

# Status of Fruit Decade Focused Program for Import Substitution of Fruits

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## Abstract

Nepal, though a very small country, can accommodate production of all the important fruits of the world due to its varied topography and geographic location, however, import of fruits has been increasing resulting huge trade deficit. Apple, grape, mandarin, orange, lime, banana and pomegranate are the important fruits that are imported despite the country's high potentiality of growing them. Area and production of fruits are increasing steadily, but the rate of increase in supply of fruits is lesser than the rate of increase in demand. The government of Nepal has started the Fruit Decade Program from FY 2016/17 in order to increase the production and productivity of fruits through quality sapling production, orchard area expansion and strengthening for effective management of the orchards thereby aiming at increased fruit production which will aid in import substitution and export promotion of fruits. More and more land in the rural area that is being abandoned due to migration of working force, must be converted to large scale fruit cultivation and linking them to value chain including market and attracting foreign returnee youths to be involved. Massive campaign programs and trainings need to be conducted in order to attract youths on fruit decade programs. Research, education and development partners must work together at all levels (federal, provincial and local) for the development of fruit crops in the country.

**Keywords:** Fruit Decade Program, Fruit production, Trade deficit

## 1. BRIEF HISTORY OF GOVERNMENT HORTICULTURE ORGANIZATIONS

The contribution of agriculture on National GDP is 27.6% (MOF 2018) and the horticulture sector contributes 16.75% of Agriculture GDP. Fruit sector contributes nearly one third of this. Though Nepal constitute just 0.1% of the world land mass, it accommodates almost all the important fruits of the world due to its diverse

geographic location and physiography. There are more than 55 types of fruits grown in Nepal, out of which 25 are grown in commercial scale. There is an increasing trend in area coverage and production of fruits over the years; however, the rate of increase in production is minimal and not able to meet the increasing demand of fruits in the country. The increasing gap between the demand and the domestic supply can be noticed by increasing quantity of imports in the recent years. Neighboring countries have progressed

well in fruit development, while Nepal has experienced more of trade deficit in fruits despite the country's high potentiality. Because of the scattered areas of cultivation, low productivity, high prices of production inputs, poor rural infrastructures, high transportation costs, high marketing costs and poor cultivation and postharvest technologies, Nepali produce are less competitive even in the domestic markets.

Agriculture is facing shortage of human labor due to out-migration in search of better jobs and hence rural agriculture lands are being abandoned. This challenge must be undertaken as an opportunity and thus utilize by fruit plantation and required processes in fruit development. In recent years, the government of Nepal has emphasized development of the fruit sector and hence announced the years 2016/17 to 2025/26 (B.S. 2073/74 to 2082/73) as the fruit decade in order to substitute import and promote export of fruits through mission programs in the fruit production sector.

## 2. STATUS OF FRUITS IN NEPAL

### 2.1 Area and production of fruits

Year	Total Area (ha)	Productive Area (ha)	Production (MT)	Yield (MT/ha)
2000/01	73775	48166	487326	10.1
2005/06	91923	56549	535449	9.5
2010/11	117932	79184	794164	10.0
2015/16	157199	110586	976461	8.8
2017/18	160,394	111,744	1,086,931	9.7

**Source:** MoALD 2019

Despite more than six decades of effort with the given strength and opportunities in the fruit development in Nepal, the productivity of fruit has remained low. This can be raised up to 15 metric ton per hectare with increased access to information, modern production technology and inputs (high quality saplings, fertilizers, credit and water). The lower productivity of fruits are mainly because of the following reasons (FDD, 2017):

- The orchards established during the past

Fruits are generally grouped into three categories; summer, citrus and winter fruits. The summer fruits include mango, banana, litchi, guava, arecanut, papaya and pineapple; they are grown in the southern belt of Nepal. The major citrus fruits are mandarin (Suntala), lime and sweet orange (Junar), mainly grown in the mid hills of Nepal. The major winter fruit crops are apple, pear, walnut, peach and plums, grown in mid to high hill regions. In recent years, strawberry, kiwifruit and pomegranate fruit are emerging as the potential crops in warm temperate areas of Province 1 and Bagmati Province, dragon fruit in sub-tropical areas of Bagmati Province and Province 5 and olive in hilly regions of Karnali and Sudur Paschim Province of the country.

