

Organic farming in rural Nepal: Food security during a pandemic

2021

Funded by The International Foundation

Executed by Himalayan HealthCare

Please summarize the original purpose(s) and proposed outcomes of this grant.

This agricultural initiative will enable women farmer participants to gain and implement knowledge, skill and techniques for sustainable growing projects to enhance family/community nutrition and generate income.

In this project, we proposed to directly serve 30 Dalit and Tamang women farmers from Sertung village in a remote, extremely poor, road-less mountainous region of Dhading District in central Nepal. Our year one goal was to improve 90% or more of the 30 participants' family nutrition and food security, improved quality of life, and steps towards increased income. An estimated 150 family members of these women farmers would in turn benefit while motivating, educating and benefiting hundreds of other local farmers.

90% or more of the participating 30 women farmers will each produce a minimum of 30-40 kg vegetables in year 1, to be eaten and solar dried for food security. They will also plant fruit trees for cash, 70-80% of which will be healthy in year 1 and in year 2 & 3 they will be able to sell these and also portions of increase vegetable yields.

Please outline the baseline which was used to measure the results of this project.

1. Expedition participation records of 30 participants to complete the Agricultural Learning expedition in the Regional Agricultural Research Station (RARS) at Lumle in western Nepal
2. Training participation records of 30 participants to complete onsite training through experts in Sertung village in Dhading District; number of trainings coordinated and delivered
3. Record of participant farmers successfully engaged in growing project over the year period showing increase in growth of vegetables (weight and type of crops produced) and improvement in other cash crops through monthly record which shows improvement of their knowledge of growing techniques, basic irrigation, marketing and sell of cash crops

4. Survey data on food security factors about household foods consumed (nutritional value, ease of access, quantity) and related quality of life improvement of the 30 participants
5. Amount of supplies distributed to 30 participant farmers
6. Weekly project coordination and supervision provided over one year

Please describe the measureable and proven impact of this project against the baseline described above.

1. 30 women farmers were selected for this project. The selection was carried out in March and April of 2021 after the harsh winter months were over and the gardens were growing back, enabling us to select the participants. The final selection of the participants was based on door to door visit by HHC agro-expert, field supervisors and field coordinator. At these visits, our team checked on land availability for vegetable cultivation even if leased, keenness on vegetables and animal farming, and already engaged in gardening/farming at some level. Priority was given to individuals with greater needs like single women, widowed women, women with a very large family to feed, those already planning vegetable or animal farms.

Training Site: The RARS center (RARS- Regional Agricultural Research Station at Lumle) was confirmed for the expedition, 200 KM away after the great learning experience in 2019 for another women group sponsored by The International Foundation. The group spent a significant part of its time receiving training in a variety of agro- topics provided by long-term agricultural experts available there, while they also observed and saw firsthand how farms are planned, cultivated and prepared, planted, irrigated, protected and harvested. The 30 participants had to hike for a day and change two vehicles to reach the center in two days. The training was conducted over 5 days and an additional day was made available for the group to see sights in Pokhara city as most of the participants were visiting a city for the first time in their life.

The five day training at RARS center with two sessions per day was conducted from 3-7 April 2021 and it was as follows: Introduction of RARS station and its certified crops and vegetables, information on insects and butterfly that destroy plants and crops and methods to trap them, introduction to plant nursery, its size and care and transfer of plants by scientist Ram Prasad Mishra; Importance of vegetable farming, its nutrition and financial gain, management of high altitude crops, local versus important vegetable plantation by vegetable scientist Chandra Kanta Timilsina; Potato plantation, technique, types, process, season, fertilizer

