

# Problems and prospects of Vegetables and Fruits Production and Marketing in Nepal

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## Abstract

Agriculture contributes on an average one third to total Gross Domestic Product. It is the major source of employment for the majority of people in Nepal. Productivity of vegetables is in increasing trends after 1991/92 up to 2015/16 but fruits productivity is in decreasing trend after 2009/10. Summer fruits share above 62% of total fruit area and production while terai region share more than third fourth of total summer fruits both in area and production. Mango and banana are the most dominant summer fruits in terms of area and production. Citrus fruit share about 22% of total fruit area and production while hilly region is dominant in terms of citrus growing area and production. Mandarin types of citrus occupy around two third of total citrus growing area and production. Winter fruits share 15.5% and 13% of total fruit area and production respectively. Hills and mountain region share 99.2% of total winter fruits production. More than half of the total winter fruits area and production is share by apple and pear.

**Keywords :** Agriculture, vegetables, fruits and Nepal.

## Introduction :

Nepal is situated as trapezoidal shape 870 km in length by 130 km in width. Its total area is 1,47,181 sq. km. In latitude, it ranges from 26o22' to 30o27' N and in longitude from 80o04' to 88o12' E. In altitude ranges from about 60 m above mean sea level in the Terrain in the South-East to 8,848masl at the summit of Mount Everest in the North. It is surrounded by China in the north and India in the east, west and south. It has favorable agro ecological diversity for agricultural production, especially in the horticulture sector. Different ecological belts are endowed with different types of climates due to its geographical locations. Most of the important fruits, vegetables, spices and flowers of the world can be grown in this country.

Agriculture is the backbone of Nepalese economy. Agriculture contributes on an average 33 percent to GDP and employs 65.7 Percent of the labor force in Nepal. Among 147,181,000 hectare of lands 3091000 hectare is cultivated i.e. only 21%. Nepal's agriculture is still heavily dependent on rainfalls. Only 44% of the cultivated land has irrigation facility. Limited irrigation and unreliability of rainfalls have resulted in fluctuating trends in the agricultural production. Fruit and spices crops share about 7.04% to agricultural GDP. Among this Mango, Banana, Apple and Orange share about 1.56%, 0.4%, 0.42% and 0.97% respectively. Vegetables and nursery share about 9.71% to total agricultural gross domestic product.

Export share of summer fruits is 96% followed by citrus fruit 3% and winter fruits 1% by volume while by values summer fruits covers almost 100% and citrus and winter fruits are insignificant amount. On other side share of summer fruits is 59% followed by citrus fruits 16% and winter fruits 25% by volume while by values cover 65% followed by citrus fruits 14% and winter fruits 21% . WHO has recommended at least 400 gram of fruit and vegetable for healthy life.

In the last sixty years, there have been significant progresses in policy development, institutional development, and technology generation and transfer. With Nepal's membership to WTO and regional trade associations, increasing education levels and nutrition knowledge of the people, increasing demand and import of horticultural commodities shows high prospects for horticulture development and to harness the potentiality of horticultural development in Nepal experience shows that there are challenges for enhancing production, improving physical infrastructure, enhancing marketing and promotion of processed products. In Nepal, 65.5% population are engaged in agriculture and its contribution to national GDP is 31.23% where horticulture sub-sector has the most significant role in AGDP which shares 21.42 percent, MOAD 2015.

## Present position of Horticultural Crops in Nepal :

### Vegetables :

During the last 10 years, area of vegetable crops has increased by about 41% from 189,832 in 2005-06 to 266,937 hectares in 2014-15 whereas the production has increased by about 63% from 2,190,100 MT in 2005-06 to 3,580,085 MT in 2014-15 as shown in table.

**Table 1.**

Area, production and productivity of vegetables in Nepal

Year	Area (Ha)	Production (MT)	Productivity (MT/Ha)
2005/06	189832	2190100	11.54
2006/07	191922	2298689	11.98
2007/08	208108	2538904	12.20
2008/09	225154	2754406	12.23
2009/10	235098	3003821	12.78
2010/11	244102	3203563	13.12
2011/12	245037	3298816	13.46
2012/13	246392	3301684	13.40
2013/14	254932	3421035	13.42
2014/15	266937	3580085	13.41

Source: MoAD, 2005/06-2014/15.