Total area, productive area and production of fruits are increasing over the years (Table 1). 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.

decades (late 20th century) have become old and senile, and need rejuvenation with better management and replanting with high quality saplings

- Citrus decline, mango malformation, fruit drop due to varied reasons and other pests along with poor management of fruit orchards have been emerging as new challenges and require rejuvenation

- Fruit researches during recent past are not getting priority from the government and other organizations as it has long gestation period for fruiting
- Mechanization, post-harvest technology and value chain development activities in fruits have been in low key
- Donor’s funding is almost nil in fruit research and development, and government investment is also not up to the level expected
- Coordination, collaboration and co-working among DoA, NARC, University system and private stakeholders are inadequate

The total area of fruits in the FY 2017/18 is 160,394 ha and productive area is 111,744 ha, which is producing 1,086,931 MT of fruits with the resulting productivity of 9.7 MT/ha (Table 2).

Fruits	Area (ha)	Productive area (ha)	Production (MT)	Productivity (MT/ha)
Tropical	87,594	70,749	733,439	10.4
Citrus	44,424	25,964	245,176	9.4
Temperate	28,376	15,031	108,315	7.2
Total	160,394	111,744	1,086,931	9.7

NCFD 2019

Area wise, summer (or tropical) fruits cover 54% followed by citrus (28%) and winter (or temperate/warm temperate) fruits at 18% in the FY 2017/18. Production wise summer fruits contribute 67% followed by citrus (23%) and winter fruits (10%) in the total fruit production.

Mango is the number one crop on the basis of area and production, followed by mandarin, banana, apple, litchi, lime and sweet orange in terms of area, while there is a slight differences in terms of production, i.e. mango followed by banana, mandarin, litchi, sweet orange, lime, pear and apple.

Fig 1 show the area and production of different fruit crops in Nepal in the fiscal year 2017/18.

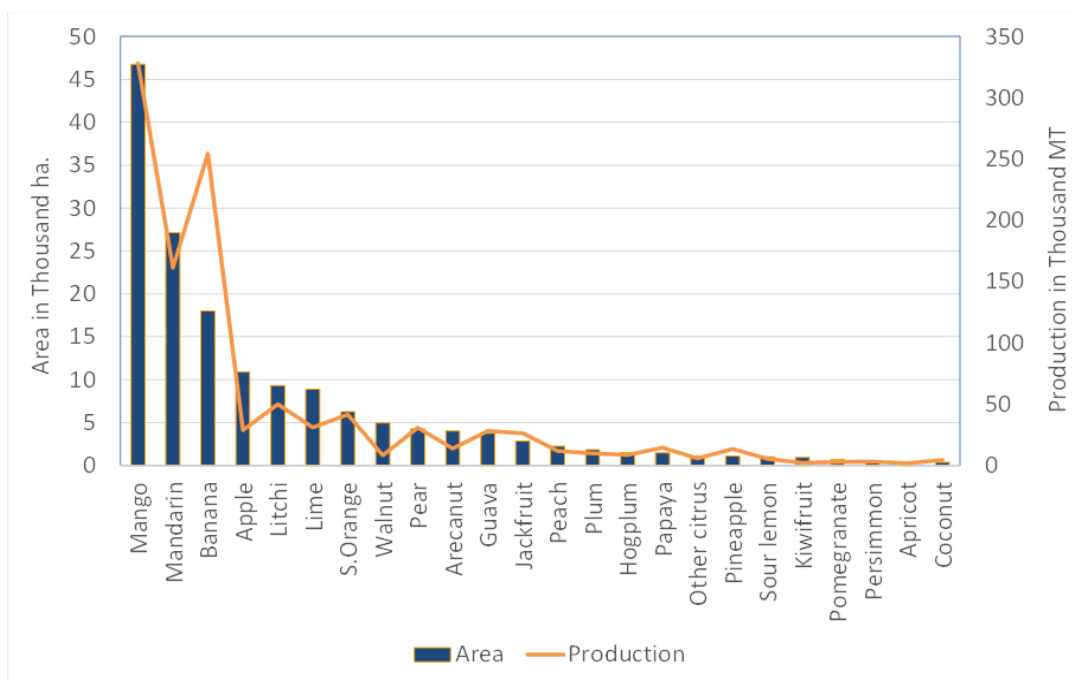


Fig 1. Area and Production of different types of fruits in Nepal in FY 2017/18

Source: NCFD, 2019

## 2.2 Import and export situation of fruits

Import of fruits in value and quantity are presented in the Table 3 which shows, from the FY 2009/10 to 2018/19, increase in quantity is by 6 times, while increase in value is by 20 times. This increase is mainly due to the higher rate of increase in demand as compared to the increased rate of domestic production, and high rate of post-harvest loss. Demand of fruits is increasing in recent years due to more health consciousness, more awareness, easy access and higher per capita income. The export in the same period has decreased sharply in quantity and in value.