and storage by potato scientist Dr. Kalika Prasad Upadhyaya; importance, history, size, process of plastic tunnels for off-season vegetables, visit to tunnel sites, technique of growing vegetables in tunnels and its proper care by vegetable scientist Chandra Kanta Timilsina; importance and objective of growing off-season vegetables, its nutrition and financial value, need of high quality seeds, technical knowledge and proper planning for off-season vegetable farming by Dr. Kalika Prasad Upadhyaya; Types of diseases, their reasons, characteristics and control, prevailing fungal, bacterial and viral diseases and control, integrated agricultural management especially of high altitude soil, preparation, management and storage of fertilizers by crop, pest and disease expert Sunita Adhikari; Prevailing crop pests and trapping, harvesting alternate crops and bio-fertilizer, good and bad pests for local crops, practical class on type identification and types of insect trap by expert on insecticide, Dr. Kasi Nath Chiluwal; Integrated chicken and goat farming, diseases of high altitude animals and identification of sick livestock, livestock management problems, management of sheds, insemination, healthy diet and vaccination by livestock expert Dr. Bibek G.C. After the training, the women farmers spent a day for fun in Pokhara city and on the way home made a stop at Bandipur Goat Farm where senior expert Buddhi Ram Acharya gave a tour of the farm and provided information on types of goat, suitable environment, proper grass and fodder cultivation for grazing and a close look at the *sanan* and *boyar* breeds of goats at the farm.

At the end of the training, the group discussed a plan of action for the next several months: HHC agro-tech and field coordinators would make regular visits to the participant's farms to help the participants with their growing experience; the participants would try and meet a few times if possible during the pandemic, to learn from each other's experiences; HHC's agricultural expert Saviat Shrestha stationed at HHC Sertung farm would conduct on-site trainings and make house visits in the village before Dec 2021.

2. Training participation records of 30 participants to complete onsite training at their own village of Sertung in Dhading District by HHC agricultural expert; number of trainings coordinated and delivered -

As per the availability of the farmers time, the 30 selected farmers were divided into cohort of 15 and were educated on the topics including: vegetable farming techniques, vegetables suitable for local soil and altitude, irrigation in hilly terrain, fruit tree planting, compost using native vegetation, use of solar dryers, pesticide control and other topics. This has brought about changes in the mentality of the farmers into the modern farming techniques as opposed to traditional farming.

Five specific practical trainings were also conducted by Saviat Shrestha on various dates-

10th August – Greenhouse plastic construction, farming during monsoon rains and nursery management

26th August – Making botanical pesticide and nutrient ferritin

11th September – Climate change and effect on agriculture/farming and its management

26th September - Cash from crops and animal farming for family income

1st October – Procedures of fruit and vegetable preservation

17th December – Importance, Use and making of compost

HHC agro technician and HHC supervisors made visit to every participant's garden two times a month and observed the situation of the crops and helped with problems faced by the farmers especially in management & control of pests thus helping them with better yield. The house visits also helped the women farmers with pre & post harvesting, growth time of different groups of vegetable like - cruciferaceae, marrow, root, leafy green, alliums etc.; Treatment using bio-pesticides; Vegetable planting rows; making and using bio-fertilizer using local plants such as Himalayan nettle, *Banmara*, chili pepper, garlic, ginger and cow (animal) urine; Care of fruit trees; Use and operation of the HHC installed solar dryers; Use of the plastic vacuum sealer machine for sealing and packaging dried vegetables

All the 30 participants actively engaged in the vegetable and fruit growing projects over the remainder of the year (seven months from May till November) after the first RARS training in Lumle some 200KM from their village. Between November and December they continued to work on solar drying vegetables and vacuum packing them using the new sealing machine provided by HHC. As shown in the detailed emailed report, the participants and many of their family members showed tremendous enthusiasm, pride and work very hard to succeed in this growing project.

Please note that in this community the entire family participates in farming and in this project a total of 150 people including the project participants and their family member have been directly impacted by this project and hundreds more indirectly.

The group unfortunately could not meet as planned because of the Covid-19 pandemic lockdown and safety precautions.

Sale of Vegetables: Many of the group members were enterprising. 18 out of the 30 participants sold 1.1 tons of vegetables during the year. A few of them sold fairly large amounts to sustain their family's livelihood while others sold the little surplus they had for some cash which is hard to come by. It has to be mentioned here that a few were already selling before the training. With more technical support from the HHC agro-tech and further encouragement from HHC officials the group will be able to expand and improve both yield and sale of vegetables in time.

The yield and sale of vegetables will continue even after the project period as the 30 participants have several crops still to be harvested and HHC will also be providing more seeds and support throughout 2022.

