

AN OVERVIEW OF FRUIT GROWING IN NEPAL

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ABSTRACT

Opportunities for growing varieties of fruits in Nepal are available because of its wide range of agro-climatic conditions and geophysical locations. Although fruit activities were going from many decades but the government has taken interests on the systematic approach of fruit development activities in a planned manner since 1960; as a result, many fruit species and their commercial cultivars introduced and horticultural centers and stations specializing on fruit programs developed. Farmers, at subsistence and commercial level, are growing various fruit species from the Eastern DR to the Far-western DR. Potential fruit crops specific to each district and development region are outlined. The area and production of fruit crops increased by almost two-folds in past 30 years.

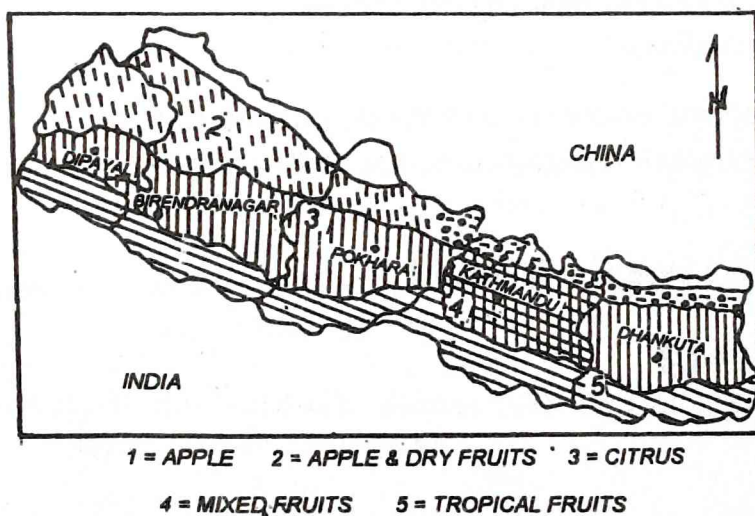
Additional Key Words: Tropical fruits, temperate fruits, development regions, districts

INTRODUCTION

Growing of fruits in Nepal (1,47,181 sq. km in area) is not of a recent origin and it has a history of 200 years (Shrestha, 1998). Since fruits possess an immense value in Nepal and to its people, HMG/N has taken sufficient interest on production and promotion of fruit activities in the country. The demand for fruits is expected to increase manifolds due to increased in-coming tourists, population growth, and growing awareness among the Nepalese for fruit consumption because of the protective qualities of fruits. To meet the in-country demand, Nepal imports a considerable quantity of fresh and dry fruits. The household survey of Nepal Rashtira Bank (1988) reported that the per capita fruit consumption was about 50% of the recommended quantity; of this, only 45.2% was met by domestic production and the rest was met by importation.

There are indigenous, yet wild and cultivated fruit species in this country. Different fruit species requiring vivid growing conditions from warm to cold climatic situations have been grown from the Eastern to Far-western Nepal in terai, inner valleys, hills, mid-hills and high hills. Recently, APP (1995) has also focussed fruits as high value horticultural crops that require production packages and developmental activities for its further promotional programs.

Citrus is widely grown in the mid-hills from Eastern to the Far-western developmental regions (DRs). Tropical fruits are limited for their production in terai belts and inner terai regions. In the mid-hills of Central DR, mixed fruits are grown. In high hills of Eastern, Central, and some parts of Western DRs, farmers have started growing apples. In most high hills of Western to Far-western DRs, apples and dry fruits such as walnuts are most suitably grown.



Figur. 1. General suitability map of fruit growing in Nepal (Shrestha, 1998).

POTENTIAL FRUIT CROPS

Nepal is a small mountainous country with a range of climatic situation from tropical humid to temperate dry condition. There are 75 districts in Nepal, which is divided into five developmental regions (DR) namely, Eastern Development Region, Central Development Region, Western Development Region, Mid-western Development Region, and Far-western Development Region. All of these regions have terai, mid-hill and high hill districts. This indicates that there are opportunities for growing various fruit species that require hot to cold climates.

Table 1. Area (ha) and production (mt) of fruits by development regions in Nepal (ASD, 1998).

