



Agricultural Report



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First Year Agricultural Activities

1.1 Local agricultural committee meeting

Local agricultural committee meetings were conducted in the targeted 4 villages through different stakeholders of each community attended these meetings. The local agricultural committee meetings were conducted between 22nd and 24th of Jan 2019 and included representatives from civil society, local cooperatives members, and other key persons (farmers). The number of the participated organizations reflects the interest of the local bodies to engage in such activities and the good relationships among the agricultural and heritage-interested organizations. The following table presents the dates, the number of participants, and the participated organizations. (See table 1.1).

The project team explained to these participants the project objectives and the planned interventions for their communities and their responsibilities as partner organizations/ stakeholders and the project facilitators as well. Both of project announcement and the applications were discussed. Applicant forms were distributed to the main person from every local committee at this meeting, in addition to discuss the text of the agreement with the committee members. Participants were informed about the project including the donor which is the Darwin Initiative and the implementing organizations for this activity (PIBS/ PMNH and ICP- BU).

Table 1.1: Distribution of conducted local agricultural meetings with related stakeholders in the targeted villages.						
Locality Name	Meeting date	Participated organizations/ key individuals	Number of participants		Total	The meeting location
			Male	Female		
Biet Jala	23.1.2019	3	4	2	6	Beit Jala Municipality
Battir	22.1.2019	4	5	3	9	Battir Municipality
Husan	22.1.2019	3	5	1	6	Husan Village council
Al-Walaja	24.1.2019	3	2	4	6	Al-Walaja Village Council





The conducted local committee meeting in the target locations

1.2 Project announcements

The project team started the project activities through preparing announcements and beneficiary application forms, which were distributed at the main public sites and on the main page of the village council's/ municipality's social media of the targeted villages to inform the largest number of the targeted community about the project activities and giving them the opportunity to apply to the project. The announcements were distributed specially at village council and municipality buildings' where most of local people can see the announcement as well in other main places (mosques, shops, and schools). Further to these procedures, a period of one week and a half was given to each community to complete the beneficiary's applications. The applications were distributed to all targeted communities, and one of the participating village council or municipality staff was selected (during the local committee meeting) to distribute and receive the completed applications. By adhering to this method, the largest number of households was encouraged to apply for the project activities. The announcement period for all targeted communities conducted between 22nd of Jan and 3rd of Feb 2019.





Distributing the project announcement in the public place in the target locations

1.3 Applications' revision

The following table shows the number of the received applications which reached to 108 applications (Table 1.2). These applications were review by the project committee. During the selection process which was conducted by the project team and the local committee, the priority in the selection given to the applied women to give them an equal opportunity to select the most suitable households. 28 applications were rejected because they did not match with the criteria of selection (See Table 1.3 below).

Table 1.2: Number of received application forms per locality			
Locality name	Total applications		
	Received	Accepted	Non-accepted
Biet Jala	34	29	5
Battir	26	19	7
Husan	20	19	1
Al-Walaja	28	13	15
Total	108	80	28



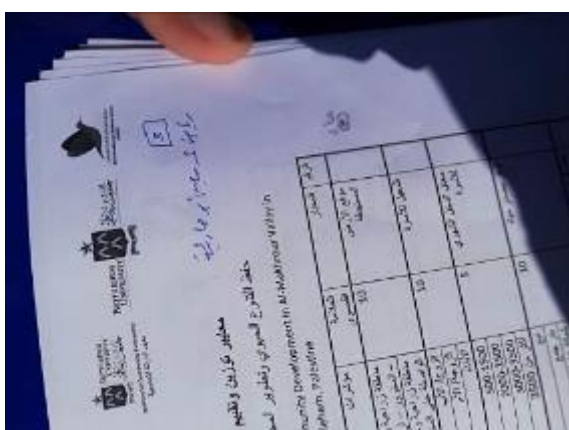
Applications revising process with local committee members

Table 1.3: Criteria of selection				
No.	Criteria	Max. remark	Indicators	Remark
1	Targeted land location	10	An agricultural area and in the targeted area (in eg.: the eastern lands of Battir which reaches Al-Makhrou), good agricultural land	10
			An agricultural area and outside of the targeted lands	E
2	Breadwinner	10	Father/ husband	5
			Mother/ wife	10
			Sons	8
3	Average monthly income for family	5	500-1500	5
			2000-2500	3
			3000-3500	2
			More than 3500	1
4	Source of water	10	Spring	10
			Collective well/ cistern	8
			Municipal water	8
			Water tank	5

			No source		0
5	Total family members no.	5	1-5		2
			5-10		4
			More than 10		5
6	Disabilities	5	Disabilities: one status		3
			Disabilities: more than one status		5
			No disabilities		0
7	The area of the land	5	400-500 m2		5
			Other		0
8	Readiness to commit to serve the land	10	Yes		10
			No		0
9	Land ownership	10	Own property		10
			Shared with other heirs		8
			Rented		0
10	Benefited of similar project in past years	5	During 2017- 2018		0
			Before 2017		5
11	Technical criteria?	10	Soil depth	Little	0
				Medium	5
				Deep	10
		10	Presence of rocks (percentage)	0-5%	10
				6-10%	5
				11-25%	1
				More than 26%	0
		5	The slope of the land	Less than 5%	10
				6-15%	5
				More than 15%	0

1.4 Beneficiaries' selection (based on field visits).

The project team worked closely with the local committees during the beneficiaries' verification and selection processes. The project team and local committees spent several days to visit all of 108 applicants to select the suitable beneficiaries and to verify the provided information by each applicant and to assure the transparency and fairness of the selection process to match the criteria of selection, bearing in mind the socio-economic and agriculture indicators and gender considerations

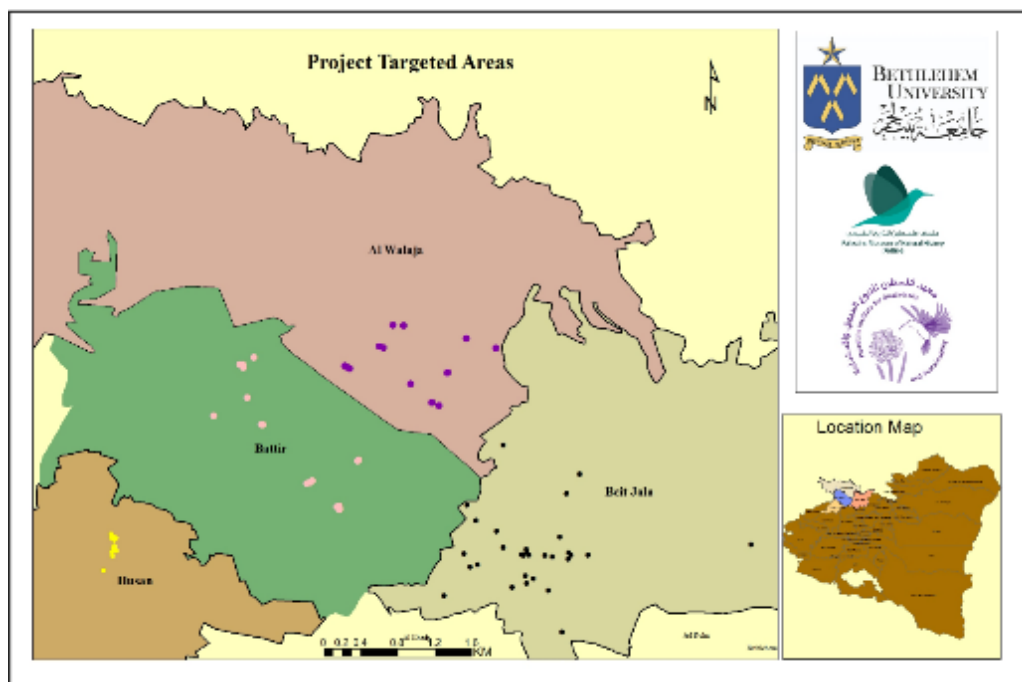




Beneficiaries' selection process

GPS coordinates and location map of the farmers' field in the valley

Farmer sites have been visited and the GPS coordinates of their fields were recorded and collected during October and November of 2019. The following is the prepared location map of the farmer's sites.



1.5 Sign MoUs with the selected 80 farmers

The project team signed beneficiaries' agreements with the presence of the local committee members of every target area. The agreements defined and addressed each party's responsibilities. The agreements signing period for all targeted areas conducted at the same day 23rd of Feb 2019 (Table 1.4).



Beneficiaries' signing agreements

Table 1.4: distribution of signed agreements with the project selected beneficiaries per area	
Biet Jala	29
Battir	19
Husan	19
Al-Walaja	13

Of those 80 farmers, 67 followed up with training and delivery of supplies/agricultural inputs. Survey before training was done with each of those to gauge family situation and knowledge base. The following data resulted from the prepared baseline survey and some data from the received completed application forms by the selected applicants in the targeted communities. Al-Walaja number of farmers was lower than expected (13) and due to number of applicants from Beit Jala who own land in the valley, we compensated by increasing the accepted beneficiary farmers from Beit Jala (29, 26 after follow-up). The farmers were eight Females (1 Battir, 6 Wallaja, and 1 Beit Jala) and 59 males. The selected farm families had a mean of 6.5 individuals/family unit. The estimated average family size in the West Bank in year 2017 was 4.8 (PCBS, 2018). The income/Year average was 25,865 NIS (per month = 2155 NIS) per

family (1 NIS= 0.21 GBP). The land area for each family had a mean 3.9 dunums (min = 0.3 / max = 22 dunum). In surprising positive news, nine farmers preferred/used chemical fertilizer (13.4%) while 58 (86.6%) already preferred/used organic fertilizers.

1.6 Capacity building training

Three days training workshops were conducted for the project beneficiaries on the Principles of Permaculture and Biodiversity. This workshop focused on the general definition of biodiversity and the humans' fingerprint in Palestine and worldwide about this issue, land preparation, intercropping, irrigation and water harvesting system, and the usage of organic and liquid fertilizer. The farmers committed to attend the workshop (as it's illustrated in the table 1.5), where they reflect an obvious idea about their desire to learn and benefit of the scientific information that presented to them.

Table 1.5: Number of participants in the training workshop (Planned compared with attended)			
Areas	Date of implementation	Attended	Planned
Biet Jala	22.3.2019	22	29
Battir	20.3.2019	12	19
Husan	22.3.2019	19	19
Al-Walaja	21.3.2019	14	13



Workshop on the Principles of Permaculture and Biodiversity – Targeted areas

1.7 Distribution of agricultural inputs and cultivation of summer vegetable crops at selected farms

The project team distributed all of the **agricultural inputs** for the all selected beneficiaries. Each piece of land was provided with all required equipment and tools to establish well-functioning sustainable agriculture system. The distributed items are presented per each piece of land as listed in the following table.

