



EcoHimal Nepal

Climate Change Adaptation in Solukhumbu Integrated Sustainable Tree Cropping and AFRC Programme First phase Final Report July 2019 to July, 2022 Supported by The Glacier Trust (TGT), UK

A. Objectives Achieved:

Overall Goal

Sustainable rural livelihoods through the promotion of tree cropping and organized marketing of the produce

The local rural indigenous community of Deusa and Waku villages of Solukhumbu have been empowered in the management and conservation of the natural resources through innovations in agro-forestry technologies and behavioural change towards climate change adaptation. They have been practising sustainable agriculture conserving land, water, plant and animal genetic resources in environmentally non-degrading, technically appropriate, economically viable and socially acceptable approach.

Through locally-determined agricultural experimentation in crop diversification, small-scale rural farmers are promoting layer cropping in marginal, ecologically-fragile areas through low-cost resource conservation techniques to preserve biodiversity, regenerate soil fertility, manage water and increase their production while reducing dependence on externally imported inputs. Demonstration of high value low labour-intensive tree crops with simple techniques, and farmer-to-farmer sharing of their successes is now effective to improve their livelihoods. The adaptation of multi-layer farming has maximized the land use, and multiplied production in different seasons.

The satisfaction level of the local farmers has been increased from the productivity of their farmland and improved income through coffee, fruits, and vegetables. Tree lines are shifting up where extensive plantation and conservation of orange, coffee, banana, citrus, apple, avocados, peach, pear and nuts are happening adopting the changing climate. Increase in fodder and forages in the villages have supported farmers in need of animal feed. It has also reduced the forest load at the local level. In addition, coffee orchard established by local farmers supporting their livelihood with production (minimum 4.15 tons coffee) and organized marketing at reasonable prices. Adaptation of improved technologies is succeeding by more than 1,500 farmers engaging in innovative farming. Adopting sustainable climate resilient farming, self/employment generated, increased income of the local farmers and contributing to better livelihoods.

Tree cropping has not only increased productivity but also improve the nutritional requirement of farmers. The local government adopted the model to provide multiple benefits and to reduce pressure on the community forest. It has partnered with DAFRC for agro-forestry initiatives in the whole rural municipality increasing budget every year with adaptation of models from its annual programme and has been subsidizing the budget to empower the DAFRC as leading organization. DAFRC has been promoted as efficient and sustainable vegetable, fruits and spices collection centre. In addition, a cooperative established for organized marketing of local products. All the members have been empowered with knowledge and techniques about marketing. Involvement of more than 350 local farmers has institutionalized the cooperative in the direction towards marketing of the produce. It is resourced to operationalize cooperative market chain of fruits and vegetables to increase farmers' income and other livelihood opportunities, which in turn will contribute to poverty reduction.

Plantation, crop diversification, and raw product marketing is achieved and it is helpful to develop resilience of the farmers and better livelihoods. However; selling raw product from the village is



not in favour of local farmers in terms of income and principle of fairtrade. To improve such situation product processing locally and keep more share of income at local level is yet to be achieve.

Specific Objectives:

To raise families out of poverty through the promoting sustainable production and marketing of the produce

The programme has upgraded and upscaled the success of AFRC and STC programme with continuation of the community-led agroforestry of EcoHimal. In a few model hamlets, production of multi crops started, low-labour intensive, high-yield crop cultivation has been adopted. More than 35,600 high value tree crops (fruits, citrus, nuts) planted, local farmers have favoured tree crops over cereal crops and self-employment opportunities created. The small land holders have continued multi-layer organic agriculture. Local employment opportunities generated at the village local; 213 local youths and women have been trained, and resources engaged in sustainable production and marketing of the produce.

In 3 years, project period, 387 local households sold about 4.14 tons coffee and generated more than 2.3 million Nepalese rupees. In addition, the project contributed to increase the income of local farmers from tree crops such as banana, orange, etc. other than coffee. The minimum income NPR 6,000.00 up to 1.1 million is generated by the individual farmers during this period. Production of vegetables, spices and other potential crops increased but lacks marketing. The project is planning to train local farmers to transform raw products in final consumer products adding value to keep more money at village level in upcoming phase of the project.