Types of vegetables: The vegetables that were introduced through this project were varieties of tomato, onion, cauliflower, cabbage, cucumber, green chili, egg pant, raddish, balsam apple, chayote, coriander, pumpkin, okra (ladyfinger), turnip, Spanish green mustard leaf, squash, spinach, garlic, peas, ginger, soya beans, etc., that would do well in the climate of the region served. Quality seeds and seedling were provided by HHC to each of the participants.

Quantity of vegetables produced during this project: The amount of vegetables produced during this project period shows better results than expected. Out target was 30-40kg of vegetables per participants whereas the average production was 107.7 kg with the highest being 310 kg. These are quantities of only the vegetables introduced through this project. The project also helped with a significant increase in production of vegetables that were already grown before the training, through newly learned techniques. If the quantities of these vegetables are also included in the total quantity of each participant, the average vegetable yield per participant would be close to 200kg which is about five times what we had hoped for. A total of over 3.2 tons of new vegetables was produced during this project.

Fruit trees: The participants have been able to save most of the fruit plants that were provided to them after the RARS training.

Impact of the project on other farmers: Besides the 30 participants who received training during the project period, the detailed report also shows a record of at least 46 other farmers bought seeds from the HHC farming center, asked the help and support of the HHC agricultural technician for various issues and problems related to their farms. We have not collected data on their crop yield. There is more number of villagers asking to be part of similar projects in the future.

3. Survey data on food security factors about household foods consumed (nutritional value, ease of access, quantity) and related quality of life improvement of the 30 participants – The 30 participants have grown at least 3.23 tons of vegetables of which they have consumed at least 1.8 tons of a variety of vegetables which has significantly improved the quantity and variety of food available to each of their families where once they were limited to a few smaller amounts of vegetables. As several participants have stated, they now have more vegetables available even off-seasonal ones that will last them for a longer period of time. They have also said that some of the off-seasonal vegetables like coriander, cabbage, garlic and onion will be available to them almost throughout the year because now they are able to grow them round the year. Several of the participants have also pickled or made nuggets out of their surplus vegetables for future use. Many of the participants have already used the new solar dryers to dry and store food for the harsher months while others have sundried. There are now three solar dryers being used full time and 30 farmers who were not participants in the project but live close to where these dryers have been installed dried 324 kg of vegetables during the year.

Most of the varieties of vegetables produced during this project (as listed above) have good nutritional value which will add to the good health of the families involved in the project. This is a region where malnutrition is a problem because of lack of a balance diet and HHC has launched a child nutrition project (6 to 59 months children) in the region to protect the very young and vulnerable population in the community. This is a strong step in improving the diet and nutrition of this community.

Also these new varieties of vegetables have enriched the palate of the participants and their families which will be a big incentive to continue growing more such vegetables and also new ones in the future. This is cultural movement that we hope to propagate in this community and 2019 was a strong year with the support of the International Foundation. Many of the neighbors of the 30 participants and also the 2019 participants have taken help from HHC agro-tech to improve their vegetable production and have keenly and even jealously followed the progress of the participants and want to partake in a similar project in the near future.

4. Amount of supplies distributed to 30 women farmers:

As the RARS center training ended all the 30 participants were provided with the following supplies to help them with their new farming project:

1. Plastic sheet (6m by 10m, 120mm thick) for plastic tunnel for growing vegetables

2. One coil of pipe 30m long for watering and irrigation
3. Hand pump
4. Spray can
5. 5 large packets of variety of vegetable seeds
6. One set of weeding hand tools
7. 2 orange plants
8. 2 lemon plants
9. 1 avocado plant
10. 1 pecan plant
11. 1 walnut

Our field reporting points out that the participants are using everything that has been provided to them through the project. The participants have successfully saved their precious fruit plants. 13 participants have completed the vegetable tunnels from the plastic provided, while seven are in the process of construction, while the remaining 10 will complete their tunnels in February 2022 with the support of the HHC team.

5. Bimonthly project coordination and supervision provided over one year – The HHC senior agricultural technician Soviat Shrestha made regular visits to all the farms of the participants. The details of each visit are very long and hard to accommodate here therefore have been made into a separate summarized Excel report attached to the covering email.
The participants have benefited from the regular farm visit and training provided by HHC agro-tech. They were able to root out problems and learn hands-on about irrigation, plant spacing, fertilizer, pest control, seed selection, etc. Importantly most of them have learned to make bio-pesticide from local herbs, plants and animal urine and are using it quite successfully which is crucial for growing organic vegetables.