Year	Import		Export	
	Values in 1000 Rs.	Quantity in MT	Values in 1000 Rs.	Quantity of Export in 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
2018/19	18106125	383350	8950	295

Source: Department of Customs, 2019

Apple, grapes, mandarins, banana, guava are the major fruits imported to Nepal. Apple alone was imported 73 thousand MT in quantity and 4.93 billion rupees in value in the year 2018/19 (DOC 2019). Banana is supposed to be nearing to self-sufficient in our country, however in this fiscal year, 1.78 billion worth of banana were imported i.e. 2nd most imported fruits in value, this seems to be due to over production in India and sent to Nepal at very cheaper price with what Nepalese banana growers were not able to compete due to higher production cost of the domestic farmers. Similarly, 1.58 billion worth mandarin/oranges and 1.54 billion worth grapes were imported in the same fiscal year (Fig 2). Export of fruits sharply reduced and the commodities exported were dates, citrus, pear in a minimal quantity. Dates must be imported from third countries.

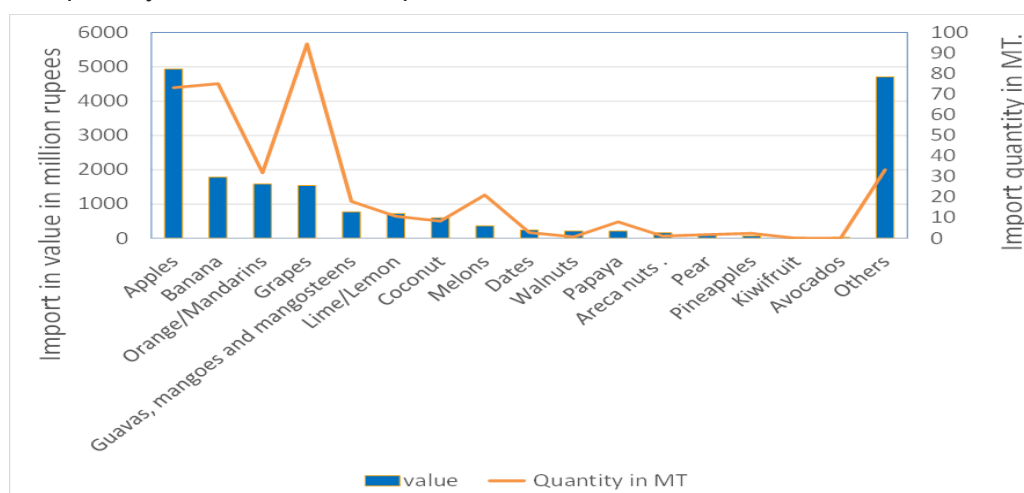


Fig 2. Import of fruits by types in Nepal in FY 2018/19

Source: DOC, 2019

## 2.3. Availability and demand of fruits in Nepal

Internationally recommended minimum quantity of fruit to be consumed is 36.5 kg per person per year (100 gm per day per person real intake). Average edible parts of most fruits vary from 30 % (Lime) to 97 % (grapes). On an average real edible portion of fresh fruit is 60% of the fruits purchased from the market or collected from the garden (FDD, 2017). To consume 36.5 kg edible portion, 60.8 kg (61 kg) fresh fruit is required. Thus, a person needs nearly 61 kg fresh fruit per year to supply 36.5 (36 kg) edible intake per year. Availability of fruits can be tentatively calculated as the domestic production and the import of fruits minus the export of fruits. Availability of fruits in Nepal is 39 kg and intake is 23.4 kg (FDD, 2017), while world's average intake is 74.1 kg and average intake in China is 81.4 kg and in India is 11.8 kg.

## 3. POLICIES, PLANS AND PROGRAMS ON FRUITS

### 3.1 Policies and Plans

The Government of Nepal has developed and implemented several policies and programs to promote fruit development in the country. Agriculture Perspective Plan (1995-2015) has included apple as a high value crop for high hills and mandarin orange as high value crop for mid hills. Other plans and policies include National Agriculture Policy (2004), Agribusiness Policy (2007), Agro biodiversity Policy (2006), Land Use Policy (2012) and different 3-5 year

periodic plans. 20-year Horticulture Master Plan which was prepared in 1991 with an assistance of Asian Development Bank, was not approved by the government, but has been used as a guiding document by horticulture planners.

In recent years, the government has approved and implemented Agriculture Development Strategy (ADS, 2015). The ADS is expected to guide agricultural sector for the next 20 years and horticulture has larger role to play, and it points out increasing trend of trade deficit due to import of fruits; however, it does not prioritize fruit development activities. Fruit is not even listed in top 15 value chain ranking crops. Fruit is just addressed in ADS as a commodity in special support to overall rural communities' livelihood across Nepal.