Table 1.6: Agricultural equipment and tools distribution				
Delivering date/ area	Biet Jala	Battir	Husan	Al-Walaja
	1.3.2019	28.2.2019	26.2.2019	27.2.2019
Category	Item			
Irrigation network and its accessories	Main pipeline 25 mm, 25 m long			
	Lateral pipeline 16 mm (without holes)			
	Lateral pipeline 16 mm (with inside holes)			
	T-shape connector (16 mm)			
	16 mm connector with a "T" shape			
	Straight 16mm connector			
	End-line of 16 mm pipe			
	Drippers (4 L capacity)			
	Valve 16 mm			
	Plastic -water tank to main pipeline- connector			
	Water tank (1 cubic meter)			
	Water pump (1 horsepower)			
	Hole punch for 16 mm drip irrigation			
	Green hose for irrigation 16 mm, 20 m long			
	Plastic -water tank to main pipeline- connector			
Gardening and soil agitation tools	pickaxe (digging tool) with a pick helve			
	Double headed (for weeding and lighting the soil) and hoe			
	A spare handle of ridging hoe			
	A spare pick helve			
	Ridging hoe with a handle			
	Steel garden farming bow with wood handle			
	Spare handle of gardening bow			
Other tools	Trimming and harvesting scissor			
	Black tomato garden tying twine			
	Rat traps			
	Small black rubber (for stone removing) and buckets			
	Gardening hand gloves			
	Pliers for valve installation			
	Thin galvanized steel wire			
Compost (25 L)				



Agricultural inputs distribution

Animal fermented manure distribution: the following table shows the number of the distributed fermented manure per area and the date of the delivering process as well (table 1.7). This amount of manure (40 L/ sac) is enough to cover the planted crops nutrient requirement

for whole of project period where the distributed compost support the plant growth requirements of the needed nutrients.

Table 1.7: Animal manure delivering and distribution process					
Item	Quantity/ farmer	Quantity/ Area			
		Beit Jala	Battir	Husan	Al- walaja
		Delivery Date			
		29.3.2019	28.3.2019	26.3.2019	26.3.2019
Animal fermented manure	32-35 Sac	945	645	645	465



Fermented manure distribution

Propagules (seeds and seedlings) distribution: further to these activities, the seeds and seedlings of vegetables were distributed to the beneficiaries during two days (16th and 18th of Apr); the seeds and seedlings of thirteen different crops were distributed successfully, (see table 1.8). In addition to two local varieties of snake-cucumber and squash (zucchini) which are delivered to the farmers through a small cooperation with a local NGO called Agricultural Development Association (PARC) where they provided the farmers with these varieties from their seed bank.

Table 1.8: the amount/ number of seeds and seedlings and the delivering date per area						
Plant	Propagule	Amount/ farmer	Delivering date/ area			
			Battir	Husan	Beit Jala	Al-walaja
			18.4.2019	16.4.2019	16.4.2019	18.4.2020
Parsley	Seedling	200	3800	3800	5800	2600
Mint		20	380	380	580	260
Sage		10	190	190	290	130
Thyme		150	2850	2850	4350	1950
Tomato		150	2850	2850	4350	1950
Cucumber		150	2850	2850	4350	1950
Hot pepper		50	950	950	1450	650
Sweet pepper		50	950	950	1450	650
Battiri eggplant		150	2850	2850	4350	1950
Basil		20	380	380	580	260
Chrysanthemum		20	380	380	580	260
Marigold		20	380	380	580	260
Okra	Kg (seeds)	0.25	4.75	4.75	7.25	3.25





Propagules distribution process

1.8 Water tank distribution

Water delivering and distribution to the farmers required a lot of time (four days per two areas: 19th, 25th, 27th, and 29th of Mar) and effort where the targeted lands are steep and need a lot of pipes to deliver the water from the huge and mobile tank to the plastic one. At the end, it was done in a perfect manner and with a good cooperation by the farmers, they provided with extra pipes. They pleased too much for such a unique water distribution ever.





Water delivering and distribution process

1.9 Follow up visits plan

The project team performs one field day visit per area, through which they are going to visit a whole of 80 farmers as their farm sites to follow up the plantation of the distributed crops. These visits took place during April 2019. Going forward follow-up with these farmers and with others to ensure they use the methods we trained in (permaculture see Fig. 1 –the farmers' pieces of lands will be like this example-) instead of the damaging methods of agriculture (fig. 2 & 3).



Fig.1 a health mix of natural agriculture with wild flora and fauna (this is traditional agriculture, which we want to revive). Notice most work is done by women



Olive harvest season in highly disturbed habitats



New olive plantation done without regard to environment

Second year Agricultural activities

2.1 Follow up visit (extension service)

80 field day visits per area performed during May and Jun 2019. These visits were conducted to follow up some of the farmers who haven't cultivated their crops during Apr. Late precipitation season affected the Palestine summer season for this year (2019), where the condensed growth of the grasses and weeds did not give farmers the chance to grow vegetables early as usual. On the other hand, these field visits come to support farmers' technical knowledge at specific topics such as advising them to do some IPM practices and to avoid other practices, which are less friendly to the environment. Local committee representatives were part of these visits too.





The conducted field follow up visits to the target areas

41 field day visits performed during Sep 2019, the main target of these visits is to follow up the current situation at the end of summer season, in addition to finishing selecting winter crops by the farmers, record the GPS coordinates for each farmer (Table 2.1). These field visits come to support farmers technically, to collect the plant debris for the dried plants and do composting for, collect the dried seeds either store it to the next summer season or to plant it for the coming winter season such as basil as a repellent plant. Notes were written down regarding the abundance of biodiversity close to their fields. The following plants and insects are mainly noticed there: inula, pink rockrose, capparis, grasshoppers, butterflies, bees, and deer. (*For more information, see the detailed reports for Alwalaja and Battir field visit reports*).

A representative of the local committee at each location participated within the visit. The farmers are preparing for the winter season while some of the farmers are still producing more vegetables, mainly eggplants, tomatoes, and hot pepper. Some of the warmer areas farmers (like Battir farmers) brought a winter propagule and planted it to produce early products such as cauliflower, where they either have the seedlings or bought it, so in this case as well they'll have two different production stages. Part of these visits was confirming the practical training on water and soil management and attending the marketing festival if they want to visit it, where some farmers have no fresh products to sell.

The production sheet of the summer season was collected from farmers who committed to fill and others who were not able to fill it, were asked about the amount of harvested crops.

Table 2.1: the performed follow up visits per location per number of visited farmers		
# of visit per location	Date of visit	Number of visited farmers per visit
Battir 2 nd follow up visit part (1)	12/9/2019	7
Battir 2 nd follow up visit part (2)	17/9/2019	12
Al-Walaja 2 nd follow up visit	10/9/2019	13
Beit Jala 2 nd follow up visit part (1)	20/9/2019	9

Below spreadsheet illustrates the provided extension service and the next step for each targeted area.

Location	Date	Main findings	Main challenges	recommendations	Next step/actions/visit
Beit Jala	14.06.2019	Beginning of the production phase (mainly for: cucumber, pepper, hot pepper, snake- cucumber, and zucchini). A few farmers planted at Al- Makhrou (11), and the rest of them did not plant or they did but close to their houses.	Water shortage, where some of the planted crops are wilting/ already wilted. The death of the seedlings, especially repellent one. Condense growth of tomatoes. Some pests were noticed, such as spidermites, aphids and whitefly.	Using local seeds especially for next season. Covering the top of the soil with organic debris/ weeds/ hay or straw. Tomatoes pruning/ trimming (with a small practical part) To plant more repellent plants and increase the rate of intercropping process. Using natural extract was advised (grinded garlic with hot pepper spices and a spoon of soap diluted in a liter of water) -that was in general-, tell the technical training in the field).	Technical field training (mainly about pest management). Follow up visit: to deliver them with the production sheet, and to check up and solve their challenges/ problems.
Battir	14.05.2019	Plantation stage. Two out of 19 farmers were not plant.	Plowing availability. Seedlings' death/ dehydration. Top soil dehydration.	Mainly and for all of them, covering the top surface of the soil was advised. Organized watering, 2 times/ day especially the hot one and for farmers who are not very close to Battir water-spring.	First follow up visit after plantation: Provide the farmers with the "production sheet". Checking up with farmers about problems and solutions with their crops. Technical training at two sites at Battir

Location	Date	Main findings	Main challenges	recommendations	Next step/actions/visit
Al-Walajah	18.06.2019	Beginning of harvesting of cucumber, zucchini, hot and sweet peppers, and snake-cucumber. All farmers except one of them were plant their fields.	Water shortage, crops dehydration at some places. 2 of the farmers planted close to their houses. Crowded/ condensed okra. Bent vegetative cover of the tomatoes. Small size of vegetative cover especially for cucumber at some fields. White fly insect.	Covering the top of the soil with an organic litter, and using a plastic bottle with a small holes for efficient water flow (as a water harvesting technique), and irrigating the crops at night if possible. Okra thinning. Trimming and trellising of tomatoes. For good fruit size, to provide with more water and compost. Use smoking process “an ancient one”, where the smoke of burned manure helps with insect repelling. (MoA advise)	Technical training (mainly to focus on water harvesting and pest management).
Husan	20.06.2019	Very good and healthy plantations, where the farmers followed some traditional ways of agriculture practices, mainly trellising using dried sticks, and intercropping a little bit. First stage of the production (cucumber, eggplant, zucchini, and hot and sweet pepper). All farmers planted their fields.	Less intercropping. Cracks over the top surface of the soil (which means more evaporation, and soil microorganism's death). Dodder -parasitic plant-, which is a very dangerous one in some fields. Pests are slightly existed at some fields. Over-irrigation at some fields. Using plastic mulch (by the time it is hardly decomposes). A huge amount of weeds. Condensed and almost bent tomato branches.	More intercropping, for instance one farmer was going to plant one field with corn (monoculture), but it was suggested to plant cowpea, sunflower, and okra in between. Covering the surface of the soil with organic litter, especially to avoid soil cracks. Hand removal of the plant haustoria and the flowers itself at flowering stage. Using natural extract, or organic pesticide/ fungicide, for powdery mildew and spider mites. Organize irrigation process by decreasing watering times. Covering the plastic mulch to increase its shelf-life by decreasing its degradation by the sun. Manual weeding. To prune and trellis tomatoes.	Follow up visit, mostly to teach the farmers how to make a natural extract, and for more technical advice. Technical training mainly to focus on the best field and how to encourage other farmers to do like with more additional practices (composting, pruning, and some water harvesting).