The returnee migrants are working well and being a model for other farmers. Women are becoming independent due to income of their produce and access of resources.

To capacitate farmers on tree cropping technology and its extension and promotion:

More than 1500 local farmers skilled on tree cropping techniques with knowledge on multi-layer inter cropping and on-farm tree diversification. They have demonstrated their acquired skills planting high value tree crops in their farm land. Their technical knowledge on climate smart agriculture techniques, especially bio-intensive, layer and multi-cropping, have been applied on their farmlands for their benefits.

The small holdings have started to rent the lands for tree crop extension. Priorities of the farmers changed towards multi-layer cropping and changing the approach of subsistence farming. Increased adaptation of multi-layer farming shifted their dependency from subsistence to self-resilient diversified farming. A member from each family in the project area has been skilled in tree crops to apply in the farm and improve their livelihood. Neighbouring villages are replicating the technology, where EcoHimal has replicated it in the country and beyond.

B. Outcomes/Results Achieved:

1. Approximately 200 farmers trained in tree crop production and supplied with appropriate tree crop planting materials.

1,562 local farmers (940 male and 622 female) trained on plantation techniques along with climate change adaptation, organic farming, multi-layer intercropping, pest infestations and control, intercropping and nursery management as presented below.

- ✓ 22 trainings on bio-intensive plantation techniques, trained 420 farmers
- ✓ 13 trainings on cultivation, trained 278 farmers
- ✓ 13 trainings on vegetable seedlings production, trained 189 farmers
- ✓ 2 (A 6 days long and one day long) mushroom cultivation training, trained 50 farmers
- ✓ 2 coffee cultivation training, trained 49 farmers
- ✓ 5 trainings on fruits cutting and grafting trainings, trained 62 farmers
- ✓ 16 tree crops farming, climate change adaptation, trained 230 farmers



- ✓ 2 trainings on environmental conservation and organic farming, trained 61 farmers
- ✓ 9 trainings on agro-forestry and livestock initiatives, trained 223 farmers

Almost all households in Deusa and half of the Waku village have been skilled in tree cropping, level of their understanding on climate change adaptation measures. Farmers are local expert in multi-layer farming since it is not new for them, but needs to make it systematic and introduce high value crop.

2. About additional 40,000 tree crop seedlings planted.

129,218 seedlings (high value tree crops, fodders and forages) planted in the duration of 3 years. The programme prioritized local production of seedlings to make healthy seedlings available DAFRC is self-sustained to produce the seedlings as per the local need. More than 126,085 seedlings produced and planted in local area through DAFRC.

Table 1: Summary of seedlings planted in project area

S.N.	Description of Seedlings distribution	Quantity
1	High value tree crops procured and planted in local areas	3,313
2	Seedlings distributed directly from DAFRC to local farmers	126,085
Total seedlings planted		129,218

Deusa village has been transformed to a green village. The local farmers have access to fodders and forages for their animals. The forest line has been increased, marginal lands have been farmed with tree crops. It has contributed to provide sources of income generation and livelihood to the local farmers.

3. At least 6 satellite nurseries are established and well managed

7 satellite nurseries in Thulung Dudhkoshi Rural Municipality established and are operational. Out of them, 6 are generating income from the sale of seedlings and agro-products. They are on the way to be self-sustained. In the duration of 3 years, they generated income of NPR 714,730. Only one nursery has just started to produce seedlings.

The summary of income generated by 6 nurseries in all 3 years are provided in table 2. The details of sales are provided in the activities section.

Table 2: Income generated by satellite nurseries

S.N.	Satellite nurseries	Amount in NPR
1	Lokhim Satellite Nursery (LSN), Ward no. 9	240,800
2	Jubu Satellite Nursery (JSN), ward no 5	13,850
3	Kangel Satellite Nursery (KSN), Ward no. 2	147,600
4	Mugli Satellite Nursery (MSN), Ward no. 6	41,300
5	Panchan Satellite Nursery (PSN), Ward no. 3	253,380
6	Deusa Satellite Nursery (DSN), Ward no. 7	17,800
Total income generated		714,730

All the nurseries are owned by the local communities. They are on the way towards self-sustaining for sustainable operation. The income generated by the satellite nurseries are used for further production purposes.