The area of vegetables is continuously increasing in Nepal. However, the production of vegetables is increasing at faster rate than increment in area. Production increases attributed to the favorable climatic condition, availability of seed and fertilizers, improved management practices, mechanization in vegetables farming along with area expansion. The percentage increase in area, production and productivity of the vegetables in 2015\16 compared to 1991/92 is 100%, 248% and 74%, respectively. Production of vegetables was increased with 118043 mt per year while area was increased with 6160.8 ha per year from 1991/92

to 2015/16. Average productivity of vegetables from 1991/92 to 2015/16 was 11.09 mt/ha. The annual average total yield of vegetables for 25 years period from 1991/92 to 2015/16 is 11092 kg ha<sup>-1</sup>.

### Fruits

During the last 10 years, area of fruits has increased by about 64% from 91,923 in 2005-06 to 261,739 ha in 2014-15 whereas the production has increased by about 85% from 535,449 MT in 2005-06 to 1,762,617 MT in 2014-15.

**Table : 2**  
Area, production and productivity of fruits in Nepal

Year	Total Area (Ha)	Productive Area (Ha)	Production (MT)	Productivity (MT/Ha)
2005/06	91923	56549	535449	9.47
2006/07	94901	57595	575095	9.99
2007/08	100099	63432	630563	9.94
2008/09	103651	68785	686213	9.98
2009/10	107322	70722	706972	10.00
2010/11	117932	79184	794165	10.03
2011/12	139321	101233	1029754	10.17
2012/13	137759	101480	938730	9.25
2013/14	150150	110617	979542	8.86

Source: MoAD, 2005/06-2014/15.

In Nepal both area and production of fruits is continuously increasing since 2000/01 but production was found decline in 2011/12. Production again start to increase after 2012/13 but lesser increment than area increases due to which productivity of fruits decreases in recent years. Increase in production is attributed by favorable climatic condition, availability of planting stocks and fertilizers, improved management practices, mechanization in fruit farming along with area expansion. The percentage increase in area, production and decrease in productivity of the fruits in 2015\16 compared to 2000/01 is 129%, 100% and 12.7%, respectively. Production of fruit was increased at the rate of 41061 mt per year while area increases at the rate of 4830.5 ha per year from 1991/92 to 2015/16. Average productivity of fruits from 2000/01 to 2015/16 was 9.7 mt/ha.

The area and production of summer fruits is continuously increasing since 2000/01 in Nepal but production decline in 2011/12. Production again start to increase after 2012/13 but lesser increment than area increases due to which productivity of summer fruits decreases in recent years. The percentage increase in area production and decrease in productivity of the summer fruits in 2015\16 compared to 2000/01 is 165%, 128.5% and 13.9%, respectively. Production of summer fruits increase at the rate of 30140 mt per year while area increases at the rate of 3290.5 ha per year from 1991/92 up to 2015/16. Average productivity of summer fruits from 2000/01 to 2015/16 was 9.77 mt/ha. Summer fruits are grown under 62% of total fruit growing area and production share by summer fruits is nearly 65%. Terai region shares about 78% of total summer fruits area and production. More than 75% of total fruit area and production is share by mango and banana. Summer fruits mainly grown in Nepal are mango, banana, papaya, litchi, jackfruit, guava, pineapple and others (coconut and areca nut).

Mango alone share about 56% of total summer fruit area and 42% of total summer fruit production. Highest productive area and production lies in eastern and central region. Eastern and central region share about 73% of area and production of total summer fruits area and production. Highest productivity occurs in western development region (8.3 mt/ha) whereas average productivity of country in 2015/16 is 6.9 mt/ha. Mango alone share more than 85% of total summer fruit area and production in terai region. Highest mango producing districts are Sarlahi, Siraha, Saptari, Rautahat and Jhapa. Banana shares about 21% of total summer fruit area and 37% of total summer fruit production. Terai region only shares about 70% of area and 80% of production of total banana production. Eastern development region shares about 46% of area and 52% of total banana production. Highest productivity occurs in eastern development region (18.6 mt/ha) whereas average productivity of country in 2015/16 is 16.5 mt/ha. Highest banana area and production occurs in Saptari, Jhapa, Morang, Kailali, Sunsari and Rautahat districts. More than 55% of total papaya production occurs in terai region followed by hills i.e. more than 36% in term of both area and production of total papaya cultivated area and production in country. Highest productivity occurs in central development region (16.2 mt/ha) whereas average productivity of country in 2015/16 is 13.1 mt/ha. Highest papaya production occurs in Parsa, Rautahat, Dang, Morang and Kanchanpur. Around 50% of guava area and production occurs in hilly region. Eastern and central development region share about 53% of area and 50% of total guava production in Country. Highest productivity occurs in far western development region (9.01 mt/ha) whereas average productivity of country in 2015/16 is 8.3 mt/ha. Highest guava area and production occurs in Kalali, Jhapa, Dhading, Taplejung and Khotang districts. More than 52% of total area and production of jackfruit lies under terai region. Around 58% of pineapple produces under terai region. Most of the pineapple area and production occurs under central development region. Highest productivity occurs in eastern development region (21.6 mt/ha) whereas average productivity of country in 2015/16 is 13.7 mt/ha. Highest pineapple area and production occurs in Jhapa, Sindhuli and Kaski districts. Most of the litchi area and production occurs in Central development region. Around 98% of total litchi area and production occurs in hills and terai region. Highest productivity occurs in eastern development region (8.7 mt/ha) whereas average productivity of country in 2015/16 is 7.4 mt/ha. Highest litchi area and production occurs in Parbat, Dhading, Morang, Bara and Nuwakot districts. Among total production of arecanut in Nepal, Jhapa district alone share about 68% of total area and production whereas Morang district share about 21% in terms of total area and production. Morang alone share about 54% of total area and 71% of total production of coconut.