A healthy sage with high production



GPS coordinates



Preparation for winter season



Monoculture of cauliflower (advised for intercropping)



Eggplant production- still producing



Wild thyme (as an agricultural surrounding biodiversity).



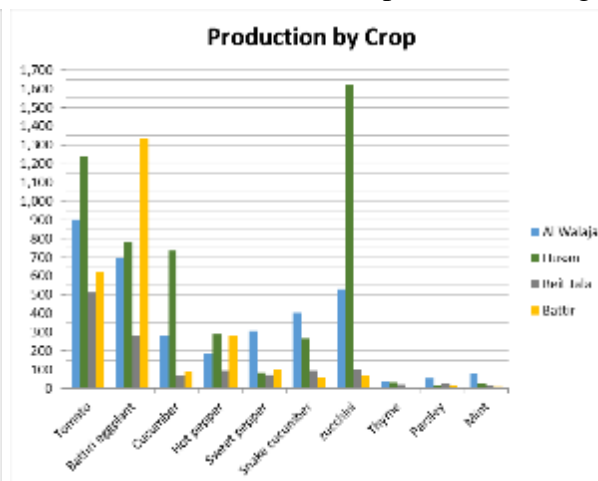
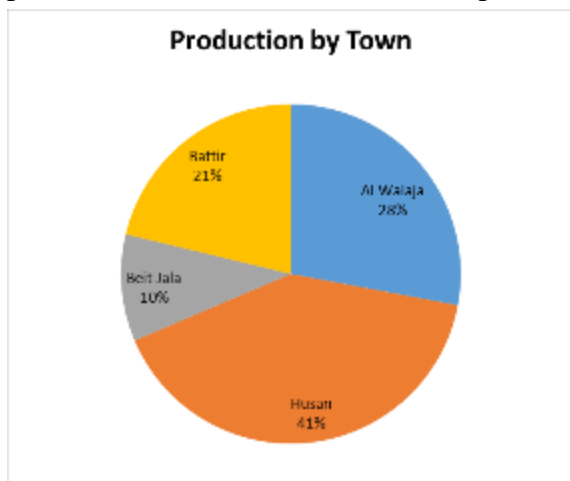
End of the season of okra crop



The preserved seeds to the next season: okra, zucchini and squash (ground bottle squash)

2.2 Evaluation report for summer vegetables production

The charts below show high fluctuation of production per each site per crop for last summer season, where Husan farmers produced a higher amount of the vegetables then Al-Walaja, Battir, and Beit jala respectively. The last rain season affected the ploughing process and the production for some areas. The total production for all summer season crops is 12518.7 kg.



Locality: Walaja

Date: 10-09-2019

#	Beneficiary/ Farmer's name	Current status	Problem	Advise/ extension service provided	Notes
1	Muna Hajajlah (F)	Preparing for winter season; Production of eggplant is ongoing		Keep two areas without plowing to compare with plowed areas	
2	Lamyaa Hajajlah (F)	Preparing for winter season; Finishing summer season (remnants of tomato)	fully ripen fruits are not collected (source of next season seeds); Weeds	Remove ripen fruits to collect seeds and do weeding. Spread basil seeds.	
3	Sameeha Wahadneh (F)	Preparing for winter season	Weeds	Remove weeds, and plant all the land area for winter season	
4	Imad al-Aaraj (M)	Preparing for winter season; Removal of previous productions	Remnants of crops; Land isn't clean	Prepare compost	
5	Tawfeeq Hajajlah (M)	Preparing for winter season; Finishing summer season	Wasps; Weeds	Remove weeds and mix them with soil and manure. Mix seeds with sand for winter season	Presence of large and small bees
6	Wafaa Hajajlah (F)	Finishing summer season; Production of eggplant, parsley, mint and pumpkin is ongoing	Remnants of crops; Parsley not harvested	Prepare compost from remnants of crops, and finish parsley harvest	One of the best
7	Majid al-Aaraj (M)	Removal of previous productions; Production of eggplant and beans is ongoing	Remnants of crops	Prepare compost for next season	Add new soil to land
8	Ibrahim Abu al-Teen (M)	Removal of previous productions	Weeds; Remnants of crops; Land is not plowed	Remove weeds and remnants of crops. Plow land	
9	Nabil al-Aaraj (M)	Preparing for winter season	88%%9	Remove weeds, and don't plow land	Prepare for next season
10	Majid I. al-Aaraj (M)	Preparing for winter season	Same land farmer #9	Prepare compost from remnants of crops, and don't plow land	Training on T-compost and permaculture.
11	Ikhlas Hajajlah (F)	Preparing for winter season; Production of eggplant is ongoing		Remove weeds. Collect basils seeds and plant them for next season	Mint, basil, and chrysanthemum plants were very productive. Biodiversity is notable

					(butterflies, snails, grasshoppers). Inula plan is abundant
12	Hasan Hajajlah (M)	Preparing for winter season; Production of eggplant is ongoing		Remove weeds and prepare compost. Mix human hair (collected from barberry shops) with soil	Deer and grasshoppers are abundant
13	Reem al-Aaraj (F)	Wasn't there, but still preparing for winter season			Call her for sheet of production

Locality: Battir Date: 12-09-2019 and 17-09-2019

#	Beneficiary/ Farmer's name	Current status	Visiting time	Problem	Extension service provided	Notes
1	Hana' Abu Harthia (F)	Production is ongoing; Preparing for next season	12 Sep '19 at 9:20	Plant debris needs to be removed; weeds around sage; eggplant taste is bitter.	Dry and collect okra and its seeds for next season; pickle bitter eggplant; leave plant roots at the soil (for aeration and decomposing later on)	No tillage for next season, however, agitation is used instead; leave irrigation system in the land to minimize land service; they asked for red agricultural soil
2	Riyad Abu Harthia (M)	Production of tomatoes, eggplant and hot pepper is ongoing; Planted cauliflower	12 Sep '19 at 9:45	Lots of aphid on cauliflower (but natural enemies are available); End of summer season	Remove the infected parts (or whole plant if necessary) and bury them away from healthy plants; minimize plowing (shallow plow)	The wife (Hala) collected broad beans seeds for next summer season
3	Saeed Abu Harthia (M)	Finishing of summer season; Production of eggplant is ongoing; Planted cauliflower	12 Sep '19 at 10:10	Previous season plants are dehydrated	Remove plant debris and compost it; add some manure	Biodiversity: inula, pink rock rose, wild thyme. He mentioned the presence of many frogs during night
4	Fouad Mu'ammam (M)	Preparing for next season; Production of eggplant; And jaw-mallow is ongoing	12 Sep '19 at 10:50	Previous season plants are dehydrated; End of summer season	Remove plant debris and compost it; collect basil seeds for plantation next season	His daughter was there (he's at work); turning the compost pile that was conducted in last practical training
5	Raed Mu'ammam (M)	Lots of eggplant compared to the end of production season, fewer of tomatoes	12 Sep '19 at 11:30	Most of crops are dehydrated	Prepare for next season; collect dry seeds, keep immature seeds until they mature; composting of plant debris	

6	Nu'man Mu'ammam (M)	In the middle of production season of eggplant (late plantation)	12 Sep '19 at 12:35	Leaf Minor on citrus leaves; Dehydrated mint	Prepare inula/stinging nettles extract – immersed; 24 hours in water- and apply it once a week; use straw/natural mulching	Need to contact with ICP for more preparation for the marketing festival; will collect local eggplant seeds for next season; will deliver production sheet later
7	Mohammed Fannoun (M)	Production of eggplant is ongoing	17 Sep '19 at 14:50	End of The summer season	Prepare for winter season	Using human hair (collected from barber shops) was efficient in repelling pigs
8	Badr ad-Deen Abu Hasan (M)	Finishing of production season	17 Sep '19 at 16:15	Pigs problem; Rust diseases on host weeds (possibly, spread diseases & infection)	Prepare garlic and sodium bicarbonate extract – chopped garlic and immersed 24 hours in water mixed with NaHCO_3^-	Biodiversity: wild fennel, grasshoppers, inula, capparis; asked to help him renovating his water bond
9	Ibrahim Abu Hasan (M)	Production of tomatoes and eggplant; planted cauliflower recently	12 Sep '19 at 13:50	End of the summer season for most of crops	Remove plant debris and compost it; prepare for winter season	
10	Khalil Mu'ammam (M)	Production of eggplant is ongoing; Preparing for winter season	17 Sep '19 at 14:10	Dry plant debris (mainly cucumber); Broomrapes (parasitic plant) problem	Collect repellent plants' seeds and plant them; remove broomrapes while in the flowering stage or before if possible	He has lots of diversified products to be sold at the marketing festival: olive oil, thyme, honey, and local dry yogurt
11	Adel Oweinah (M)	Production of okra and eggplant is ongoing; Planted cauliflower	17 Sep '19 at 17:05	Ant problem	Prepare for next season; in case of heavy presence of ants, use isolation materials to prevent their access to tree canopy (e.g.: oil)	Eggplant crop is bitter; asked for small purification system
12	Nader Shami (M)	Production of eggplant and pepper is ongoing; Planted cauliflower	17 Sep '19 At 11:00 (took more time, road to Land is damaged)	Birds (esp. partridges) feed on cauliflower and cabbage leaves	Collect okra seeds for next season; spray garlic extract plants on regular basis	He sold beans only (little amount for low price); Biodiversity: butterflies, partridges, black bird, capparis, iluna
13	Ibrahim Shami (M)	Little production of eggplant, pepper and tomato	17 Sep '19 at 12:30	Weeds; End of summer season; Some okra seeds are not mature yet	Remove weeds; prepare for next season; collect and dry okra seeds for next season	

14	Kamal Mu'ammam (M)	Finishing the production season	17 Sep '19 at 15:35	Plant debris needs to be removed	Prepare compost from plant debris; prepare for next season	Many weeds; he reported on the success of using garlic extract ; iluna and purslanes are present
15	Maher Harbouk (M)	Finishing the production season; (eggplant prod. is ongoing)	17 Sep '19 at 15:55	Weeds; Previous season plants are dehydrated	Shallow plowing; prepare compost	
16	Fouad Shami (M)	Finishing planting season	17 Sep '19 at 11:30	Okra seeds are ready for harvesting; Weeds are abundant; Plant diseases and parasites are present from previous season	Remove weeds; collect okra seeds	He might use another piece of land next season; insect traps for next season
17	Ben Bella Abu Hasan (M)	Very little production of tomato; Preparing for winter season	17 Sep '19 at 10:00	Plastic on site; Most crops are dehydrated	Remove dry plants; minimize plowing (i.e. shallow plow); prepare compost; collect okra seeds	Asked for guidance on making/using pipes for hydroponics
18	Ibrahim Qaisi (M)	Preparing part of the land for next season; Planted cauliflower; Production of eggplant is ongoing; irrigating olive trees	17 Sep '19 at 9:05	One crop is planted	Crossing/overlapping plantation	Biodiversity: pink rock, iluna, wild thyme
19	Omar Qaisi (M)	Preparing for next season Planted cauliflower	17 Sep '19 at 9:05	Presence of aphid	Spray cauliflower with garlic and iluna extracts	

2.3 Conduct first festival during harvesting period of summer cultivation season

The project farmers participated within the marketing festival that has been arranged for by ICP on 5th of Oct. 2019, where they sold some of their fresh products such as grapes, quince, mint, pomegranate, and some eggplant. In addition to the processed products that they prepared before such as: pickled eggplant, pickled olive, Labneh (like soft cream cheese), thyme, dry yogurt, grape molasses, preserved grape leaves, and jams. The farmers were happy to join this festival, and they recommend conducting another one next year.



