

Value Chain Issues in Fresh Fruit Crops

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Abstract

Fruit crops are considered high value crops in Nepal. Fruit crops' contribution to AGDP is 5.38% (MoALD, 2019). The diversity in agro-ecological environment has given a good opportunity of growing many fruit crops with the country's comparative advantage of import substitution and export promotion. However looking into the prospects and potentialities of fruit production, the marketed volume of almost all fruit crops is very low. Quality of the fruits produced is poor and postharvest loss is high. Postharvest facilities are very much limited and markets are not well organized. Value Chain of fruit crops is very weak and functional linkage among value chain actors is very poor. Completion of High Value Agriculture Project in Hill and Mountain Areas (HVAP) in value chain approach has demonstrated a successful implementation of value chain approach in seven targeted high value commodities including apple in fruit crops. The value chain of each fruits should be strengthened in every aspects of value chain functions. This paper has also tried to present a case of apple value chain as experienced in HVAP.

Keywords: comparative advantage, import substitution, export promotion, linkage

1. Introduction

Prospects/potential of commercial fruits production is high in Nepal due to its geographic location and physiography. The country can accommodate all types of fruits from cool temperate, warm temperate, sub-tropical and tropical fruits. Government policies and programs are supportive. Fruit crops are considered high value commodities in the country and their contribution is 5.38 % in AGDP (MoALD, 2019)

No doubt there were various fruit development projects implemented in the past (Horticulture Development Project, Hill Fruit Development Project etc.) with different modalities and approaches. They have significantly contributed a lot in fruit germplasm introduction, technology generation, strengthening government institutions, forming and strengthening of producers' groups/cooperatives, and out-scaling of technology and fruit production. Commercial oriented fruit production has been initiated and has taken up momentum. Due to the past efforts done by government, non-government and private sectors, a good progress has been made in terms of

area of coverage and production volume. However the marketed volume of almost all fruit crops is very low. Quality of the fruits produced is poor and postharvest loss is high (20-40%). Postharvest facilities are very much limited and markets are not well organized. Import of fruits is increasing in recent years, apple is leading one. The share of country's demand for various fresh fruits are at present largely met by the import from the neighboring and other foreign countries.

Recently value chain based High Value Agriculture in Hill and Mountain Areas (HVAP) supported by International Fund for Agriculture Development (IFAD) and implemented by Ministry of Agriculture Development (MoAD) has been successfully completed, which can be taken as a model example of value chain approach in the country. With the support of United Nations Development Project (UNDP) and Korea International Cooperation Agency (KOICA), Value Chain Development of Fruits and Vegetables Project has recently started for a period from 2018 to 2022 in five fruit crops banana, citrus, papaya, pineapple and watermelon together with 9 vegetable crops including potato in province 3 and Gandaki province (VCDFVP 2018).

2. Scenario of Fruit Statistics in Nepal

Area, productive area and production of fruits are increasing over the years (Table1). However, the rate of increase is very slow, the productivity is hovering around 9- 10 MT/ha, which is very low in comparison to other neighboring countries.

Table 1. Area, productive area and production of fruits

Year	Total Area (ha)	Productive Area (ha)	Production (MT)	Yield (MT/ha)
2000/01	73775	48166	487326	10.1
2001/02	77537	49780	473621	9.5
2002/03	80426	51016	518864	10.2
2003/04	86707	54111	511406	9.5
2004/05	89312	55348	552879	10.0
2005/06	91923	56549	535449	9.5
2006/07	94901	57595	575095	10.0
2007/08	100099	63432	630563	9.9
2008/09	103651	68785	686213	10.0
2009/10	107322	70722	706972	10.0
2010/11	117932	79184	794164	10.0
2011/12	139321	101233	1029754	10.2
2012/13	137758	101480	938731	9.3
2013/14	148208	110086	965044	8.8
2014/15	150387	110802	992703	9.0
2015/16	157199	110586	976461	8.8
2016/17	162660	110501	1018308	9.2
2017/18	166815	114122	1082398	9.5

3. Export and Import Situation

Import of fruits in value and quantity are presented in the Table 2 which shows, from the F.Y 2009/10 to 2017/18, increase in quantity by 5 times, while increase in value by 16 times. This increase is mainly due to the higher rate of increase in demand as compared to the increased rate of production, and high rate of post-harvest loss. The export in the same period has decreased to 1/10th in value and 1/8th in quantity.

Fiscal Year	Import		Export	
	Values (NRs. '000)	Quantity (MT)	Values (NRs. '000)	Quantity (MT)
2009/10	906660	60736	482803	8023
2010/11	3634913	149102	1033273	18632
2011/12	4034503	164467	468182	9523
2012/13	6374313	199845	33140	2264
2013/14	12180583	227002	4161033	24813
2014/15	6116511	161206	9771	610
2015/16	7853888	167440	185393	1588
2016/17	11298143	197451	29191	940
2017/18	14692111	321463	55408	1120

Source: NCFD 2018

4. A Case of Apple Value Chain in HVAP in Hill and Mountain Areas (2010-2018)

HVAP was a market-led initiative, provided income and employment opportunities to poor smallholder farmers, landless and agribusiness through development and upgrading of pro-poor value chains in Far-west and Mid-west development region. The project was executed by the MoAD with financial support from the IFAD partnering with the Netherlands Development Organization (SNV) and the Agro Enterprise Centre (AEC).