Total fruit grown areas and production share by Citrus is 22% of total fruit production in Country. In Nepal among all citrus, mandarin types of citrus occupy 65.3% and 67.2% of total citrus growing area and production. Whereas sweet orange and lime are grown nearly in equally areas but productivity of sweet orange is higher due to its higher production. Majority of mandarin type citrus grown in hills of western region in terms of both productive area and production. Highest mandarin type citrus production occurs in Kavre, Syangja, Gorkha, Kaski, Panchthar and Tanahu districts.

The area and production of citrus fruits is continuously increasing since 2000/01 in Nepal but production starts to decline after 2010/11 (Fig. 4) due to which productivity of citrus fruits decreases after 2009/10 up to 2015/16. The percentage increase in area, production and decrease in productivity of the citrus fruits in 2015\16 compared to 2000/01 is 109%, 79.5% and 14%,

respectively. Production of citrus fruits increases at the rate of 8193 mt per year while area increases at the rate of 1047.7 ha per year from 1991/92 up to now. Average productivity of citrus fruits from 2000/01 to 2015/16 is 10.3 mt/ha.

The area of winter fruits is continuously increasing since 2000/01 in Nepal but production decline after 2011/12 due to which productivity of winter fruits decreases in recent years. The percentage increase in area, production and decrease in productivity of the winter fruits in 2015/16 compared to 2000/01 is 64%, 41.6% and 13.7%, respectively per year while area increases at the rate of 492.5 ha per year from 1991/92 up to now. Average productivity of summer fruits from 2000/01 to 2015/16 is 8.24 mt/ha.

Winter fruit share 15.5% of total fruit grown areas and production share by winter fruit is 13% of total fruit production in Country. Hill and mountain region shares about 99.2% of total winter fruits area and production. Winter fruits mainly grown in Nepal are apple, pear, peach, walnut, plum, hog plum and others. More than 53% of total winter fruit area and production is share by apple and pear. Midwestern development region contributes about more than 60% of total apple area and production. 75% of total apple growing area and production share by mountain region. Among mountain districts high apple producing districts are Kalikot, Mustang, Rukum, Jumla and Mugu. Highest productivity occurs in western development region (12.3 mt/ha) whereas average productivity in country in 2015/16 is 8.3 mt/ha. Highest pear production and area lies in eastern development region followed by central and western development region, which occupies more than 75% of area and production share. More than 53% of total winter fruit area and production is share by apple and pear. 70% of area and 81% of production among total winter fruits area and production lies under hills region. Similarly walnut, peach, plum, hog plum, and other fruits are dominant in mid hills in terms of both area and production. Highest area and production of walnut lies under mid-western development region. Peach and plum is around equally share by all development regions. Hog plum shares 90% of area and production under eastern and central development region. Highest kiwi production occurs in central hills followed by eastern hills. Highest apricot production occurs in Central Mountain followed by far-western hills. Highest pomegranate production occurs in eastern hill region. Ilam district alone share 30% of area and 40% of total production of pomegranate in Nepal. Highest persimmon area and production occurs in central hill of Nepal.

#### **Export and Import Scenario :**

In total export, share of summer fruits is 96% followed by citrus fruits (3%) and winter fruits (1%) by volume while by values summer fruits cover almost 100 percent and citrus and winter fruits are in insignificant amount whereas in total import, share of summer fruits is 59% followed by citrus fruits (16%) and winter fruits (25%) by volume while by values summer fruits cover 65% followed by citrus fruits (14%) and winter fruits (21%). Table 8 illustrates that the import of fruits by volume and values is more than the export which expels that this sub-sector should be emphasized.