### 3.2 Recent past Developmental Programs on fruit crops

#### 3.2.1 Developmental Programs on fruit crops under FDD/NCFD

In spite of immense potentiality of fruit production, the quantity and value of importation of fruits is increasing in recent years due to the slow rate of increase of production as compared to the rate of increasing demand of fruits in the country. Various fruit developmental programs have been implemented by the then Fruit Development Directorate (FDD) and the current National Centre for Fruit Development (NCFD) in order to reduce import, promote export and address trade deficit in fruit crops (Table 4).

Table 4. Developmental Programs on fruit crops under FDD/NCFD

S.N.	Name of the Program	Covered Districts	Year of implementation
1	Lime mission	Terhathum, Dhankuta, Bhojpur and Makawanpur	2007/08 - 2013/14
2	Citrus orchard rejuvenation program	Dhading, Gorkha, Lamjung, Tanahun, Kaski, Syangja, Parbat and Myagdi district	2013/14-2016/17 Proposed for 5 years
3	Apple self-reliant program	Mustang, Manang, Jumla, Humla, Dolpa, Kalikot, Mugu and Rukum	2011/12 to 2016/17 (Proposed for 10 years)

4	Pomegranate Promotional program	Ramechhap, Sindhupalchok, Nuwakot, Dolakha	Implemented in 2014/15 (Proposed for 5 years)
5	Olive promotional program	Bajura, Bajhang, Jajarkot, Dolpa, Mugu, Kalikot, Jumla, Humla	Implemented for 3 years (2015/16 to 2017/18). Proposed for 10 years (2015/16 to 2024/25)
6	Kiwi promotional program	Illam, Dolakha, Lamjung, Parbat and Dadeldhura	Implemented in 2014/15 Proposed for 5 years
7	Fruit Pocket area special program (Mango, Litchi, Hog plum, Banana)	Mango (Siraha, Saptari, Dhanusha, Sarlahi, Mahottari) Litchi (Dhading, Gorakha, Tanahu, Syanja and Palpa), Banana (Nawalparashi, Rupandehi, Banke, Bardiya and Kailali), Hog plum (Parbat and Syanja)	Implemented in 2014/15
8	Floriculture promotional program	Kathmandu, Bhaktapur, Kaski and Chitwan	Implemented in 2014/15
9	Coffee area expansion program	Kabhre, Nuwakot, Kaski, Syanja, Palpa, Gulmi	Implemented from 2014/15

### 3.2.2 Fruit related programs run by sectors other than FDD/NCFD

Other directorates and centres such as Plant Protection Directorate, Soil Management Directorate, Post-Harvest Management Directorate, and Agriculture Marketing Directorate had been implementing respective programs on fruits along with other crops. Different projects under the line ministry (Agriculture) have also accommodated fruits along with other crops in the assigned project districts (Table 5).

S.N.	Name of the Project	Focused fruit programs	Districts covered	Year of implementation
1	High Value Agriculture Project (HVAP)	Apple	Jumla and Kalikot	2010-2018
2	The High Mountain Agribusiness and Livelihood Improvement Project (HIMALI) project.	High hill fruits such as apple, and walnut	10 Himali districts (Sankhuwasabha, Solukumbu, Dolakha, Rasuwa, Manang and Mustang, Dolpa, Jumla, Mugu, Humla)	2011-2017
3	One Village One Product (OVOP) program by Other Ministry (Through FNCCI)	Kiwi	Illam and Makawanpur	2006-2017
		Mango	Saptari	
		Arecanut	Jhapa	
		Junar	Ramechhap and Sindhuli	

	Hug plum	Bhaktapur and Parbat
	Banana	Chitwan and Kanchanpur
	Coffee	Syanja
	Bel fruit	Bardiya
	Olive	Bajura and Bajhang

#### 4. FRUIT DECADE (2016/17 TO 2025/26) AND FRUIT YEAR 2075 B.S (2018/19)

As mentioned above, various programs have been implemented aiming at reducing trade deficit in fruits, but these programs were not implemented for the period as envisaged, rather run for shorter terms. These programs were not able to show impacts on reducing trade deficit on fruits, rather the trade deficit has widened as shown in table 3. Fruit crops require more than five years to come to production and show impacts. In the year 2016, the Nepal government has announced the years 2016/17 to 2025/26 (B.S.2073/74 to B.S. 2082/73) as the Fruit Decade. Fruit Decade Implementation Guideline 2016 (2073 B.S.) has been approved

by the ministry in the FY 2016/17 and in order to avail quality fruit saplings to support the decade program another guideline Fruit Sapling Production Infrastructure Development Guideline 2016 (2073 B.S.) has also been approved in the same fiscal year.