4. DAFRC is self-sustained for further agro-forestry initiatives

Institutional sustainability:

DAFRC has been institutionally sustainable- with physical infrastructures and well-motivated management committees, technical human resources and devoted members. The administrative and managerial capabilities are developed well to run an institution. The management committee is carrying out periodic meetings to discuss the development agendas. The annual audit and



renewal of the organization has been done on time. In addition, the institution is acknowledge as partner organization by local government, line agencies and NGOs. DAFRC is capable of lobbying and appealing the resources for its development, extension and replication.

Financial Sustainability:

In line with the 3 years business plan, the activities implemented and succeeded to achieve its targets. The financial targets in all 3 years are very positive. The income side of each fiscal year is strong than the expenditure. The income generated by DAFRC from various sources (seedlings, seeds, agro-products, coffee, training, hospitality etc. and incurred expenses to generate income has been examined as per the available records. The summary of income and expenditures of 3 years provided in the table 3.

Table 3: Profit and loss of DAFRC in Programme period

S.N	Particulars	2021/22	2020/21	2021/22	Total in NPR
A Income from					
1	sale of seedlings/saplings	306,769.79	1,010,885.00	1,344,585.00	2,662,239.79
2	sale of varieties of seed (vegetables)	12,250.00	20,305.00	59,760.00	92,315.00
3	agro products collection and sale (coffee parchments and vegetable products)	1,085,807.51	662,440.00	1,200,635.00	2,948,882.51
4	training and demonstration	32,270.00	12,500.00	50,200.00	94,970.00
5	guest hospitality	182,490.00	266,565.00	332,375.00	781,430.00
6	agri tools sale	530,000.00	12,915.00	17,650.00	560,565.00
7	Vet medicines	485,003.99	0.00	9,300.00	494,303.99
8	Financial support from local government	0.00	650,000.00	250,000.00	900,000.00
9	financial support from Prime Minister Agriculture Modernization Program	0.00	1,000,000.00	450,000.00	1,450,000.00
10	Others	0.00	100.00	0.00	100.00
Total Income		2,634,591.29	3,635,710.00	3,714,505.00	9,984,806.29
B Actual expenditures for					
1	production of seedlings/saplings	495,046.00	495,046.00	562,035.00	495,046.00
2	agro products collection (coffee parchments and vegetable products)	738,510.00	770,510.00	1,085,000.00	770,510.00
3	training and demonstration management	38,430.00	38,430.00	0.00	38,430.00
4	guest hospitality	145,705.00	145,705.00	278,650.00	145,705.00
5	Office running cost	30,400.00	30,400.00	89,236.00	30,400.00
6	Capital investment (infrastructures and others)	620,892.00	620,892.00	235,800.00	620,892.00



7	human resources management	416,000.00	416,000.00	960,400.00	416,000.00
8	Others	1,632.00	1,632.00		1,632.00
Total expenses		2,486,615.00	2,518,615.00	3,211,121.00	2,518,615.00
Balance of Amount		147,976.29	1,117,095.00	503,384.00	1,117,095.00

The income is not a sole income since there is support of the project in various aspects. Due to natural disaster (hail storm) and COVID-19 infection the planned activities are not fulfilled as planned but as local organization contributed to the local community, since the external intervention were limited in those periods. In general, the progress made during this period is satisfactory.

