DEVELOPING URBAN AGRICULTURE ON A WORLDWIDE SCALE

According to the Food and Agriculture Organisation of the United Nations (FAO), approximately 15% of the world's food is produced in urban areas: urban agriculture provides food to 700 million urban citizens, almost a fourth of the world's urban population. Hence, with increasing urbanisation rates, individual, collective, public and private projects emerge in many countries, for economic as well as social and environmental reasons.

The concept of urban farming and its positive impacts are thereby promoted in several international texts and agreements: the FAO first officially acknowledged urban and peri-urban farming in January 1999. The organisation then published a position paper on the topic (*Urban Agriculture for sustainable poverty alleviation and food security*), stressing the link between the development of urban farming and the achievement of the Sustainable Development Goals (SGDs), in particular the second SDG which aims at ending hunger and achieving food security and improved nutrition.

- In 2015 in Milan, 132 cities signed the Milan Urban Food Policy Pact (MUFPP), recognising that "cities which host over half the world's population have a strategic role to play in developing sustainable food systems and promoting healthy diets" and "acknowledging that urban and peri-urban agriculture offers opportunities to protect and integrate biodiversity into city region landscapes and food systems, thereby contributing to synergies across food and nutrition security, ecosystem services and human well-being".

- In 2016, the New Urban Agenda (NUA) was adopted during the third United Nations conference on housing and urban development (Habitat III) in Quito. It promotes urban farming in its article 95: "we will support urban agriculture and farming as well as responsible, local and sustainable consumption and production, and social interactions through enabling accessible networks of local markets and commerce as an option to contribute to sustainability and food security".

With an urban population expected to reach two thirds of the world's population by 2050 (United Nations, 2016), the demographic trends shed light on the importance of considering urban farming techniques, now formally recognised by international stakeholders. In parallel, humanitarian crises are increasingly impacting urban contexts, where the issue of food insecurity requires new approaches than traditional crisis responses: it is therefore crucial that all humanitarian stakeholders share and disseminate the techniques and innovations developed. This is what this handbook intends to do by presenting sack-gardening as an urban farming technique that can provide a solution to food insecurity crises within humanitarian or development projects.

NOTES

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