Envisaged impact of fruit decade on fruit production is shown in Fig 3. Before the start of the decade program i.e. in the FY 2015/16, the area under fruits was 1,57,199 ha and productive area was 1,10,586 ha and the production of fruits was 9,76,481 MT. After the completion of fruit decade program, the area is expected to be 2,79,083 ha., the production is expected to rise to 20,02,821 MT in business as usual. After the intervention the production is expected to rise to 29,94,593 MT.

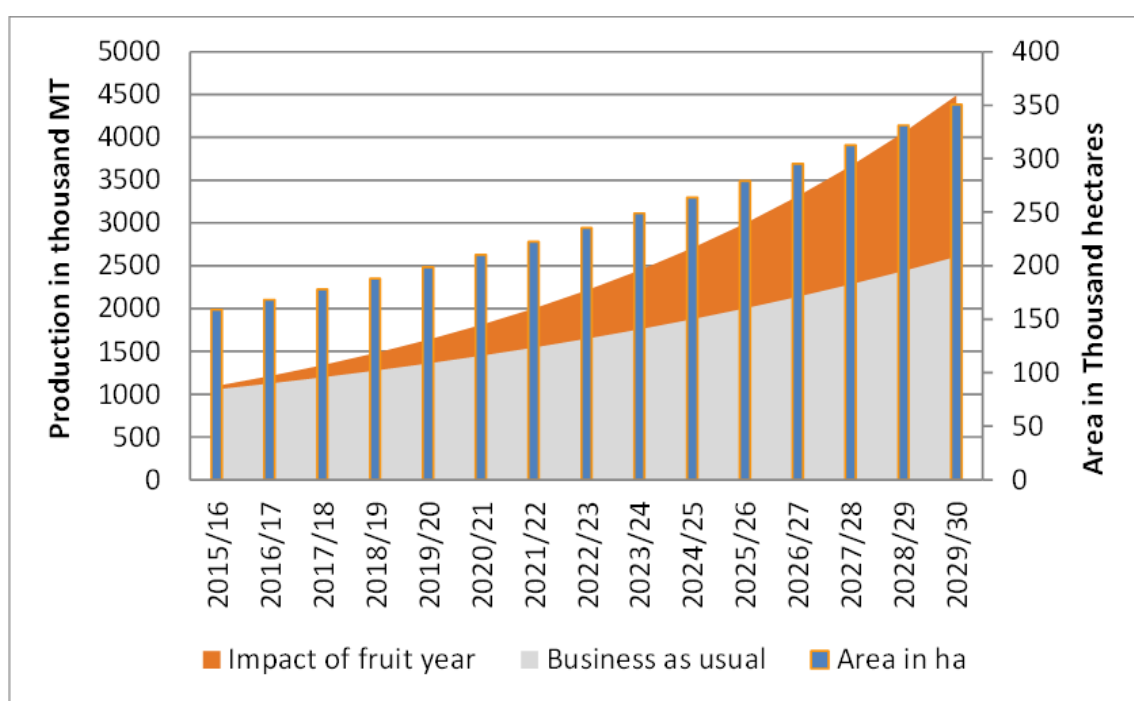


Fig. 3. Envisaged impact of fruit decade on fruit production.

## 4.1. Fruit Decade Implementation Guideline

Fruit Decade Implementation Guideline has envisaged the development program for the next ten years (FDD, 2016). Under the provision of these guidelines, capital subsidy program for additional sapling production infrastructure (Tissue culture lab, net house, shade house, green house) had been proposed and expected to avail quality fruit saplings for the expansion of fruit plantation area starting from 2075 B.S. (FY 2018/19). The first five years of fruit decade will be emphasized on quality saplings production for the expansion of fruit orchards as short term strategy and next five years will be emphasized for new technology transfer and post-harvest handling and processing industries development.

The main objectives of the program are to increase the production and productivity of fruits through quality sapling production, orchard area expansion and strengthening thereby resulting in self-reliant on major fruits (Mango, Litchi, Banana, Mandarin, Lime/lemon, Apple, etc.) through a decade long mission program on fruits. The program also envisages food and nutritional security through increased consumption of fruits, income and employment generation through research and value chain development on fruits, and promotion of horticulture tourism, conservation of environment and control of soil erosion. Programs listed are as follows:

- Quality sapling production program- Farm/centres, private sectors, Tissue culture lab establishment, screenhouse construction, training and visits
- Fruit pocket area expansion program- Site selection, training, fruit saplings distribution, high density plantation
- Emerging fruit crop promotional program – Site selection, training, fruit saplings distribution, high density plantation
- Import of potential fruit varieties- Import

of propagating materials (rootstocks and scion), multiplication and production of saplings in farm/centres