C. Activities carried out and brief accomplishment:

• Coordination with local government and concerned stakeholders

- ✓ Regular coordination with local government has been carried out, three periodic monitoring from the representatives of local government were conducted. The local government and the ward offices have prioritized the seedlings production, agro-production and marketing. They were satisfied with the outputs of the DAFRC and encouraged to circulate the community services as DAFRC from the established satellite nurseries.
- ✓ All together 8 meetings carried out with Mr. Ashim Rai, the chairperson of Thulung Dudhkoshi Rural Municipality. The meetings were focused on cooperative establishment, coffee promotion, possible cooperation and product marketing. The concept “Hub and Spike” for coffee promotion and marketing widely discussed.
- ✓ The local government provided subsidies and resources for training (cold store establishment, plantation, bee keeping, mustard farming and cooperative financial management, etc.). In addition, mustard seed was provided for the promotion of a mustard pocket area.
- ✓ An animal health camp focusing on dehorning, deworming, veterinary and animal health treatment, was implemented, where 33 animals were treated, in support of the local government in 2021.
- ✓ A cooperative management and book keeping training conducted with the financial support of the local government and in coordination with the District Cooperative Association. The local government provided funding support of NPR 0.1 million to the DAFRC to cover the costs of that training in 2020.
- ✓ 26 local farmers were provided 312 walnut seedlings in cooperation with the local government.
- ✓ A 5 day bee keeping training conducted in 2020 with the financial support of the local government. 26 local farmers were trained and 200 local farmers of Ward no 8 were supported with 400 improved bee hives.
- ✓ Local government has subsidized 2 million Nepalese rupees to establish cold store in ownership of DAFRC. The construction of cold store under procedures
- ✓ 0.1 Million Nepalese rupees subsidized to DAFRC by Ward office, ward no 8 of local government and used for forest tree seedlings production.
- ✓ An Environment Committee formed within the local government comprising 10 members and is functional to promote climate change adaptation in the project area. The programme was implemented in cooperation with the committee throughout the programme period.
- ✓ A lead farmer, Mr. Amar Deep Rai, trained with a 15 day bee keeping training in cooperation with National Bee Keeping Training Centre in Godawari to prepare him as local resource person. Since returning to the Municipality, he is performing as the local resource persons on bee keeping to the local farmers (till the date 89 farmers trained) in 2021.



- ✓ Coordination with Vocational and Skill Development Training Centre, Okhaldunga and conducted a one-month beekeeping and pig rearing training.
- ✓ Coordination with Provincial Government, Ministry of Industry, Directorate of Industry, Commerce and Consumer Protection, Office of Cottage and Small-scale Industries, Solukhumbu and local government and conducted a 5-day training on Shitake mushroom cultivation techniques.
- ✓ Coordination with Agriculture and Veterinary section of local government carried out throughout the year for the technical support on nursery establishment, seed/seedlings production and medicine application for domestic animals.
- ✓ Coordination of trainings and programs with the local agriculture and veterinary department, zones, and skill development centre, as well as other organizations.
- ✓ Coordination with the agriculture and veterinary section of the office of Ward no 8 for the implementation of the Mustard Pocket Area Program with a 50% subsidies i.e. NPR 4,00,000/
- ✓ Coordination with Prime Minister's Agriculture Modernization Project for the training in Kiwi farming and pest management.
- ✓ Coordination with Spices for Health Project of EcoHimal for training on coffee cultivation, cardamom farming, and environmental and biodiversity conservation.
- ✓ Improved Potato Seed (IPS) in cooperation with Horticulture Center Phaplu, Solukhumbu produced at local level. 4 local farmer (Mr. Dhan Bahadur Tamang, Mr. Man Bahadur Tamang and Mr. Janga Tamang, together with the DAFRC staff member Mr. Keshav Kumar Rai) demonstrated the IPS production, produced 220 kg improved seeds. All 4 farmers trained and mobilized as IPS resource persons, and Mr. Rai already conducted 5 trainings on IPS production at DAFRC.
- ✓ 3,000 kiwi scions obtained from the Horticulture Centre, Phaplu for grafting purposes.
- ✓ Annual plan of the programme submitted in Rural Municipal council every year and included in the local government's annual budget and programme

Coordination with INHURED International

Joint programmes on agro-forestry initiatives have been implemented in cooperation with INHURED International. Resources, technologies and human resources with the organization shared. In the reporting period, 17 programmes on different thematic areas (trainings, school education, children leadership, ecological arts and seedlings plantation) organized jointly.