What factors contributed to the project's proven impacts?

1. All participants are farmers and therefore are able to look after and care for plants. So they have both the interest and the capacity to successfully carry out this project and with a little help they are able to improve and expand their farms.
2. All participants are desperately needy and are committed to work hard to succeed.
3. The community is remotely located and isolated from bigger centers so are very close-knit and rely on each other for better outcomes for survival. Therefore most of the time they work together well.

4. The selection of the participants was done in a thorough manner to ensure a good selection. A door to door visit of many farms in the village was carried out by HHC team for a month to ensure that individuals who were serious, keen, interested and were already carrying out vegetable and animal farming to some extent were selected.
5. This is the second iteration of the project sponsored by The International Foundation. The 2019 project proved to be successful and provided us a blueprint of this project and future ones to follow.
6. HHC has had many successful community projects like building toilets and stoves, community education, women's empowerment in the past which were hugely successful and the women take great pride in participating in our projects to improve their lives. The villagers know that HHC is reliable and the programs are solid and that we follow through to make the projects successful.
7. All the local HHC staff are well-trained, hand-picked individuals who are well-trusted by the villagers and therefore are willing to follow their lead
8. HHC has had other agricultural projects like cardamom and vegetable seed distribution in the past which have been successful in the village
9. The training in the RARS center near Pokhara city was a huge incentive, to not just learn new ideas and techniques but it was a chance to visit outside the village, which was a first for many of the participants
10. Providing tunnel materials, seeds, fruit trees, tools, etc. for free was a great incentive but more work needs to be done to help the farmers build more tunnels in the next few years.

Can this project be replicated and provide a scalable model?

Yes, it can be replicated with ease and successfully as every farmer in the village is keen to participate in such a project especially having heard about exciting stories from the participants and the many incentives that came with the project. Almost everyone in the village and the region are farmers, and vegetable and animal farming is closely linked to their life. This project is just an extension of what they do.

The project can be scaled to cover the five villages of over 20,000 people in the Ankhu Khola Valley region (namely Ruby Valley, Khaniyabaas and Ganga Jamuna Rural Municipalities) in Dhading District of central Nepal. These are remote, roadless, extremely poor farming villages that will eventually be connected by a small dirt road in a couple of years which will allow vegetable and other cash crop produced to be sold beyond the villages where they grow.

Also nationally, more than 70% of Nepalese are farmers many of whom are already

carrying out vegetable and cash crop growing. The nation's per capita is hugely reliant on farming and therefore this and similar projects can be hugely successful in Nepal especially with Nepal's rich biodiversity, its unique geographic position as well as its altitudinal and climatic variations and over 21% of its land cultivated. Nepal is also soon to be linked by a railway system to cities in China which can allow fresh and organic vegetables and fruits to reach larger markets. This small project in its infancy in this small region of Nepal is about poverty alleviation but it has a huge national implication.

Will the impacts of this project be sustained by community participants beyond your organization's involvement? If so, how?

This village and the region, because of its remoteness and isolation and rampant poverty, will need a few more years of sustained pressure through similar projects to expand on the critical number of vegetable and cash crop growers who understand the significance of organically grown products and be able to fathom its market value and try and avail local and other markets. Also, the local road linking this and all the neighboring villages is almost completed even though it is only a dirt road and will be seasonal which will be useable for at least nine months a year other than the monsoon. This will soon provide access to the market in towns and cities in the region and beyond.

Has this grant helped to attract new funding from the community or increased collaboration with other organizations? How has your organization changed as a result of this project?

This community we work with is very isolated and remote and there are very few NGOs and INGOs and government projects in the region but since 2019 after the first of the International Foundation projects, a partner organization called Karuna-Shechen Nepal is now supporting farmers in the neighboring village of Tipling after consultation with HHC. Also Friends of Nepal (<https://www.friendsofnepal.com/>) is supporting a student/youth farming project in 2021-22 in Sertung village through HHC as well.