- Value chain program on fruits- Production, post-harvest, grading, storage, processing and marketing
- Horticulture tourism promotional program- Model farm development, fruit-based tourism industry development
- Technology transfer program – Trainings and tours, seminars, exhibition, publication of technical matters on fruits
- Research programs on (i) varietal characterization and development, (ii) farmer's problem oriented, and (iii) socio economic analysis of fruit production
- Interaction programs involving all stakeholders
- Monitoring and Evaluation

## 4.2. Guiding Document for Fruit Development

Guiding Document for Fruit Development (FDD, 2017) has been prepared by the FDD through the consultative service in 2016/17. The general objective of the project document is to guide program planning in fruit development and research so that Nepal becomes self-sufficient in fruit supply from its own production in next 10 years' time and meet the objective set by the Fruit decade program. This document has recommended short term (5 years), mid-term (10 years) and long term (20 years) recommendations categorically for temperate, warm temperate, subtropical, and tropical fruit crops. The document made a basis on the following strategic pillars.

- Production increases through increased area under production
- Productivity increases through better management practices
- Postharvest loss decreases through improved postharvest handling including packaging, transportation and storage



- Infrastructure supports for quality planting material production and post-harvest handling
- Institutional strengthening for research, development, production and marketing
- Access to finance and mortgaging

This document is a guiding document to be used in federal, provincial and local level program planning on fruit development and research.

### 4.3. Programs implemented in line with Fruit Decade

#### 4.3.1 Programs implemented as per guideline of FDD/NCFD

In the first year of fruit decade (i.e. FY 2016/17), the Nursery development programs were implemented through the District Agriculture Development Offices (10 districts for temperate fruits, 10 districts for warm temperate fruits, 19 districts for citrus fruits and 10 districts for tropical fruits) (table 6).

Fruit categories	Major fruits	Number of nurseries per district	Districts
Temperate fruits	Apple, Walnut, Apricot	One nursery per district =10	Jumla, Humla, Dolpa, Mugu, Kalikot, Mustang, Manang, Rasuwa, Solu and Baitadi
Warm Temperate fruits	Pomegranate, Hog-plum, Kiwi, Pear, Persimmon	Two nurseries per district = 20	Dolakha, Sindhupalchowk, Ilam, Bhaktapur, Sindhul, Dhading, Salyan, Dailekh, Kathmandu, Makawanpur
Subtropical fruits	Citrus (Mandarin, Lime and Sweet orange)	One nursery per district =20	Bhojpur, Udaipur, Terhathum, Dhankuta, Palpa, Baglung, Kaski, Chitwan, Ramechhap, Kavrepalanchowk, Gorkha (2 sets of nurseries), Tanahun, Syangja, Arghakhanchi, Salyan, Dailekh, Doti, Dadeldhura, Kailali,
Tropical fruits	Mango, Litchi, Banana and Papaya	One nursery per district =20	Bara, Rautahat, Siraha, Saptari, Sarlahi, Rupandehi, Banke, Bardia, Surkhet, Kanchanpur

Apart from the nurseries listed in table 6, two private tissue culture laboratories for banana sapling production were established supported by Fruit Development Directorate's subsidy program budget, one each in Chitwan and Nawalparasi. Similarly, one big, three medium and eight small protected net houses were constructed in mid and far western development

regions. One net-house was established in Chitlang, Makawanpur for olive saplings production.

In the second year of fruit decade (i.e. FY 2017/18), private nursery development program of Fruit Development Directorate was implemented through farms and centres at Sarlahi, Janakpur, Trishuli, Daman, Marpha

and Palpa. Program aimed to establish and strengthen nurseries in their command districts. Budgets were allocated to government farms for farm infrastructure construction, strengthening farm roads, fencing and nursery infrastructure construction and strengthening screen houses, glass houses and net-houses.

In the third year of fruit decade (FY 2018/19), Fruit Plantation Area Expansion Program was implemented. A guideline on Fruit Plantation

Area Expansion in public and private lands was prepared and followed. Major objectives were import substitution and export promotion through commercial fruit cultivation area expansion. Proposals were called from 15 districts (table 7) for plantation in private lands in which area of plantation should be at least 10 hectares in a block. In this fiscal year, fruit crops; lime, mandarin, kiwi, mango and pomegranate have been planted in total of 208.7 ha in 9 districts (table 7).