Prime Minister's Agriculture Modernization Programme (PMAMP)

With the support of Prime Minister's Agriculture Modernization Programme (PMAMP), DAFRC carried out agriculture promotion programmes, focusing on bee keeping and mustard farming at local level; this programme, valued at NPR 2.6 million, was jointly funded, 50% from the PMAMP, and 50% from the DAFRC with the active participation of local community. Ward 8 has been promoted as a mustard production pocket area.

DAFRC Success replication

DAFRC success, learning and experience shared to other districts. Mandan Deupur Agro-Forest Resource Centre management committee along with local government representatives visited there in 2019, explored the success and replicating in Kavre. Likewise, the Chairpersons of 2 rural municipalities – Mr. Bishwanath Niraula from Aiselukharka and Mr. Lilanath Niraula Rawa Besi of Khotang District visited the DAFRC in 2021 to have a brief overview of the AFRC model – its structural development, an agro forest demonstration, climate change adaption initiatives etc. – and to encourage replication in their municipalities in cooperation with EcoHimal. In addition, representatives of local government and development partners have observed the DAFRC progress and requested replication in their respective rural/municipalities.



- **Physical upgrading of the AFRC**

- ✓ DAFRC building (main building) renovated and upgraded. The existing balcony (Bartali) refurbished with new wood planks, 3 wood pillars of the front side replaced with cement pillars. The CGI sheet above the balcony replaced with new sheets and updated staircase of main building. The height of the dining hall increased. Height of wood beam raised, roof sheets replaced and solved the water leakage.
- ✓ Kitchen utensils are at place for hospitality. Dining hall upgraded, the glass wall and door and windows constructed. Electricity circulation maintained with new wiring. At present, serving discs for food servicing for buffet service is available, there is self-cooking facility for interested guests. New beds placed, tables placed, a 1 KVA generator installed for alternative lighting; placed hand washing basin outside of the toilet, a new water tap constructed in front of dining room;
- ✓ The Kitchen building of DAFRC upgraded adding more 4 rooms with the financial support of local government.
- ✓ The High-Tec nursery installed and is in used for different varieties of vegetable and fruits seedling production.
- ✓ 3 Plastic tunnels in the premises of DAFRC installed and are in use. Also, all 3 plastic ponds are in use for rain water harvest and collection.
- ✓ A spices collection center has been constructed. The collection center was constructed in support of EcoHimal's Spices for Health project. Total 0.2 million rupees received from the project to construct a building for collection center. In addition, the project supported NPR 135,000.00 to promote DAFRC as training center.
- ✓ A high-tech greenhouse constructed in support of PAMP. In total, DAFRC is equipped with 3 high-tech green houses.

- **Procurement of seedling materials and production of a wide variety of the most suitable species for the two target VDC.**

- a. **Procurement and production of seedlings;**

Procurement from external nurseries:

Total seedlings procured and distributed:

- ❖ For winter plantation: **(total: 2,417)**
 - 277 seedlings were distributed to 49 local farmers and institutions in 2019/20.
 - 240 seedlings of 8 tree crops varieties, distributed to 21 local farmers in 2020/21.
 - 1,900 seedlings of 9 varieties of tree crops procured and planted by 36 local farmers in 2021/22.
- ❖ For summer plantation: **(total: 716)**
 - 266 seedlings distributed to 20 local farmers and planted in DAFRC in 2019/20.
 - 450 tree crops seedlings to 34 local farmers including 100 saplings of apple (Royale Golden) supplied from Turkey to Deusa.

Table 4: Procured and planted tree crops seedlings

S.N.	Particulars	Number of seedlings procured and distributed		
		2019/20	2020/21	2021/22
1	Golden Apple (Grafted)	50	100	350
2	Pear (Grafted)	40		100
3	Macadamia Nut	43	100	50
4	Dragon fruit			100
5	Peach (Grafted)		40	50
6	Gooseberry			50
7	Kiwi	200		400



8	Lemon	150		400
9	Avocado	60		500
10	Local orange			250
12	Apple (Royale Golden)			100
Total		543	240	2,350

Production:

Different varieties of seedlings were produced and distributed from DAFRC nursery to the local farmers.