In total export, share of fresh vegetables is 88% followed by potatoes (12%) and dried vegetables in insignificant quantity by volume while by values fresh vegetables cover 64% followed by dried vegetables (22%) and potatoes (14%) whereas in total import, share of fresh vegetables is 34% followed by potatoes (54%) and dried vegetables (12%) by volume while by values fresh vegetables cover 33% followed by potatoes (41%) and dried vegetables (26%). Table 9 demonstrates that the import of vegetables by volume and values is more than the export which interprets that attention should be paid in the promotion of vegetable sub-sector for exportable commodities.

#### **Prospects:**

The climate in hills and mountains differ from the terrain. During summer, temperature in the hills and mountains is low. Normal season vegetables in hills considered as off-season in terrain and neighboring countries. Off-season vegetables fetch higher price in the market as well. Because of diverse agro-ecological situations in the hills and mountains, different fruits have niche value as well as it has comparative advantages like production season of citrus is differed from India and Bangladesh, export quality of large cardamom is produced in the eastern hills, niche type of orchids.

Nepal's significant horticulture production is in increasing trend despite its comparatively lower productivity. Both in case of fruits & vegetables, productivity of Nepal (8.96 & 13.41 ton per hectare respectively) are lower than the productivity of China (11.6 and 23.4 ton per hectare), India (12.3 and 17.3 ton per hectare) and world average (11.4 and 19.6 ton per hectare). Though the comparison of Nepal's horticulture productivity with that of China, the leading producer of fruits & vegetables, and India does not give identical results.

#### **Employment Opportunity :**

At present situation more than 3,000,000 youths have been deployed in the overseas in search of job. Production, processing and marketing of horticultural crops create employment opportunity to the rural and urban youths. Commercialization of horticulture crops and their value addition generate income to the people.

#### **National and International Market :**

Nepal has been under the process of rapid urbanization. It is assumed that by 2030 about 50% of the population will live in the town and cities. This will create a high demand for agricultural commodities in the markets. At present context the import of fruits and vegetables are increasing every year. Current Import scenario of horticultural crops in values are as such, apple of NRs 1.9 b, Banana of NRs 292 m, Citrus of 129 m, fresh vegetables of NRs 844 m.

In some commodities where import is increasing it can be substituted by producing such commodities within the country such as; mango, banana, onion, potato, chili and other vegetables. On the other hand, by utilizing diverse agro-ecology of hills and mountains various high value commodities can be produced in niche areas and export to other nations. Nepal does have potential scope to export horticultural crops like mandarin, sweet orange, lime and areca nut in fruits; cabbage, peas and tomatoes as off-season vegetables.

#### **Government Policies and Plans :**

Government of Nepal has always prioritized for horticulture development in periodic plans. In the 20 year Agriculture Perspective Plan government outlined the broad policy to transform subsistence agriculture into commercial one and priorities given to the horticultural crops such as apple in mountain; citrus and vegetable seeds in mid-hill and mango, banana and fresh vegetables in terrain. The policies emphasize to facilitate market oriented high value commodities, contribute internal and export markets through agro-based industries and poverty reduction through commercialization of horticulture.

The government has endorsed Agriculture Development Strategy (ADS) in 2015 with the vision of a competitive, sustainable inclusive agriculture sector that contribute to economic growth, improved livelihood, and food and nutrition security. It will accelerate agriculture sector growth through four strategic components including improved governance, productivity,



commercialization and competitiveness. Priority is given to inclusiveness (both social and geographical), sustainability (both natural resources and economical) and connectivity to market infrastructures (agricultural roads, collection centers, packing houses, market centers etc.), information infrastructures and ICT, and power infrastructure.

#### **Challenges :**

Despite of greater scope and potentiality there are various constraints for the production of horticulture crops.

#### **Subsistence Farming :**

Farming system in Nepal is conventional and subsistence type. Each farmer grows most of the crops as per need of his family. The scattered form of farming imposed a greater constraint in marketing of horticultural crops. From sustainable point of view growing all crops is important. For commercial production it should be specialized to particular crop. The low volume of products and absence of consolidated marketing system create the great setback for export.

#### **Lack of Systematic Marketing System :**

In Nepal marketing system is a major problem. Farmers are encouraged to grow vegetables, fruits and high value crops without sustainable market and marketing system. Productions without market create embarrassing situations to the growers and discourage production. Producers face problems due to lack of transportation facilities such as marketing of apple from high hill regions and citrus fruits in the mid-hill regions.