Objective:

To Promote Apple farming through enhancement of production, productivity and market management in value chain approach.

I. Value Chain Strategic Intervention:

Value chain strategy had been developed on basis of value chain functions for achieving the project goal as well as annual activities. The strategic intervention had been developed through the assessment of problems/strength and opportunities, which are as follows:

1. Input Supply

- 1.1 Strengthen & support nursery owners to produce healthy saplings.
- 1.2 Establish/Strengthen agro-vets & link with input suppliers to deliver organic inputs

2. Production, Productivity and Post-harvest

- 2.1 Develop and deliver training for Local Resource Persons (LRPs) on apple production, orchard management & harvesting, organic fertilizers and bio-pesticides production via relevant service providers
- 2.2 Support farmers group /cooperatives for small irrigation schemes
- 2.3 Facilitate and Support for new apple variety trial & pest management demonstration
- 2.4 Support Cooperatives infrastructures to improve production - market connectivity

3. Value Addition and Market

- 3.1 Support agribusiness for piloting commercial market testing including post-harvest and transportation loss
- 3.2 Support local traders / Cooperatives for product diversification of low grade apples
- 3.3 Support agribusiness for storage facility (cellar), grading and packaging
- 3.4 Formation, Mobilization and Strengthening of producer organizations
- 3.5 Capacitate District Chamber of Commerce and Industries (DCCIs) for their involvement in facilitating business linkages including market information system strengthening
- 3.6 Support Agribusiness Working Group (AWG) for business enabling environment

II. Fund Provisions:

Value Chain Fund: Value Chain Fund: Window 1 (W1): For Agribusiness and Service Providers.
Window2 (W2): For Producers (Groups/Cooperatives)

Window 1 (W1)

Co-investment Fund Recipient	Grant limit	Matching Fund Ratio
Company/Firm/Service Providers (Institutional)	US\$ 100000	50:50
Cooperatives	US\$100000	50:50
Service Provider (Private)	US\$500	50:50

Window 2 (W2)

Beneficiaries	Grant limit	Matching Fund Ratio
Producers Group / Cooperatives	US\$ 20000	85:15 or 50:50

Sector Development Facility:

Investment area	Grant limit
Sector Development Facility	US\$ 20000
Action Research/Trial/Demonstration	US\$ 5000
Service Provider (Private)	US\$ 500

Social Inclusion Facility

Investment area	Grant limit
A. Spatial Inclusion Fund	NRs. 20,00,000.00 (in exceptional case NRs. 35,00,000.00)
B. Poverty Inclusion Fund a. Group	US\$ 3000.00
b. Individual	US\$ 150.00

Major Activities Intervened:

Agribusiness Company	Producer Organization	Service Provider
i. Plastic Doko/Crate/ Packaging Carton for Apple Marketing	i. Irrigation Pond	i. Altimeter / Secateurs and Pruning Saw
ii. Truck for apple transportation	ii. Tools and equipment (Harvesting Pole, Portable Apple Grading Machine/ Harvesting Bag / Foot Sprayer/ Knapsack Sprayer/Pruning Saw and Secateurs/Solar Dryer, Apple Slicer/Aluminum Stairs/ Electrical Balance	ii. Apron/ Shoes/ Hand Globes
iii. Trolley Dryer, Steam Boiler, Fermentation Plant, Pasteurizer Plant, Bottling Equipment for Apple Processing (apple slice making, cider and apple juice)	iii. Embedded Service Provided by agri-business.	iii. Technical Book/ booklets
iv. Embedded Service	iv. Training and Technical Backstopping	iv. Plastic sheet for Nursery
v. Plastic Doko and Crate distributed to groups/ cooperatives	v. Organic Pesticides (Servo/ Horticultural Oil/ Copper Sulphate / Blitox 50/ Lime	v. High Density Polythene (HDP) Pipe for Irrigation
vi. Packing, labeling, marketing and transportation facilities	vi. Business Counselling for Entrepreneurship Development	vi. Knapsack Sprayer (Plastic)
vii. Backward and forward Market linkages	vii. Trade fair participation, market linkages, Business Plan (BP) facilitation	
viii. Trade fair participation	viii. Inter cluster Visit	
ix. Technical backstopping (knowledge, skill and documentation)		

Total Grant Commitment: NRs. 9, 02, 04,756

Total Grant Disbursement: NRs.8, 09, 99,733 (disbursement % = 89.79%)

Major Achievement:

Total Sub Project = 102 (Jumla = 59, Kalikot = 42, Surkhet = 1)

W1=3, W2=56, PPF/PIF=11, SIF/SDF=6, AR=4, W1 Service Provider = 22 (Nursery Owner-6, LRP-15, Business Service Provider-1)

Total Beneficiaries = 2015 (Dalit = 228, Janajati = 7, Other =1780)

Total Apple Production=2301.36 MT

Total Sales= 1778.013 MT (Price Range NRs.55-70 /- per Kg)

Major Agri Business= Prakash Falful (Surkhet), Lima Falful (Kalikot), RK Apple Processing Industry (Jumla)

Per Household Additional Income = NRs. 34042.01

Total Area of Apple Covered: 15199 Ropani

Irrigation Facilities Developed

Cemented Pond = 2

Plastic Pond = 152

Total Irrigation Capacity Developed = 41, 59,000 Liters

Major Outcome:

Descriptions	Baseline	After intervention	Changed by %
Coverage (districts)	2 (Jumla, Kalikot)	2 (Jumla, Kalikot)	
Number of Sub-projects	63	102	
Household coverage	1929	2015	
Production area (Ropani)	11107.4	15199	36.84 %
Production volume (MT)	1849	2301	24.41%
Sales volume (MT)	1298	1778	36.98%
Post-Harvest Loss (MT)	263.45	247.31	- 6.13%
Per household Income	13022	47064	261.40%
Area under Irrigation (Ropani)	-	2773	
Storage facilities developed	-	Additional 45 MT	

Major Impact:

- Upgrade in Price (30 To 70 Rs Per Kg) 100% increase High value of Apple
- Improved in Market Linkage (Prakash Falful + Lima Falful + RK Apple Processing Industry)
- Improved in Apple Orchard Management (Pruning and Manuring)
- Increasing in Irrigated Apple Orchard (2773 Ropani)
- Increase in House Hold (2015)
- Post-Harvest Loss (Decrease by 6.13 %)

Source: HVAP 2015 and HVAP 2018

Major Issues in Value Chain in Fresh Fruits:

Success of value chain depends on the relation among the different value chain actors and enabling environment for mobility of value chain. Inclusiveness of business is a driving force in value chain. Role of agribusiness very important. In Nepal value chain fruit crops in general is weak. The major issues related to fresh fruit crops are dealt as follows:

Value chain functions	Issues
1. Input Supply	
i. Fruit Sapling Quality	<ul style="list-style-type: none"> ■ Limited varieties and old varieties in most of fruit crops ■ Seedlings in walnut, pecanut, macadamia nut, avocado, lime even in pomegranate ■ Saplings not meeting the technical standards ■ No nursery act/directives ■ No mother stocks maintained in the nursery
ii. Availability of plant nutrient and pesticides	<ul style="list-style-type: none"> ■ Quality inputs not easily and timely available in the pocket areas of fruit crops
2. Production and Productivity	
i. Orchard Establishment	<ul style="list-style-type: none"> ■ Proper Orchard lay-out not followed in most of the cases ■ Small size of orchards
ii. Orchard management	<ul style="list-style-type: none"> ■ Orchard Management calendar not prepared and followed timely ■ In adequate irrigation facility and rainfed fruit production ■ Proper training and pruning not observed. ■ Nutrient management and pest management still poor. ■ Dependency on free government service for technical service which is not sufficient enough and not timely available; technical expertise at local level lacking; technical service provider in private sector is lacking
3. Post-harvest	<ul style="list-style-type: none"> ■ Post-harvest management poor and post-harvest loss is still high in most of the fruit crops. ■ Quality packaging materials not available in the country and packaging standards not yet developed; custom tariff very high in packaging materials ■ Postharvest facilities like pack house, cellar/cold storage not available ■ Cold chain system not yet initiated in fruit crops ■ National/Voluntarily quality standards not developed
4. Value Addition	<ul style="list-style-type: none"> ■ Value addition in almost all fruits are very weak (in primary processed/ processed product) as compared to imported ones ■ Share of fresh fruits for processing is very low ■ Not well linked to agro-processing industries.
5. Market linkage	<ul style="list-style-type: none"> ■ Business to business and market linkages are not so much established ■ Collective marketing in producers groups/cooperatives not functioning

5. Conclusion

Different projects in Nepal are adapting value chain approach in their modality. The beauty of value chain is holistic and participatory involving different actors and institutions at various level of value chain addressing value chain issues. Each and every actor involved is expected to add value in the product at their own level so that final product can establish its position in the market. Sustainability of the value chain depends on the actors of the value chain governance and value chain mobility addressing/strengthening value chain.

With respect to Nepal, value chain issues in fruit crops are seen at every level of value chain. They should be well analyzed and prioritized. Mapping of value chain actors should be done and activities to address the prioritized issue should be identified in participation of different actors and put in the action plan with clear role and responsibilities with time frame. Follow up action plan and update keeping the value chain move forward.

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