During the programme period, 126,085 seedlings produced in DAFRC and distributed to the local farmers as provided in Table 5.

Table 5_ Summery of Tree crops seedlings production in DAFRC

		Seedlings Production & Distribution from 2019/20 to 2021/22			
S.N.	Particulars	Year 2019/20	Year 2020/21	Year 2021/22	Total
1	Seedlings Production	55,801	29, 149	41,135	126,085

b. Vegetables, spices and crops production in DAFRC

DA-AFRC has continued the production of vegetables and cash crops. 100% produced vegetables and cash crops consumed at DAFRC.

In 2019/20, 190 kg vegetables produced, in 2020/21, 260 kg vegetables produced and in 2021/22, 1,648 kg produced. 100% vegetables self-consumed, this year, pumpkin and ginger are in sale. From this year, DAFRC has started to display the agri-products in the center for sale.

c. Plants in DAFRC Demonstration plots:

High value plants are under growing in DAFRC. At present, 4,280 seedlings are growing in demonstration plots as presented in Table 6.

Table 6: Status of Seedlings in DAFRC

Particulars	Number of seedlings
Avocado	591
Orange	407
Dragon Fruit	133
Monkey Jack	884
Peach	45
Apple	150
Macadamia	12
Pears	16
Oranges	71
Gooseberry	5
Dragon Fruit (White)	129
Szechuan pepper	858
Lemon	312
Apple	51
Pears	13
Peach	55
Macadamia	56
Orange	120
Szechuan pepper	19
Gold Lemon	93
Lemon	230



Sweet orange	75
Total	4,325

d. Plantation in Marginal Land

Total 30,751 seedlings (fodders & forest) planted in Deusa village in coordination with DAFRC and local government in programme period as mentioned below;

- ✓ In 2019/20, 9,971 seedlings planted in marginal land
- ✓ In 2020/21, 15,410 seedlings planted in marginal land (DAFRC- 5,410 and local government- 10,000 seedlings)
- ✓ In 2021/22, 5,370 seedlings planted in marginal land (DAFRC- 2,010 and local government- 3,360 seedlings)

- **Training of at least 120 farmers in all aspects of tree crop production, through nursery management, land selection and preparation, nutrients requirements and crop management and special aspects of each species selected by the farmers**

Total, 1,562 local farmers (940 male and 622 female) trained in different aspects of tree crops production (nursery management, bio-intensive plantation, bio & liquid pest preparation and use, plantation and cultivation etc.) through 84 trainings in 3 years period of the programme as provided in Table 7.

Table 7: Trained farmers in tree cropping

S.N.	Fiscal Years	Trained farmers		
		Male	Female	Total
1	2019/20	127	97	224
2	2020/21	413	209	622
3	2021/22	400	316	716
Total		940	622	1562

- **Hazelnut Demo Block Support**

Periodic manuring along with weeding and regular irrigation in Hazelnuts orchard have been done. The height of plants is regularly measured, and average height of plants found 7 feet 11 inch. In addition, most of the plants started flowering and fruiting. During last year's many plants became infected by diseases and decayed. Almost 50 % are surviving.

- **Support to established satellite nurseries for tree crops seedlings production**

Technical and resources support to the 7 satellite nurseries along with lead farmers lead 8 nurseries continued throughout the programme period. The programme focused on local communities' ownership of the satellite nurseries and to create the structures, resources and capacity of the satellite nurseries for their sustainable operation. For this purpose, income generation and re-investment is encouraged in the satellite nurseries. The income generation from the satellite nurseries is satisfactory towards the end of the programme. The income generation within the programme period is provided in Table 8.