**Table 7.** Districts selected for Fruit Plantation Area Expansion Programs in FY 2018/19

S.N.	Proposed Districts	Program implementation districts	Crops	Area covered (ha)
1	Okhaldhunga	Okhaldhunga	Pomegranate	50
2	Kapilbastu, Rauthat, Sarlahi, Mahottari	Kapilbastu	Mango	20.6
3	Arghakhanchi, Bhojpur, Sunsari	Arghakhanchi (82 ha) Bhojpur (30 ha)	Lime	112
4	Ramechhap, Solukhumbu, Rukum west, Makawanpur	Ramechhap (66.5ha), Solukhumbu (40 ha), Rukum west (90 ha), Makawanpur (11.2 ha)	Kiwi	208.7
5	Kailali, Parbat, Tanahu	Kailali	Mandarin	35
Total	15	9 districts		208.7

In the fourth year of fruit decade (FY 2019/20), proposals have been called from 19 districts (table 8) for plantation of fruit crops on private lands. In this fiscal year, fruit crops; apple, lime, mandarin and mango have been chosen for plantation on private lands.

**Table 8.** Districts selected for Fruit Plantation Area Expansion Programs in FY 2019/20

S.N.	Districts	Crops
1	Mustang, Kalikot	Apple
2	Rauthat, Sarlahi, Bara	Mango
3	Jhapa, Sunsari, Bhojpur, Sindhupalchok, Gorkha, Tanahu, Parbat, Baglung, Arghakhanchi, Gulmi, Nawalparashi, Salyan, Dailekh, Kailali	Lime/Mandarin

As some of the screen houses constructed for citrus saplings production were found incomplete and the sapling produced could not be guaranteed as budwood were not certified, proposals have also been called for strengthening and completion of uncompleted screen houses

constructed for citrus saplings production from Dhankuta, Ramechhap, Kavrepalanchok, Gorkha, Lamjung, Arghakhanchi, Dailekh and Kailali.

### 4.3.2 Programs run by provincial and local level governments

As the country has adopted the federal system, government agriculture organizations have undergone massive restructuring, all regional agriculture directorates and district agriculture development offices have been dismantled and instead agriculture related ministry, agriculture development directorate are established in every province and 51 Agriculture Knowledge Centres (AKCs) are established throughout the country in the FY 2018/19. Therefore, the implementation modality of the fruit decade as given in the guideline is also affected. In the provinces, horticulture programs including fruit development programs have been proposed and implemented based on their strength of human resources and budget availability. To some extent, radio programs were aired to create mass awareness regarding the fruit decade program, technical information regarding various aspects of fruit cultivation including quality planting materials were broadcasted depending on the season. Area expansion of certain fruits through subsidy programs and contract farming were also done by some of the Agriculture Development Directorates, AKCs and province level farms. Federal guidelines of fruit development programs have been used as guiding documents for the preparation of their own guidelines. Area expansion of certain fruits were continued in the FY 2019/20 by some of the AKCs and province level farms.

The FY 2018/19 was the first year for local level bodies (municipalities). Agriculture sections with limited human resources are also conducting fruit development programs based on their perceived importance and priority.

As government agriculture organizations have undergone massive changes, fruit decade programs, and modality need some revisions and need to be adjusted accordingly. Clear cut

roles and responsibilities are to be provided at every level (local, provincial, federal). More campaigns are required on the 'Fruit Decade' at all levels of the governments in order to bring a momentum, then only increase in area and productivity of fruits will be accelerated thereby aid in import substitution of major fruits.

### 4.4 Programs by Prime Minister Agriculture Modernization Project

The Ministry of Agricultural Development (MoAD) has executed the Prime Minister Agriculture Modernization Project (PMAMP) from the fiscal year 2016/17 (2073/74 B.S.). The project is run with government resources, where the government will actively coordinate and cooperate with the private and cooperative sector to implement the project effectively. Under the project, the government has classified the agriculture production sector into pockets (10 ha.), blocks (100 ha.), zones (500 ha.) and super zones (1000 ha.).

The super zones and zones are administered by separate offices while the pocket and block were under the District Agriculture Development Offices for the first year, but now they are under the provincial government through AKC. In the first year 2016/17, the project had executed seven super zones (one super zone per province), 30 zones, 150 blocks, and 2,100 pockets across the country. In the fiscal year 2018/19, the number has gone up to 14 super zones, 69 zones, 336 blocks and 2776 pockets. Among them, 4 super zones (apple in Jumla, mandarin in Syanja, and Junar in Sindhuli and coffee in 5 adjoining districts), 18 zones, 37 blocks and 131 pockets for fruits. In the fiscal year 2019/20, some more alteration and additions have been done, like 4 super zones (apple in Jumla, mandarin in Syanja, and Junar in Sindhuli and coffee in Gulmi district), 25 zones on fruits.