#### **Lack of Physical Infra-structure :**

In remote areas inaccessibility to the road is the major problem to produce horticultural commodities. The production of most of the fruits is seasonal in nature. The production areas are in remote and the bulk of production is confined to a particular limited time. Bulk production of seasonal crops in a limited period leads to fetch poor market price due to lack of proper storage and processing units. Lack of cleaning, grading, sorting, fumigation, waxing and other packing house operations decrease export quality of the horticultural products. In many instances, inferior qualities are processed to different product such as juice, jam jellies and beverages. In some crops production without processing is useless such as coffee, tea etc. Because of growing transaction the size of existing market has squeezed and is not enough.

#### **Low Priority in Investment :**

Poor economic status of Nepalese people cannot support big projects of commercial production and processing of horticultural crops. Inadequate investment of government in horticulture sector is also a great challenge. Foreign investor or donors have less priority in fruit sub-sector for investments.

#### **Review of Literature :**

**T N Venkata Reddy, P V Rame Gowda, P K Mandanna and V G Raghavendra (2010)** At present, there is a gap in the quality and convenient packaging of mangoes. By promoting branding and organizing direct sales, the branding concept can be popularized among the farming community and consumers can patronize the brand.

**N Nagaraj, Jagannath Olekar and H Chandrasekhar (2010)** In order to address the problems of production and market inefficiency six key elements are to be addressed 1) entrepreneurship and capacity building 2) participatory decision making and group formation 3) identification of appropriate market linkages 4) matching of production technologies and local resources with local and global demand 5) achievement of economies of scale, size, scope and agglomeration of production and distribution and, 6) information and market efficiency.

**Narendra Kumar, T. Sankaraiah and Sivaprasad (2010)** The marketing system for fruits and vegetables is now in the hands of middlemen. Middlemen exist at various levels between the farmers and the consumers and exploit through malpractices in weighing, handling and payments.

#### **Objectives of the Study :**

- To find out the present position of fruit and vegetable production and Marketing in Nepal.
- To suggest further study regarding on fruit and vegetable production and marketing in Nepal.

#### **MATERIALS AND METHODOLOGY :**

Time series agricultural data for fruits in Nepal is collected from the data books published by MoAD for 16 years period from 2000/01 to 2015/16 and for vegetables for 25 years period from 1991/92 to 2015/16. The method used in this paper is descriptive-evaluative method. The study is mainly review based. It is purely supported by secondary source of data, i.e. books, journals, papers and articles and internet.

#### **CONCLUSION :**

The total yield of vegetables from 1991/92 up to 2015/16 is in increasing trend. Increment in production is more than increment in area of vegetables due to which productivity of vegetables is increasing in recent years. Increase in production attributed by the favorable climatic condition, availability of seeds and fertilizers, improved management practices, mechanization in vegetable and fruit farming along with area expansion. Both area and production of fruit is in increasing trends but increment of area is greater than increment in production due to which productivity of fruit decrease in recent years. Above 62% of total fruit area and production is share by summer fruits. Terai region share about 78% of total summer fruits area and production. More than third fourth of total summer fruit area and production is share by mango and banana. Citrus fruit share about 22% of total fruit area and production. Hilly region is dominant in terms of citrus growing area and production whereas mandarin types of citrus occupy around two third of total citrus growing area and production. Winter fruits share 15.5% and 13% of total fruit area and production respectively. Hills and mountain region share 99.2% of total winter fruits production. More than half of the total winter fruit area and production is shared by apple and pear. Nepal has comparative advantage for fruits and vegetables production thus helps to identify the major fruits growing area. This study helps to horticulturist to find out the reason why fruit production is in decreasing trends despite of its area expansion. Thus Government can give priorities to these areas. Raising the productivity is one of the priority policies of the government for alleviation of poverty in future.

The government of Nepal has made efforts to promote the horticulture sector in short as well as in long term plans, yet some deficiencies are experienced which are to be addressed in future:

- Emphasis should be given to niche fruits and vegetables production in larger areas.

- Research institutes should be strengthened to develop the hybrid varieties of horticultural crops especially vegetables.
- Big production blocks should be created and strengthened in fruit sub-sector.
- Big storage house facilities should be provided for year round supply and price stabilization.
- Capacity enhancement for the horticulturists and frontline extension workers need to be strengthened.
- Foreign aid/ investment need to be mobilized through single door policy.
- Implementation of crop insurance policy should be assured to commercial farmers.
- Sanitary and phyto-sanitary (SPS) measures should be followed strictly for exportable commodities.

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