Table 8: Status of satellite nurseries

#	Activities conducted	Income generated by the SLNs
1	<u>Ward no 9: Lokhim</u>	It generated income of total NPR: 240,800 from the sales of seedlings and agri-products: <ul style="list-style-type: none"> • Year 2019/20: NPR 53,000 • Year 2020/21: NPR 92,500 • Year 2021/22: NPR 95,300



2	Ward no 5: Jubu	It generated income of total NPR 13,850 from the sales of seedlings. It has started to generate income from year 2021/22.
3	Ward no 2: Kangel	It generated income of total NPR: 147,600 from the sales of seedlings and agri-products: <ul style="list-style-type: none"> • Year 2019/20: NPR 14,000 • Year 2020/21: NPR 13,700 • Year 2021/22: NPR 119,900
4	Ward no 6: Mugli	It generated income of total NPR: 41,300 from the sales of seedlings: <ul style="list-style-type: none"> • Year 2019/20: NPR 12,500 • Year 2020/21: NPR 12,700 • Year 2021/22: NPR 16,100
5	Ward no 3: Panchan	It generated income of total NPR: 253,380 from the sales of seedlings and agri-products: <ul style="list-style-type: none"> • Year 2019/20: NPR 23,650 • Year 2020/21: NPR 69,230 • Year 2021/22: NPR 160,500
6	Ward no 7: Deusa	It generated income of total NPR 17,800 from the sales of seedlings. It has started to generate income from year 2021/22.
7	Nursery at Nele ward no. 4	<ul style="list-style-type: none"> • Nurseries are under establishment • Agri-materials and vegetable seedlings have been recently supported from the programme

In addition, 2,185 high value tree crops seedlings planted in the 6 satellite nurseries. In addition, 2,780 fodders and forages saplings planted in the nurseries. In total, 4,965 seedlings planted in support of the CCAP as presented in Table 9.

Table 9: Plantation in satellite nurseries

S.N.	Particulars	Mukli SN	Lokhi m SN	Jub u SN	Panch an SN	Kang el SN	Deus a 7 SN	Total
A	High value Tree Crops							
1	Macadamia	5	5	5	10	5	5	35
2	Avocado	50	50	50	50	50	50	300
3	Orange local grafted	50	50	100	100	50	50	400
4	Monkey Fruits	50	50	50	50	50	50	300
5	Timur	50	50	50	50	50	50	300
6	Lemon	100	100	100	100	100	100	600
7	Chiuri (butter tree)	50	40	40	40	40	40	250
	Sub-Total	355	345	395	400	345	345	2,185
B	Fodders and Forages							
8	Koiralo (Bauhinia)	30	30	30	30	30	30	180
9	Amriso (broom grass)	100	100	100	150	150	2000	2600
	Sub-Total	130	130	130	180	180	2030	2,780
	Total	485	475	525	580	525	2,375	4,965

In addition, recently, 37 kg vegetable seeds distributed to 7 satellite nurseries, seedlings production already started in the nurseries.



- **Development of Tree crops distribution profile, survival record and performance/production status**

Survival status of the planted seedlings is reviewed on annual basis. The seedlings planted in local farmers' farmland are growing well. The average of survival status of the planted tree crops is more than 60%¹. The production started but the production records are not documented. Most farmers have self-consumed the production.

- **Institutionalize cooperative to oversee the development of enhanced coffee, tree crop production and product marketing**

The established cooperative "**Sustainable Organic Coffee, Orange, and Fruits Cooperative Limited**" has been institutionalized in cooperation with local government. The 72 members and promoters have been capacitated for agro-products market linkage creation. They have more than one hundred sixty thousand rupees as seed money to functionalize the cooperative.

- **Establishment of contacts with major cooperatives and local and export buyers in Kathmandu**

The market contacts of local farmers under management of DAFRC for coffee and cash products sale in Kathmandu has been linked. DAFRC collects the products from local farmers and supplied to the suppliers in Kathmandu, where EcoHimal Nepal facilitates the supply chain. In the 3 years period, more than 4.14 tons of coffee was supplied to different coffee promoters in Kathmandu. In addition, local vendors have been supplying the produced coffee to local markets, Kathmandu and international markets.

- **Capacity building of local youths as lead trainers to provide training in improved tree cropping including management practices, establishment, diversification, and intensification**

In each hamlet of the programme areas, local youth farmers have been capacitated as tree crops promoters have been skilled in different aspects of tree cropping. The programme strategized to train lead farmers and prepared them as tree crops resource persons. They have been transferring their skills to their neighbours.