### 4.5 Prime Minister’s program “one Nepali one fruit sapling plantation”

Prime Minister Mr. KP Sharma Oli has started the “one Nepali one fruit plantation” campaign by planting fruit saplings in the Singha Durbar complex on the World Environment Day 5 June 2018, and directed to continue the mission throughout the nation in order to support the country in making it self-reliant on fruits. This program has been continued in FY 2019/20. Ministry of Forest and Soil Conservation has

also aimed to include 30% fruit saplings such as Nepalese hog plum, jack fruit, local persimmon, gooseberry and other wild fruits, in tree plantation program on the world environment day and other afforestation programs.

## 5. CHALLENGES AND WAY FORWARD

Fruit decade program has started since the FY 2016/17 is able to bring a momentum on increasing fruit plantation area and productivity. The challenges and way forward are listed in table 9.

Challenges	Way forward
Newly adopted federal system- As the country has recently moved to the federal system, this has posed problem in the timely collection and compilation of technical information and statistical data and preparation of balance sheet of saplings.	<ul style="list-style-type: none"> <li>• A momentum has to be brought by wide campaign on the ‘Fruit Decade’ at all levels of the governments.</li> <li>• Clear roles and responsibilities are to be provided at every level (local, provincial, federal). They should be technically linked to and from program planning and implementations.</li> </ul>
Discontinuation of prioritized programs Rather than solving the problems/issues of the program, many of the important programs were dropped, for eg. Lime mission, Apple Self-reliant Program, Citrus Rejuvenation Program.	<ul style="list-style-type: none"> <li>• The programs/projects should be implemented as per the planned project period.</li> <li>• Crop specific programs are to be re-designed based on their opportunity, potentiality, need and capacity of the implementing body.</li> </ul>
Co-ordination <ul style="list-style-type: none"> <li>• Research, educational institutions and departmental organizations- linkage among them is very important for suitable technology development and utilization.</li> <li>• Federal, provincial and local organization- horticultural programs are to be implemented in all three levels, however, due to recent changes, co-ordination is weak.</li> <li>• Government and private sector- in past many years, PPP has been spelled out, but the co-ordination is still weak.</li> </ul>	Co-ordination committees should be formed and should be functional.

<p>Researches- Varieties- many fruit varieties have been imported, but without any research done such as in case of kiwi fruit, wine variety grapes, blue berry, almond, pomegranate, and newly emerging dragon fruits.</p>	<p>Researches should be demand driven, focused on issues on farmers' fields. Researchers on fruit crops are very weak; they also should be equally prioritized as other crops. Researches should address following aspects:</p> <ul style="list-style-type: none"> <li>• Varietal propagation techniques (walnut, tissue culture, nursery structures).</li> <li>• Sapling production for high density planting.</li> <li>• Pest and diseases (Fruit fly, citrus greening, crown gall in apple, mango malformation)</li> <li>• Soil nutrition management</li> <li>• Socioeconomic analysis</li> <li>• Protected cultivation</li> <li>• Postharvest technology</li> </ul>
<p>Weak value chain on fruits</p>	<p>Capacity development for branding and tracking back.</p>
<p>Branding and tracking back</p>	<p>Capacity development for branding and tracking back.</p>
<p>Absence of nursery act and regulation – This hindered legal provision for quality control of fruit saplings.</p>	<p>Provision should be made for quality sapling distribution (including tissue culture saplings).</p>

In recent years, high density plantings of fruits are gaining popularity in many countries for higher productivity per unit of land. In Nepal, apple is the most imported fruit in terms of value and quantity. Though apple self-reliant program has been implemented in some mountainous districts for few years, they are not able to expand the area as envisaged due to scattered area availability. In recent years, high density planting of apples is successfully done by Agro Manang in Bhratang, Manang, however, the country does not have capacity to produce saplings needed for expanding the area of high-density planting. Importation of saplings in mass level is not the solution due to issues of import of disease/pests along with the saplings, and due to economic issue. Therefore, we should capacitate technicians to make them able to produce saplings for high density planting.

## 6. CONCLUSION

In order to increase the production and productivity of fruits, reduce the trade deficit in fruits through import substitution and export promotion, the government of Nepal has started the Fruit Decade Program from 2016/17. More and more land in the rural area that is being abandoned due to migration of working force and these must be converted to large scale fruit cultivation and linking them to value chain including market. The program activities included quality sapling production, fruit pocket area expansion, value chain promotion, horticultural tourism promotion, and technicians' and farmers' capacity development. Massive campaign programs need to be conducted to attract youths on fruit decade programs. Clear roles and responsibilities are to be provided at every level of the governments (federal,

provincial and local). Research, education and development partners must work together for the development of fruit sector in the country. The Fruit Decade Program if implemented successfully, contributes on trade deficit in fruits, as well as contributes to overall rural reconstruction and development of the nation.

## 7. REFERENCE

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