Sustainable agriculture farmers selling their agricultural products

2.4 Practical Training by BySpokes

Conduct four two-days training sessions for best sustainable farming practices, permaculture, organic farming and biological control for benefited farmers (practical training on water and soil management techniques) (see table 2.2).

Table 2.2: number of participants in the training practical training on water and soil management techniques (Planned compared with attended)				
Trainer: Alice Gray(Byspokes)				
Area	Date of training	Place of training	Attended	Planned
Husan	30.09.2019	Husan village council and Hasan Zauol's (a farmer) field	17	19
Al-Walaja	1.10.2019	Al-Walaja village council and Nabeel & Majed Ala'raj (farmers) field	16	21
Battir	2.10.2019	Battir municipality and Ra'ed Mua'mmar (a farmer) field	20	19
Biet Jala	3.10.2019	Biet Jala	17	21

Four workshops were carried out in Husan, Battir, Al Wallajah and Beit Jala (*see table (2) for more details*).

The workshops included discussion of agro-ecological farming and its political and environmental significance as well as feedback from farmers on the challenges they face on a day-to-day basis. *See the agenda of the training*.

Topics mentioned by farmers included:

- water challenges
- pest management challenges
- marketing challenges
- sourcing appropriate seedlings
- infrastructural challenges (e.g. lack of agricultural roads and water supply), which are a result of the repressive policies of the Israeli occupation
- settler damage to property and the threat of physical violence

The consultant gave a presentation about her own farm in Wales and how they are using agro-ecological principles to manage soil, water and pests and to make themselves more resilient to climate change; as well as their marketing strategy and outreach to their local community as a Community Supported Agriculture project.

Several practical demonstrations were then carried out including:

- Aerated compost tea – how to make it and when to use it
- Use of water-level to find contour lines and measure the drop in land
- Use of A-frame to find contour lines
- Swales – digging, planting and overflows
- Trench beds – on contour or gently sloping to make use of water from springs
- Sheet mulching with cardboard and straw to suppress weeds around trees
- Infiltration basins and boomerang bunds around trees for water harvesting
- Sheet mulching for vegetable production ('sandwich strategy')
- Mulching with straw

Note: not all practical topics were covered at every site – a selection was made based on the topography of the land and the interests of the group as stated in the discussion.

i24 channel covered the event for one day at the Beit Jala site. See also the following table of pictures.





Some pictures of the indoor and outdoor training (soil and water management)



Agenda

"التدريب العملي على تقنيات الحصاد المائي وتأهيل التربة"

"The practical training on water and soil management techniques"

30.09.2019 -- 3.10.2019

المدرّبة: أليس جراي

Trainer: Gray Alice

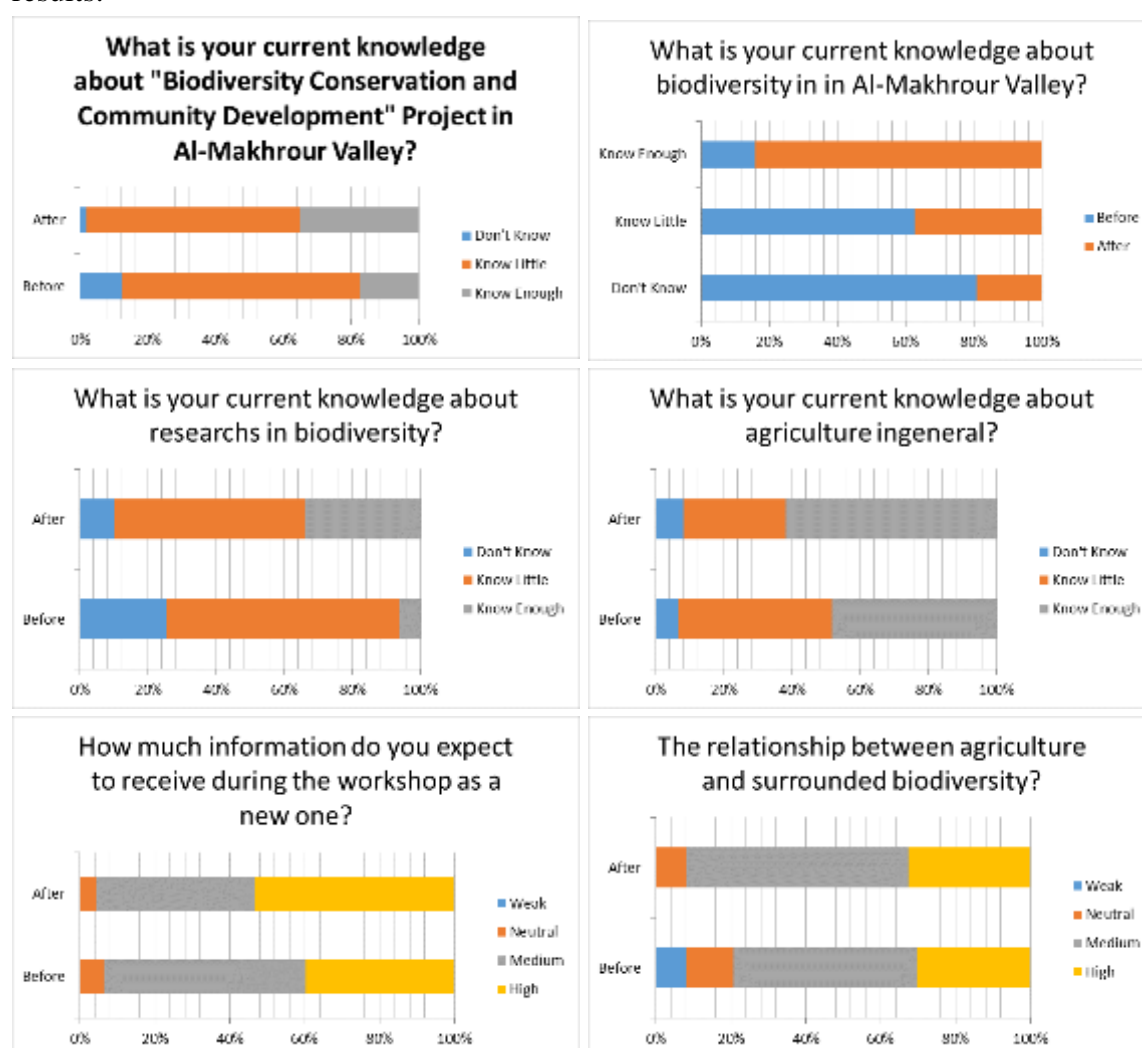
Locations: Husan, Al-walaja, Battir, Beit Jala

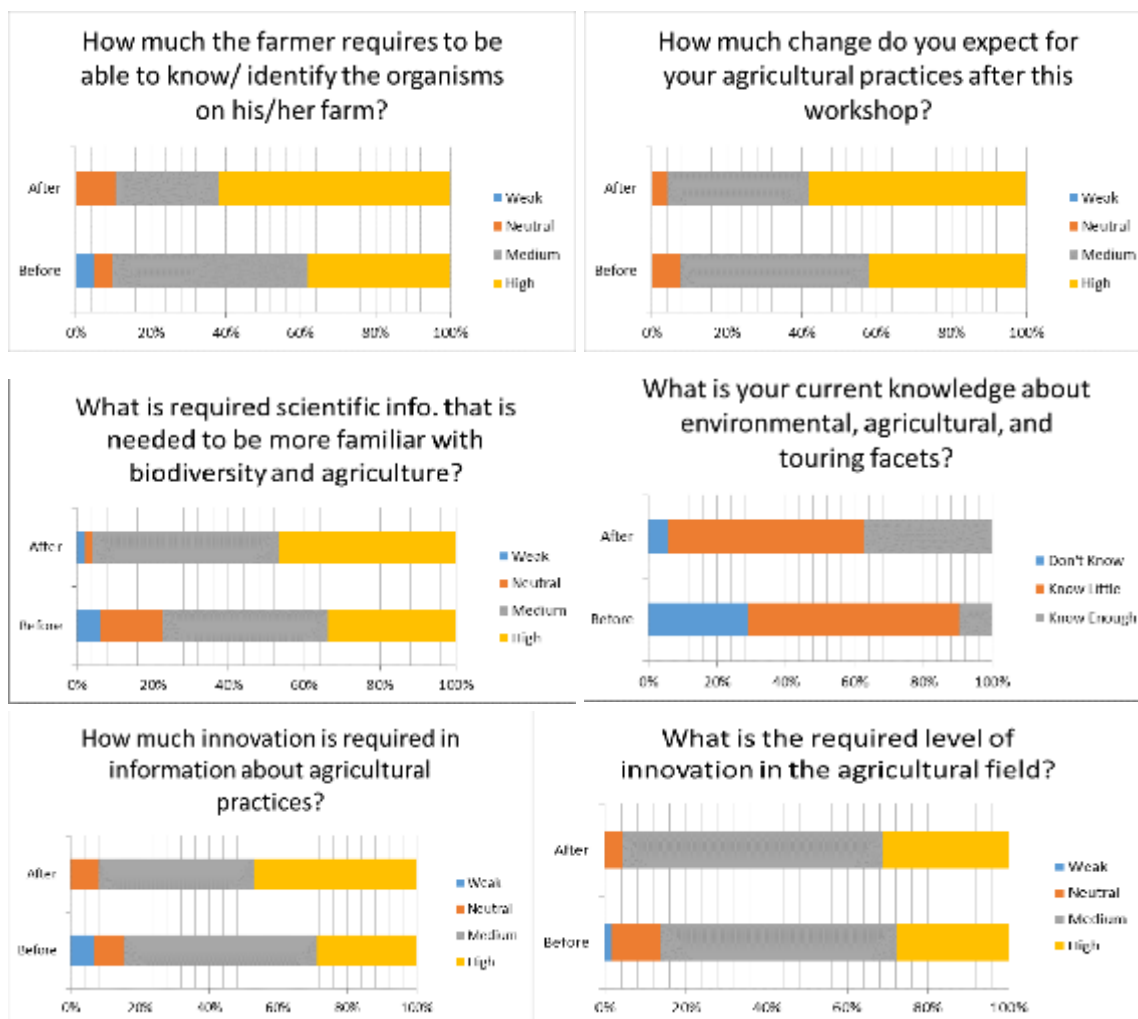
أماكن التدريب: بيت جالا، بتير، الولجة، حوسان