- **Continuation of Organic Certification of more farmers.**

The organic certification postponed and is planned in next phase. The budget is saved and will be carried out in upcoming phase of the programme.

- **Other activities:**

- ✓ In 2019, EcoHimal and TGT continued the educational cultural exchange program of German Swiss International School (GSIS) students in Deusa village. The visit was headed by Dr. Morgan Philips from TGT. The students successfully acquired local farming knowledge and climate change initiatives applied by local community. The students got opportunities to have on-field practice of bio-intensive pit preparation techniques and plantation of seedlings applying Nepali bio-intensive plantation. In addition, they explored coffee farming- production and processing at local level. In overall, the program became successful to provide enough knowledge and information about agro-forestry practices in rural community along with their learning sharing among the local farmers. Two visits were successful and further visits were disrupted by the COVID-19.
- ✓ A RM level agricultural promotion event was organized by the local government in 2019. In the event, the project management in coordination with DAFRC established a stall to

¹ Only survival status of the plants of 136 households archived and field assessment is ongoing.



demonstrate organic coffee and model kitchen garden. Seedlings, plants and products of coffee was demonstrated along with brief information. The visitors along with central parliament member (Mr. Hem Kumar Rai), province parliament member (Mr. Uttam Basnet and Mr. Buddhi Kumar Raj Bhandari) tested the organic coffee. It supported in promotion of locally produced organic coffee.

Project Monitoring

Throughout the programme period, the project management carried out periodic monitoring visits and provided guidance and instructions to the staff and management committee members, in addition oriented the staff through social media and oral communication on daily basis.

TGT Co-Director Dr. Morgan Philips carried out yearly field monitoring in 2019, later his monitoring visits were disturbed by COVID-19. In addition, TGT trustee, Mr. Richard Allen regularly coordinated with project management and carried out follow up of the project progress during the programme period.

The project management was accompanied by the external personalities. Ms. Judith Chase, the owner of Everything Organic Nursery, Kavreplanchowk visited the project areas and observed the tree cropping progress and provided constructive feedbacks. Likewise, the donor representative from The Glacier Trust, Ms. Ami Wilson along with project management team visited the project area for the monitoring of the project activities in February, 2022. She interacted with local beneficiaries and conducted physical observations. She also shared COFFEE BEER STOUT with the local coffee farmers.

Monthly reports, daily update in Facebook messenger group and weekly planning from the staff members were taken as the rapid monitoring tools to guide the staff and monitor the working progress.

DIFFICULTIES

- Due to COVID-19 and its implications (nationwide lockdown, travel restrictions, restrictions on people gathering), conduction of the trainings, orientations and field visits were restricted in 2019 and 2020 (1st and 2nd phase).
- Due to a severe hailstorm in Winter, the nursery plants - fruits, nuts, fodder and vegetable seedlings, other saplings, and forage plants – that were outside the greenhouse was completely destroyed. It is estimated that the damage caused amounted to about NPR 0.7 million which is a huge loss for the AFRC.
- Early monsoon and Dengue outbursts created challenges in programme implementation.
- Local level election also diverted the local communities and local government from their participation in the programme, especially at trainings.

A. NEXT STEPS – starting of Next Phase

1. Continued seedlings production - in collaboration with DAFRC - FIVE FINGERS APPROACH ON PLANTATION
2. Train local farmers, women groups, farmer groups in local products processing and final consumer products production
3. Support basic necessary machines/equipment for processing (pulping machine, sealing machine, roasting/drying devices, utensils, packaging machine and materials) in a package
4. Conduct monthly trainings in collaboration with VOCATIONAL SCHOOL IN LOKHIM
5. Train staff and management committees, coffee producers to prepare them as coffee entrepreneurs from the coffee marketing expert (value addition and supply chain)
6. Impact mapping of the programme (DAFRC, agro-forestry, climate change adaptation and livelihood)



7. Follow up of satellite nurseries and support them further growth.
8. Regular coordination with local and provincial government.