وقت البدء: الساعة 9 صباحاً Finishing time: 4 PM		وقت الانتهاء: الساعة 4 عصراً Starting time: 9 AM
النشاط	الوقت-Time	Activity
التسجيل	9:00-9:10	Registration
التعريف بالذات	9:10-9:30	Self-introducing session
الجانب النظري (في قاعة المجلس القروي/ البلدية)	9:30-10:20	One hour theory (at the village council/ municipality)
إستراحة	10:20- 10:30	Break
استئناف الجانب النظري	10:30-11:00	Theory continued
(التوجه إلى أرض المزارع المنوي عقد التدريب إستراحة العملي لديه)	11:05-11:20	Break (on the way to one of the farmer's field for practical part)
البدء بالجانب العملي من التدريب	11:25-12:25	Practical training
استراحة	12:25-12:40	Coffee Break
استئناف التدريب	12:40-1:30	Practical training paused (water harvesting)
وجبة خفيفة	1:30-2:30	Snacks (lunch)
استئناف التدريب (أسئلة ونقاش)	2:30-3:00	Practical training paused (questions & discussion)

2.5 Capacity building: raising awareness of biodiversity to improve agricultural practices

Two day workshops (2-targeted areas per day) were conducted for the project farmers on Raising Awareness of Biodiversity to Improve Agricultural Practices. This workshop was divided into theory-based lectures which focused on biodiversity and its relationship to agriculture. On the other hand, an educational tour was conducted to show farmers the environmental/ agricultural modules in the botanical garden and the community garden at PMNH. These modules include: water harvesting techniques, composting: compost bile way (another way than the way that was applied in the practical training), Hugo culture system, aquaponics system, reusing plastic bottles to build a greenhouse/ nursery, the green wall technique using plastic bottles, in addition to show them rehabilitated animals at the museum to encourage them to protect the animals and nature. The farmer's knowledge about biodiversity had been increased after these workshops. The following pre/post-test show the results:





The following table shows the targeted areas, date of workshop, and attendee's number

Areas	Date of implementation	Attended	Planned
Biet Jala	17.08.2019	18 (& two children)	29
Al-Walaja	17.08.2019	6	13
Husan	24.08.2019	18	19
Battir	24.08.2019	21 (& some children)	19





Photos of the conducted visits to the PMNH



Agenda

Workshop on Raising awareness of biodiversity to improve agricultural practices

Date: 17+24/08/2019

Trainers: PMNH staff

Location: PMNH Hall

Activity	Time-الوقت	النشاط
Registration	9:00-9:30	التسجيل
Self-introducing session	9:35-9:45	تعارف
Introduction about PMNH	9:50-10:20	مقدمة عن متحف فلسطين للتاريخ الطبيعي
Biodiversity, a specific topics:	10:25-10:45	التنوع الحيوي بصورة موسعة
General idea about fauna and flora.		نبذة عن دور النباتات والحيوانات في التنوع الحيوي
Coffee Break	10:45- 10:55	استراحة
The threat of introduced plants of native environment.	11:00- 11:40	النباتات الدخيلة وخطرها على البيئة المحلية
The effect of some organisms of the local environment (e.g. carpenter bee, street dogs, locusts and gazelles)		دور بعض الكائنات الحية مثل الجراد والنحل وبعض الحشرات الأخرى بالإضافة إلى الكلاب الضالة والغزلان في التنوع الحيوي وعلى البيئة المحلية
Discuss with farmers marketing festival	11:40-12:05	التطرق إلى موضوع المهرجان التسويقي
Tour on the educational Modules in the botanical garden	12:05- 12:30	جولة على النماذج التعليمية في الحديقة النباتية

2.6 Fourth Battiri Eggplant Festival- marketing the farmers' products

The main target of Battiri Eggplant Festival is to support Palestinian farmers and their products, where the farmers are able to sell a huge amount –if not all- of their products during the days of the festival. Our farmers from Battir participated in the festival; where they sold mainly eggplant and other vegetables like sweet pepper and hot pepper, in addition to investing in selling other products –that are not delivered to them by the project- to gain more earnings and profit.



2.7 Practical field training

Four practical trainings conducted at one site per every targeted location of these 4 areas, the main 3 topics were applied/ taught are:

- Composting (compost pile), the main information about compost was layers, the importance for each layer, turning, the maturation period and indicators.
- Natural/ alternatives for pesticides: natural soaked plants mainly: crushed/ mixed garlic, hot pepper, soap, oil, Melia azedarach, and onion. These solutions are mainly used for aphids, flies, and mosquitoes. They become more interested and ask for more about fungal diseases controlled by this way.
- Covering top soil with hay, straw, saw dust or/ and other available dried materials with mentioning the main benefits of covering the top soil.



The conducted practical trainings at the targeted locations

2.8 Local agricultural committee meeting:

Four agricultural local committee meetings were conducted in the targeted areas. The meeting discussed the previous and the next activities, plans, and interventions (see Annex 1). Duties, trainings' dates, list of winter crops, summer season obstacles and solutions were discussed too. The local agricultural committee meetings conducted between 16th of May and 13th of Jul 2019 and included representatives of local cooperatives, village council/ municipality, and other key

farmers. The following table represents the number of participants, the participating organizations, and dates of meeting. (See table 2.4)

Table 2.4: Distribution of conducted local agricultural meetings with related stakeholders in the targeted villages.						
Locality	date	Organizations/key individuals	Participants		Total	Location
			Male	Female		
Biet Jala	19.06.2019	4	5	2	7	Municipality
Battir	16.05.2019	5	5	2	7	Municipality
Husan	11.07.2019	4	3	2	5	Village council
Al-Walaja	13.07.2019	2	1	2	3	Village Council



The conducted local committee meeting in the target locations

2.9 Two cooperation meeting with Union of Agricultural Work Committees (UAWC)

The main aim of conducting cooperation meetings with UAWC is to provide farmers with local rain-fed crops/ vegetables, where the first meeting held at UAWC hall and seed bank and the second meeting conducted at PMNH. *For more information about the 1st meeting see below minutes of meeting.*

Place of meeting	Date	No. of attendees
UAWC hall and seed bank	13.05.2019	4
PMNH	2.07.2019	7



Two conducted meetings with UAWC

Template and minutes of meeting

Project:	Biodiversity Conservation and Community Development in Al- Makhroul valley-Bethlehem Cooperation meeting between UAWC and PMNH		
Date of Meeting:	13 th of May 2019	Time:	10.00 am
Meeting Facilitator:	Summer Shaheen	Location:	UAWC- Hebron

1. Meeting Objective			
Cooperation with regard to the mutual activities between Palestine Museum of Natural History (PMNH) and Union of Agricultural Work Committees (UAWC).			
2. Attendees			
Name	Department/Division	E-mail	Phone
Doa'a Zayed	UAWC	doaa@uawc-pal.org	0598923733
Sayel Atawneh	UAWC	sayel@uawc-pal.org	0599432461
Summer Shaheen	PMNH	sshahen@bethlehem.edu	0568326977
Mohammad Najajrah	PMNH	mhnajajrah93@gmail.com	0595183605
3. Meeting Agenda			
Topic	Owner	Time	
Introduction about PMNH and its activities and projects and introduction about UAWC and its activities and projects, to understand the kind of mutual projects/ activities for each institution to follow a procedure of cooperation for the future.	PMNH & UAWC		
Introduction about Darwin Project implemented by PMNH and Discus the cooperation with UAWC in the agricultural part of the project and mechanism of how to provide farmers with local seeds.	PMNH & UAWC		
Tour in the seed bank of the UAWC	UAWC		
3. Notes, Decisions, Issues, action items			
Topic	Owner	Time	
UAWC visit to the Palestine Museum of Natural History (at the beginning of the week of 16th of Jun).	UAWC	Jun	

Work upon an MoU between two parties (PMNH and UAWC).	UAWC	To be determined by UAWC
Provide PMNH with the winter season crops' list.	UAWC	Done
Prepare a list of exact areas that the farmers are going to plant with every winter crop, to calculate the share for every farmer.	PMNH	By end of May
Facilitate for UAWC to have suasion within the training program for farmers about the local seeds.	PMNH	(Jul-Aug)
To host the project farmers at UAWC to present a workshop about local seeds.	UAWC	Or to be done at PMNH
Discuss the project budget for the winter season crops with UAWC, later on.	PMNH	
Support the project farmers with local seeds for all of the winter season crops as possible as the availability of the seeds' quantity at UAWC's seed bank.	UAWC	Nov-Dec/ Jan
Determine and facilitate for workshop about local seeds and summer season crops presented by UAWC as part of science café.	PMNH	Jul-Aug
Awareness activities/ programs with regard to the mutual interest issues/ topics between PMNH and UAWC	PMNH/ UAWC	
Working together on rating some proposals related to the Medicinal Garden at PMNH. While preserving medicinal plants' samples at PMNH, the seeds of these plants are possibly preserved at UAWC's seed bank.	PMNH/ UAWC	
Possibility of conducting some research about the local seeds.	PMNH/ UAWC	
Note: the attendees signed on the scanned attendance sheet		

2.10 Coordination meeting at directorate of agriculture

A coordination meeting about the project activities was conducted on 11.9.2019 at the directorate of agriculture hall-Bethlehem, focusing mainly upon the sustainable agriculture activities and training. The total attendees are 6, three of PMNH and the others from MoA.

Main discussed topics:

- Discuss the previous and the current activities and interventions
- Improve cooperation between MoA and the local NGOs at the same time increase the follow up work recommended by PMNH, with regard to their projects and environment protection especially the world cultural heritage site within the current violations either by the projects' activities or by the local people.

- Another official meeting with one local NGO with the same people attending this meeting and engaging the representatives of the local committees within was recommended.
- The coming training on water and soil management has been mentioned to the attendees, in addition to the marketing festival.



The conducted coordination meeting

2.11 Coordination meeting in regard to the Marketing Festival

PMNH and ICP met on 23.09.2019 to discuss the schedule of the marketing festival, to arrange for announcement and invitations, and to revise the expenses of this festival.



Marketing festival discussing meeting

Third Year Report

3.1 Seeds and seedlings distribution for summer growing season of 2020/ 2021

The third year distribution followed the original plan per the proposal except we added one more round of distributions because of shifting budgets from one area to another (approved by Darwin Initiative).

3.2 We continued to have the usual exchange visit per plans

Field visits come to support farmers' technical knowledge at specific topics such as advising them to do some IPM practices and to avoid other practices, which are less friendly to the environment. Local committee representatives were part of these visits too.



Healthy green onion



Green onion harvest



Thyme trimming, to get more lateral shoots.



Healthy cabbage



Collecting stinging nettles fertilizer use



Weeding and collecting harvested plants debris



Covering parsley to get more heat to grow



Ready cabbage for harvest



Dwarf lettuce as a result of chili injury



Pea crop lost because of fungal infection



Weeding and using clothes as mulch



Radish thinning

Pictures of follow up visits to Beit Jala, Alwalaja, and Husan farmers showing some damage



Intercropping and ready to harvest crops



Healthy parsley product



Failure growing season for cauliflower



Late production season of beans

Some photos sent by Battir farmers by WhatsApp

3.3 Villages exchange visits to exchange experiences between farmers

On 25/8/2020, 19 farmers from Battir visited their fellow farmers in Al-Walaja in a cross village exchange visit. Al-Walaja farmers, local committee members, and representatives of Al-Walaja village council welcomed Battir farmers and showed them their products, gardens/planted pieces of land, watering techniques, and historical places like Alhadafa water spring, in addition to the Albadawai olive tree. Five farmers' gardens in different locations were visited in Al-Walaja demonstrated how they overcame challenges, such as movement restrictions. Battir farmers in turn introduced themselves and focused on their own challenges and main interests. One farmer showed some of the rare crops like black beans and pear-shaped small tomato (a variety of cherry tomato) that he grows in Battir close to the train-tracks. Farmers also discussed the importance of preservation of the Baladi (local) seeds. More pictures can be viewed here <https://bit.ly/3dynXer>



Beit Jala farmers visiting Husan village and share experience with Husan farmers

3.4 Gathering information about the productivity of the summer season

The 81 households (22 in Husan, 20 in Battir, 13 in Al Walaja and 26 in Beit Jala) benefited from seeds and seedlings distributed for the summer cultivation in 2020 produced approximately 11.4 tons of vegetables. Up to 68.6% of the produced quantity of vegetables was consumed by the beneficiaries' families. In spite of the significant high temperatures that prevailed in the region during the growth of the plants and the production period, 19.2% of the total quantity of the production was sold in the targeted localities, in addition to distribution of 12.2% of the production as gifts to farmers' relatives. (See table 3.1).

Table 3.1: Total quantity of vegetables production, and its distribution by crop, and total selling value, for summer cultivation, 2020					
Crop type	Total Production (Kg)	consumption by households (Kg)	Gifts (Kg)	Selling quantity (Kg)	Selling value (NIS)
Battiri Eggplants	2698	1277	421	1000	7440
Ajami Eggplants	162	147	15	0	0
Tomatoes	1266	1141	100	25	125
Squash	2062	1410	356	296	2300
Beans	1573	731	187	655	6040
Cowpeas	143	118	10	15	120
Cucumber	688	636	52	0	0
Snake cucumber	941	759	82	100	700
Hot pepper	238	213	5	20	180
Sweet pepper	184	180	4	0	0
Pumpkin	839	644	125	70	510
Sweet corn	562	532	30	0	0
Total	11356	7788	1387	2181	17415
% of the production	100	68.6	12.2	19.2	

Table 3.2 shows the total crop production of summer cultivation 2020, and its distribution per locality.

Table 3.2: Total quantity of vegetable production, and its distribution by locality for summer cultivation, 2020					
Locality	Total of the Production (Kg)	consumption by households (Kg)	Gifts (Kg)	Selling (Kg)	Selling value (NIS)
Husan	6516	3842.0	839.0	1835.0	14255
Battir	2722	2002.0	400.0	320.0	2900
Al Walaja	1081	1011.0	70.0	0.0	0
Beit Jala	1037	933.0	78.0	26.0	260
Total	11356	7788.0	1387.0	2181.0	17415
% of total	100	68.6	12.2	19.2	



Table 3.3 shows the total quantity of vegetable production by crop type and by locality for summer cultivation 2020. Approximately 57% of the total quantity of the production was in Husan, 24% was in Battir, 10% was in Al Walaja, and 9% was in Beit Jala. The variation in the quantities of the production in the targeted areas depends mainly on the availability of irrigation water in each locality. For example, although the number of farmers in Husan was 22 farmers and in Beit Jala was 26 farmers, the quantity of the production in Hasan formed 57% of the total quantity of the production, while the quantity of the production in Beit Jala formed 9%. Also in spite of the number of farmers in Al Walaja was 13 farmers (half of the number of the farmers of Beit Jala), the quantity of the production in Al Walaja formed 10% of the total production in the targeted area, which is almost the same production in Beit Jala. This is due to availability of irrigation water from the springs in Huasn and Al Walaja.

Table 3.3: Total quantity of vegetable production, in Kg, by crop type and by locality in summer cultivation in 2020						
Crop type	Husan	Battir	Al Walaja	Beit Jala	Total	% of total
Battiri Eggplants	1785	782	65	66	2698	24
Ajami Eggplants	100	8	35	19	162	1
Tomatoes	517	322	271	156	1266	11
Squash	1325	386	196	155	2062	18
Beans	1360	117	59	37	1573	14
Cowpeas	40	65	22	16	143	1
Cucumber	169	273	114	132	688	6
Snake cucumber	165	344	195	237	941	8
Hot pepper	165	47	15	11	238	2
Sweet pepper	118	39	14	13	184	2
Pumpkin	465	168	75	145	853	8
Sweet corn	307	171	20	50	548	5
Total	6516	2722	1081	1037	11356	100
% of total	57	24	10	9	100	

3.5 Seeds and seedlings distribution for winter growing season of 2020/ 2021

At the beginning of October 2020, eighty one households of the farmers in the targeted localities (22 households in Husan, 20 households in Battir, 13 households in Al-Walaja, and 26 households in Beit Jala) were provided with 208 kg of seeds and 47174 seedlings of winter vegetables to cultivate their fields. The total cultivated area reached approximately 40 dunums. In addition, 17 households of the community committees were provided with about 24 kg of seeds and 5075 of seedlings. In total 232 kg of seeds and 52250 seedlings were distributed. (See table 3.4).

Table 3.4: Total quantity of seeds and seedlings of winter vegetable crops distributed in the growing season 2020/2021													
Crop	crops quantity per farmer	Husan (22farmers + 4pmnh)	Battir (20 farmers)	Alwalaja (13 farmers)	Beit Jala (26 farmers)	Total for farmers	Crops quantity per local committee member	Husan local committee (6 members)	Battir local committee (6 members)	Alwalaja local committee (4 members)	BJ local committee (1 member)	Total comm.	Grand total
Seeds (Kg)													
Radish	0.05	1.3	0.95	0.65	1.35	4.25	0.05	0.3	0.3	0.2	0.1	0.9	5.1
Turnip	0.05	1.3	0.95	0.65	1.35	4.25	0.05	0.3	0.3	0.2	0.1	0.9	5.1
Chickpeas	0.25	6.5	4.75	3.25	6.75	21.25	0.15	0.9	0.9	0.6	0.2	2.6	23.8
Broad bean	0.25	6.5	4.75	3.25	6.75	21.25	0.15	0.9	0.9	0.6	0.2	2.6	23.8
Peas	0.25	6.5	4.75	3.25	6.75	21.25	0.15	0.9	0.9	0.6	0.2	2.6	23.8
Spinach	0.05	1.3	0.95	0.65	1.35	4.25	0.05	0.3	0.3	0.2	0.1	0.9	5.1
Arugula	0.05	1.3	0.95	0.65	1.35	4.25	0.05	0.3	0.3	0.2	0.1	0.9	5.1
Green onion	1	26	19	13	27	85	0.5	3	3	2	0.5	8.5	93.5
Garlic	0.5	13	9.5	6.5	13.5	42.5	0.25	1.5	1.5	1	0.3	4.3	46.8
Total (kg)		63.7	46.6	31.85	66.15	208.3		8.4	8.4	5.6	1.4	24	232
No. of Seedlings													
Fennel	25	650	475	325	675	2125	25	150	100	100	25	375	2500
Broccoli	20	520	380	260	540	1700	20	120	80	80	20	300	2000
Sage	50	1300	950	650	1350	4250	50	300	200	200	50	750	5000
Thyme	100	2600	1900	1300	2700	8500	50	300	200	200	100	800	9300
Lettuce	100	2600	1900	1300	2700	8500	50	300	200	200	50	750	9250
Cauliflower	100	2600	1900	1300	2700	8500	50	300	200	200	50	750	9250
Cabbage	100	2600	1900	1300	2700	8500	50	300	200	200	50	750	9250
Red cabbage	30	780	570	390	810	2550	20	120	80	80	20	300	2850
Kohlrabi	30	780	570	390	810	2550	20	120	80	80	20	300	2850
Total		14430	10545	7215	14985	47175		2010	1340	1340	385	5075	52250

Table 3.5 shows the distribution schedule of seeds and seedlings of winter season vegetable crops, 2020/2021

Table 3.5: Distribution schedule of seeds and seedlings of winter season vegetable crops 2020/2021						
No.	Day	Date	Time	Locality	No. of farmers	No. of Local community Committees members
1	Thursday	1/ 10 / 2020	9:30	Huasan	22	6
2	Thursday	1/ 10 / 2020	11:00	Battir	20	6
3	Saturday	3/ 10/ 2020	9:30	Beit Jala	26	1
4	Saturday	3/ 10/ 2020	10:30-11:00	Al-Walaja	13	4
Total					81	17



Distribution seeds and seedlings of winter season vegetable crops, 2020/2021

3.6 Agricultural equipment and tools distribution

The benefited households were provided with 80 pressure sprayers and hand gloves. In addition, drip irrigation networks and its accessories, gardening and soil agitation tools and others such as tying twine, gardening hand gloves, were distributed to 4 farmers from Husan in the winter growing season 2020/2021.



Distribution of equipment and tools to farmers.

3.7 Following up the farmers and providing them with technical support and extension services

From the beginning of October 2020 till the end of March 2021, the project team conducted 351 field visits (8.3% more than the proposed number of field visit for winter season) to the benefited farmers on their fields in the targeted localities to follow up the progress in their cultivation and to provide them with advice and required agricultural extension (see table 3.6).

Table 3.6: Total number of field visits conducted during winter growing season of 2020/2021								
Locality	# of farmers	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Total (1st Oct.- 31 March) (winter season)
	22	20	41	21		21		103
Battir	20	0	42	26		20		88
Al-Walaja	13	16	0	13	13	13		55
Beit Jala	26	18	0	19	27	41		105
Total	81	54	83	79	40	95		351



Following up with the farmers and providing the technical support of winter cultivation in the growing season of 2020/2021

3.8 Gathering information about the productivity of the winter season

The total winter crops production in the growing season of 2020/2021, was approximately 30.5 tons of vegetables. Up to 78% of the produced quantity of vegetables was consumed by the beneficiaries' families, 14% of the production was distributed as gifts to farmers' relatives, and 8% of the production was sold (21% of the farmers sold the surplus of their production). (See tables 3.7 and 3.8).

Table 3.7: Total quantity of vegetable production and its distribution by crop, and total selling value, for winter cultivation 2020/2021					
Crop type	Total Production (Kg)	consumption by households (Kg)	Gifts (Kg)	Selling (Kg)	Selling value (NIS)
Spinach	835	739	61	35	265
Arugula	426	371	29	26	140
Green onion	1014	900	54	60	313
Lettuce	4387	3441	526	420	1160
Turnip	426	348	63	15	60
Peas	772	727	29	16	160
Fennel	574	539	24	11	100
Kohlrabi	667	625	25	17	140
Broccoli	1844	1627	162	55	404
Red cabbage	1213	1117	64	32	150
Cabbage	7395	5087	1495	813	1939
Cauliflower	7670	5120	1657	893	2450
Broad bean	1180	1048	107	25	115
Chickpeas	375	375	0	0	0
Garlic	364	364	0	0	0
Thyme	203	203	0	0	0
Sage	173	173	0	0	0
Radish	966	889	40	37	190
Total	30484	23693	4336	2455	7586
% of total		78	14	8	

Table 3.8: Total quantity of vegetable production, and its distribution by locality in winter cultivation 2020/2021					
Locality	Total Production (Kg)	consumption by households (Kg)	Gifts (Kg)	Selling (Kg)	Selling value (NIS)
Husan	8685	6549	1016	1120	3365
Battir	6510	5142	1126	242	784
Al-Walaja	5003	4002	825	176	520
Beit Jala	10286	8000	1369	917	2917
TOTAL	30484	23693	4336	2455	7586
% of total	100	78	14	8	

Table 3.9 shows the total quantity of vegetable production by crop type and by locality in winter cultivation 2020/2021. About 34% of the total quantity of the production was in Beit Jala 28% was in Husan, 21% was in Battir, and 9% was in Al Walaja (Tables 3.10-3.14).

Table 3.9: Total quantity of vegetable production, in Kg, by crop type and by locality in winter cultivation 2020/2021						
Crop type	Husan	Battir	Al Walaja	Beit Jala	Total	% of total
Spinach	301	193	120	221	835	2.7
Arugula	163	69	80	114	426	1.4
Green onion	305	220	142	347	1014	3.3
Lettuce	1015	1165	665	1542	4387	14.4
Turnip	263	46	65	52	426	1.4
Peas	172	150	127	323	772	2.5
Fennel	137	121	126	190	574	1.9
Kohlrabi	157	140	113	257	667	2.2
Broccoli	495	363	342	644	1844	6.0
Red cabbage	380	267	192	374	1213	4.0
Cabbage	2180	1600	1240	2375	7395	24.3
Cauliflower	2145	1615	1125	2785	7670	25.2
Broad bean	319	188	292	381	1180	3.9
Chickpeas	115	42	73	145	375	1.2
Garlic	102	70	66	126	364	1.2
Thyme	66	29	32	76	203	0.7
Sage	67	20	29	57	173	0.6
Radish	303	212	174	277	966	3.2
Total	8685	6510	5003	10286	30484	100.0
% of total	28	21	16	34	100	

Table 3.10: Total crops production of winter season, and its distribution according crop type, 2020/2021 in Husan					
Crop type	Total production (Kg)	House consumption (Kg)	Gifts (Kg)	sold (Kg)	Selling value(NIS)
Spinach	301	256	20	25	195
Arugula	163	130	13	20	100
Green onion	305	269	16	20	100
Lettuce	1015	846	109	60	170
Turnip	263	206	42	15	60
Peas	172	159	13	0	0
Fennel	137	131	3	3	20
Kohlrabi	157	149	8	0	0
Broccoli	495	466	29	0	0
Red cabbage	380	360	15	5	20
Cabbage	2180	1385	350	445	1105
Cauliflower	2145	1310	350	485	1380
Broad bean	319	279	30	10	50
Chickpeas	115	115	0	0	0
Garlic	102	102	0	0	0
Thyme	66	66	0	0	0
Sage	67	67	0	0	0
Radish	303	253	18	32	165
Total	8685	6549	1016	1120	3365
% of total		75	12	13	

Table 3.11: Total crops production of winter season, and its distribution according crop type, 2020/2021 in Battir

Crop type	Total production (Kg)	House consumption (Kg)	Gifts (Kg)	sold (Kg)	Selling value(NIS)
Spinach	193	158	29	6	30
Arugula	69	65	4	0	0
Green onion	220	193	19	8	40
Lettuce	1165	880	175	110	250
Turnip	46	41	5	0	0
Peas	150	142	2	6	60
Fennel	121	108	9	4	60
Kohlrabi	140	125	11	4	30
Broccoli	363	330	19	14	84
Red cabbage	267	258	9	0	0
Cabbage	1600	1130	430	40	100
Cauliflower	1615	1155	410	50	130
Broad bean	188	186	2	0	0
Chickpeas	42	42	0	0	0
Garlic	70	70	0	0	0
Thyme	29	29	0	0	0
Sage	20	20	0	0	0
Radish	212	210	2	0	0
Total	6510	5142	1126	242	784
% of total		79	17	4	

Table 3.12: Total crops production of winter season, and its distribution according crop type, 2020/2021 in Al-Walaja

Crop type	Total production (Kg)	House consumption (Kg)	Gifts (Kg)	sold (Kg)	Selling value(NIS)
Spinach	120	111	5	4	40
Arugula	80	72	4	4	20
Green onion	142	122	7	13	65
Lettuce	665	535	110	20	50
Turnip	65	53	12	0	0
Peas	127	125	2	0	0
Fennel	126	126	0	0	0
Kohlrabi	113	111	2	0	0
Broccoli	342	287	40	15	75
Red cabbage	192	177	15	0	0
Cabbage	1240	880	280	80	120
Cauliflower	1125	810	285	30	100
Broad bean	292	232	55	5	25
Chickpeas	73	73	0	0	0
Garlic	66	66	0	0	0
Thyme	32	32	0	0	0

Sage	29	29	0	0	0
Radish	174	161	8	5	25
Total	5003	4002	825	176	520
%		80	16	4	

Table 3.13: Total crops production of winter season, and its distribution according crop type, 2020/2021 in Beit Jala

Crop type	Total production (Kg)	House consumption (Kg)	Gifts (Kg)	sold (Kg)	Selling value(NIS)
Spinach	221	214	7	0	0
Arugula	114	104	8	2	20
Green onion	347	316	12	19	108
Lettuce	1542	1180	132	230	690
Turnip	52	48	4	0	0
Peas	323	301	12	10	100
Fennel	190	174	12	4	20
Kohlrabi	257	240	4	13	110
Broccoli	644	544	74	26	245
Red cabbage	374	322	25	27	130
Cabbage	2375	1692	435	248	614
Cauliflower	2785	1845	612	328	840
Broad bean	381	351	20	10	40
Chickpeas	145	145	0	0	0
Garlic	126	126	0	0	0
Thyme	76	76	0	0	0
Sage	57	57	0	0	0
Radish	277	265	12	0	0
Total	10286	8000	1369	917	2917
% of total		78	13	9	

Table 3.14: Total crops production of winter season, and its distribution per locality, 2020/2021

Community	Total production (Kg)	House consumption (Kg)	Gifts (Kg)	sold (Kg)	Selling value(NIS)
Husan	8685	6549	1016	1120	3365
Battir	6510	5142	1126	242	784
Al-Walaja	5003	4002	825	176	520
Beit Jala	10286	8000	1369	917	2917
TOTAL	30484	23693	4336	2455	7586
of total %	100	78	14	8	

3.9 Permaculture training

Four training sessions were implemented by a local consultant recommended by our UK partner Byspokes due to travel restrictions about “Rainwater Harvesting Techniques for Dryland: Theory and Practice” at 4 villages in Bethlehem district (Battir, Husan, Al Walajeh, Beit Jala). The full report is at <https://bit.ly/2U7NrIG>

3.10 Seeds and seedlings distribution for summer growing season of 2021

At the beginning of April 2021, eighty one households of the farmers in the targeted localities (22 households in Husan, 20 households in Battir, 13 households in Al-Walaja, and 26 households in Beit Jala) were provided with about 42 kg of seeds and 44405 seedlings of summer vegetables to cultivate their fields. In addition, 17 households of the community committees were provided with about 5 kg of seeds and 4695 of seedlings. In total 49100 seedlings and about 47 kg of seeds were distributed. (See table 3.15). Table 3.16 shows distribution schedule of seeds and seedlings of summer season vegetable crops, 2021.

Table 3.15: Total quantity of seeds and seedlings of summer vegetable crops distributed in the growing season of 2021

No. of Seedlings													
Crop type	Quantity per farmer	Husan (24) (22 farmers+2 PMNH)	Battir (20)	Alwalaja (13)	Beit Jala (26)	Total quantity for farmers	Quantity per local committee member	Husan (6)	Battir (6)	Alwalaja (4)	Beit Jala (1)	total quantity for committees.	Total
Tomato	150	3600	3000	1950	3900	12450	50	300	300	200	150	950	13400
Eggplants (Battiri)	50	1200	1000	650	1300	4150	25	150	150	100	50	450	4600
Eggplants (Ajami)	75	1800	1500	975	1950	6225	30	180	180	120	75	555	6780
Sweet Pepper	30	720	600	390	780	2490	30	180	180	120	30	510	3000
Hot Pepper	30	720	600	390	780	2490	25	150	150	100	30	430	2920
Cucumber	100	2400	2000	1300	2600	8300	50	300	300	200	100	900	9200
Squash	100	2400	2000	1300	2600	8300	50	300	300	200	100	900	9200
Total		12840	10700	6955	13910	44405		1560	1560	1040	535	4695	49100
Seeds (Kg)													
Cow peas	0.3	6	5	3.25	6.5	20.75	0.15	0.9	0.9	0.6	0.25	2.65	23.4
Okra	0.3	6	5	3.25	6.5	20.75	0.15	0.9	0.9	0.6	0.25	2.65	23.4
Total		12	10	6.5	13	41.5		1.8	1.8	1.2	0.5	5.3	46.8

Table 3.16: Distribution schedule of seeds and seedlings of summer season vegetable crops, 2021

No.	Day	Date of distribution	Time	Locality	No. of farmers	No. of Local community Committees members
1	Tuesday	13/4/2021	9:30	Husan	22	6
2	Tuesday	13/4/2021	10:45	Battir	20	6
3	Wednesday	14/4/2021	9:30	Beit Jala	26	1
4	Wednesday	14/4/2021	10:15	Al-Walaja	13	4
Total					81	17

At the beginning of October 2020, eighty households of the farmers in the targeted localities (22 households in Husan, 19 households in Battir, 13 households in Al-Walaja, and 26 households in Beit Jala) were provided with 208 kg of seeds and 47,174 seedlings of winter vegetables to cultivate their fields. The total cultivated area reached approximately 40 dunums. In addition, 17 households of the community committees were provided with about 24 kg of seeds and 5,075 of seedlings. In total, 232 kg of seeds and 52,250 seedlings were distributed to the farmers. Also, the benefited households were provided with 80 pressure sprayers and hand gloves. Moreover, they were previously provided with irrigation system network, composts and shears. In addition, the project team also follows up the benefited farmers in their fields and provides advice and agricultural extension services to them. The project team organized an exchange field visit for the farmers of Battir town to the farmers of Al Walaja village on 25 August 2020, in order to exchange the experiences and the knowledge between the farmers in the field of ecological agriculture.

A random sample of 20 (of the 81) Farmers were questioned end of March and early April 2021 for a final feedback. (6 from Beit Jala, 4 from Al Walaja, 5 from Husan, and 5 from Battir). Here is what we learned:

- Because of the agricultural inputs provided by the project, the farmers encouraged to increase their cultivation area. As it was found from the results of the questionnaire analysis that the total area that was cultivated by the farmers interviewed before the implementation of the project was 8.55 dunums per growing season. While the total cultivated area by them during the last growing season increased to 13.3 dunums (55.6% increased).
- The project has introduced some new types of vegetables to the farmers that were not grown before the implementation of the project such as cohlrabi, broccoli, fennel, red cabbages, arugula. These types have won the farmers' satisfaction and they will continue to cultivate them in the next seasons.
- Before implementing the project, 85% of the farmers interviewed used pesticides, 5% used natural alternatives, and 10% did not use anything to control the insects and diseases that affect the plants. While during implementing the project all the farmers used only natural alternatives.
- Materials used for plants fertilization:
- Before implementing the project, 15% of the farmers interviewed used Chemical fertilizers, 35% used both chemical fertilizers and unfermented animals manure, 45% used unfermented animals manure, and 5% did not use anything. While during implementing the project all the farmers used both natural fermented animals manure and compost.
- Before implementing the project, 5% of the farmers interviewed used herbicides and manual weeding, 5% used herbicides and plowing, 5% used manual weeding, 10% used manual weeding and hoeing, 50% used manual weeding, hoeing, and 10% used manual weeding, hoeing, and plowing.
- While during implementing the project, 95% of the farmers control the weeds manually and 5% manually, hoeing and plowing.
- Before implementing the project, 20% of the farmers interviewed used the weeds as food for the animals, 10% threw the weeds on borders of the field, 65% burn the weeds, and 5% either through the weeds on borders of the field or burn them.
- While during implementing the project, 10% used the weeds either as food for the animals or composting, 45% used them either as soil cover or composting, 10% used

the weeds as soil cover, or turning it in the soil, or composting, 10% used them either for composting or turning it in the soil, 15% used the weeds for composting, and 10% used them either as soil cover or turning in the soil.

- Average percentage of the savings in spending of the household on buying vegetables in the season due to availability of the production was about 61%.
- During implementing the project, all the farmers achieved self-sufficiency from their vegetables produce. Whereas 69% of the production was consumed by the households, 18% of the production was distributed as gifts to farmers' relatives and friends, and 13% of the production was sold.
- Average percentage of the savings in the production inputs costs due to the production inputs provided by the project to the farmers (fertilizers, irrigation networks, seeds and seedlings, agricultural tools, etc.) was 71%.
- Average of the increase in the crop productivity due to the use of permaculture practices was 22%.
- All the farmers agreed that the quality of the products was better and free from any chemical contaminants.
- Because of the use of permaculture practices the average production costs was decreased by about 36%.
- 35% of the farmers sold the surplus in production. These farmers stated that, the demand for buying products that resulted from safe agriculture increased by an average of 26%, and the average selling price of the products increased by 21%.
- Impact of the training workshops, agriculture extension and educational field visits and experience exchange visits that were carried out on the awareness and knowledge of the farmers:

All the interviewed farmers stated that, the training workshops held for farmers, agriculture extension and educational field visits, and experience exchange visits between farmers organized during the project had a significant impact on increasing farmers' knowledge and awareness about the following:

- Importance of sustainable permaculture and its preservation of public health and the environment.
- Importance of preserving and sustaining the environment and biological diversity.
- Importance of using organic materials and avoiding the use of agro- chemicals.
- Methods of fermentation of animal manure, and compost manufacturing.
- Water harvesting techniques and methods to rationalize the use of irrigation water.
- Importance of covering the soil (mulching) to preserve its moisture, and limiting the growth of weeds.
- Correct ways to get rid of plant residues and how to benefit of them.
- Importance of and how to prepare and use some natural alternatives in controlling insects and diseases that affect plants.

All of the farmers who were interviewed said that, the project contributed in building women's capacity through:

- Training workshops and agricultural extension and educational field visits.
- Experience exchange visits between the farmers.
- Providing some women with tools for food processing.

- Through participating in the agricultural products marketing festival.

All of the farmers who were interviewed said that, they will continue in applying the permaculture practices in their farming, and encouraging other farmers to apply them. The analysis result shows that, all of the famers are satisfied with the project. 90% of the farmers interviewed rated the project as excellent and 10% rated it very good.

Notes and recommendation of the farmers:

- The project is very beneficial to farmers.
- Continue in implement the project with the farmers.
- Continuing in conduct training workshops for farmers and provide them with agricultural extension and guidance.
- Distribute seeds and seedlings to farmers at the appropriate time for planting.
- Drew the attention of the responsible authorities to the problem of wild pigs and stray dogs that attack the fields of the farmers and cause damage to crops and loss to farmers.
- Taking into consideration the needs of the farmers.





Summary of Vegetable seedlings and seeds distribution:

During the project period, 234,550 vegetable seedlings and 490 Kg of vegetable seeds and bulbs, 3,500 sacks of compost, and 80 pressure sprayers were distributed to the farmers in the targeted communities in addition to irrigation systems and other agricultural tools. The following table shows the total quantity of seedling and seeds and bulbs distributed per each growing season (table 4.1).

Table 4.1: Total quantity of seedlings and seeds and bulbs were distributed to the farmers during the project period		
Growing season	Seedlings	Seeds & bulbs (kg)
Winter 2019/ 2020	54,000	190
Summer 2020	79,200	21
Winter 2020/ 2021	52,250	232
Summer 2021	49,100	47
Total	234,550	490

Annex 1 notes on early interventions with farmers

Location	Date	Main findings	Main challenges	Recommendations
Beit Jala	14.06.2019	Beginning of the production phase (mainly for: cucumber, pepper, hot pepper, snake-cucumber, and zucchini). A few farmers planted at Al-Makhrour (11), and the rest of them either didn't plant or they did but close to their houses.	Water shortage, where some of the planted crops are wilting/ already wilted. The death of the seedlings, especially repellent one. Condense growth of tomatoes. Some pests were noticed, such as: spidermites, aphids and whitefly.	Using local seeds especially for next season. Covering the top of the soil with organic debris/ weeds/ hay or straw. Tomatoes pruning/ trimming (with a small practical part) To plant more repellent plants and increase the rate of intercropping process. Using natural extract was advised (grinded garlic with hot pepper spices and a spoon of soap diluted in a liter of water) -that was in general-, tell the technical training in the field).
Husan	20.06.2019	A very good and healthy plantations, where the farmers followed some traditional ways of agriculture practices, mainly trellising using dried sticks, and intercropping a little bit. 1st stage of the production (cucumber, eggplant, zucchini, and hot and sweet pepper). All farmers planted their fields.	Less intercropping. Cracks over the top surface of the soil (which means more evaporation, and soil microorganism's death). Dodder -parasitic plant-, which is a very dangerous one in some fields. Pests are slightly existed at some fields. Over-irrigation in some fields. Using plastic mulch (by the time it's hardly decomposes). A huge amount of weeds. Condensed and almost bent tomato branches.	More intercropping, for instance one farmer was going to plant one field with corn (monoculture), but it was suggested to plant cowpea, sunflower, and okra in between. Covering the surface of the soil with organic litter, especially to avoid soil cracks. Hand removal of the plant haustoria and the flowers itself at flowering stage. Using natural extract, or organic pesticide/ fungicide, for powdery mildew and spider mites. Organize irrigation process by decreasing watering times. Covering the plastic mulch to increase its shelf-life by decreasing its degradation by the sun. Manual weeding. To prune and trellis tomatoes.

Battir	14.05.2019	Plantation stage. Two out of 19 farmers weren't plant.	Plowing availability. Seedlings' death/ dehydration. Top soil dehydration.	Mainly and for all of them, covering the top surface of the soil was advised. Organized watering, 2 times/ day especially the hot one and for farmers who are not very close to Battir water-spring.
Al-Walajah	18.06.2019	Beginning of harvesting of cucumber, zucchini, hot and sweet peppers, and snake-cucumber. All farmers except one of them were plant their fields.	Water shortage, crops dehydration at some places. 2 of the farmers planted close to their houses. Crowded/ condensed okra. Bent vegetative cover of the tomatoes. Small size of vegetative cover especially for cucumber at some fields. White fly insect.	Covering the top of the soil with an organic litter, and using a plastic bottle with a small holes for efficient water flow (as a water harvesting technique), and irrigating the crops at night if possible. Okra thinning. Trimming and trellising of tomatoes. For good fruit size, to provide with more water and compost. Use smoking process "an ancient one", where the smoke of burned manure helps with insect repelling. (MoA advise)