Development Region (DR)	Temperate	Citrus	Tropical	Total
Eastern DR				
Area	2607	4297	8819	15723
Production	16668	25665	59146	101479
Central DR				
Area	3184	4961	12391	20536
Production	20960	29802	84254	135016
Western DR				
Area	2610	4640	7344	14594
Production	16129	28049	50001	94179
Mid-western DR				
Area	3202	1853	4016	9071
Production	18148	10039	24822	53009
Far-western				
Area	1976	1275	2029	5280
Production	11452	6797	13235	31484
Total of all DRs				
Area	13580	17026	34599	65204
Production	83357	100312	231458	415167

In the five developmental regions, the acreage under fruits and their production vary. The Central DR occupies the highest area under fruit crops with the production of 1,35,016 Mt while the Far-western DR has the least acreage covered with fruits and the production is also a minimum.

Eastern Development Region:

In Eastern DR, there are 16 districts (11 mid-hill to high hill and 5 terai districts). In the terai districts such as Jhapa, Sunsari, Morang, Siraha, and Saptari tropical fruits and some subtropical species are successfully grown. In hilly districts, although some tropical and subtropical fruits are grown in lower, but warmer belts, but temperate fruit species requiring cooler climates are grown in most cases. Mandarin orange is commonly grown fruit species. Asian pear, plum, and peaches are grown in Terhthum and Ilam districts. In Dhankuta district low chilling apples such as, Anna, and Vered have been successful. Vered is more sour and sub-acidic than Anna. Anna is an Early variety and ripens before monsoon starts. From midhills to high hill apricot such as Sakarpara, New Castle, Kaisha and Charmagaz can also be successful. They can be grown for dry fruits rather than for fresh fruits. Mangos, papaya, Jackfruit have good scope in terai areas. At higher altitudes of Solukhumbu district walnut and apple can be

grown. Plum is also grown but because of limited markets they are used for making wine or alcohol. At lower altitudes citrus are grown such as, Local mandarin, Junar, and local lime. In this district there is a good scope of cherry production provided that compatible yet early varieties are planted to escape from the rain. Sankhuwasabha has considerable citrus production; pecan and chestnut are a few possible fruits in this district. Pomegranates and even mangos are grown where suitable climatic pockets are available. In Udaipur, pineapples have been recommended at lower belts in areas where irrigation facilities are available. Local pomegranates called Darim with small in size and lower juice content is grown in Sindhuli district. An improved variety of this fruit species called Ganesh has been introduced. This variety has excellent taste with bigger fruits. Muscat Red and Paper Shell varieties also should be tried in Sindhuli.

In warm temperate to high hills another important introduction could be Kiwi, for which farmers have great demand. In Himachal Pradesh of India this fruit has been in increasing demand and may possibly replace apple in future. Although plant multiplication is a difficult process and needs to develop technologies; however, Hayward and Bruno varieties of kiwi have good possibilities in this country. For local consumption blackberry, raspberry and strawberry could also be grown in many hilly districts as they improve nutritional level of local people and also can be a good income generation of the farm families. For strawberries, a neutral variety that fruits early in the season must be planted for getting good profit. 'Santa Rosa' plum, 'Hiratanenashi' persimmon and 'Kandhari' pomegranate could also be prolific in mid-hill districts; but marketing situation must be explored adequately before launching into production programs.

Central Development Region:

In Central DR (12 hilly districts and 7 terai districts), citrus is common fruit species in all hilly districts. High chilling apples are grown in Dolakha and Sindhupalchowk districts. In Lalitpur, Rasuwa, Kathmandu, Nagarkot (Bhaktapur), Kavre, and Makwanpur districts, low chilling apples, 'Pharping' pear, persimmon etc. are grown. Kiwi and olive have good scope in some of these districts. In Kavre, Walnut and pecan are possible in higher altitudes. Mandarin orange grown at higher altitudes of this district is not as good in terms of quality as they are in lower altitudes. Kiwi and litchi are also potential fruit crops in this district. Although *Lapsi* can be grown from warm temperate areas of mid hill districts of the Eastern to Western DRs, the Central DR plays a leading role especially the mid hill areas of Kathmandu, Bhaktapur, Lalitpur, Makwanpur, and Kavre. Makwanpur district is especially suited for Japanese Nijishiki pear at Daman area, Pharping pear, Comice and Red Bartlett pears at lower belts, walnut, apricot, plum, citrus, pomegranate and strawberry. Avocado, litchi, mango, banana etc. are grown in warmer belts. In Dolakha, apples are grown in higher altitudes, citrus in lower altitudes and banana, pineapple, etc. in hot climatic areas.

In Kathmandu valley, various fruit species are successfully grown. Because of many marketing opportunities available in this valley there is a high demand of Japanese pears, good and attractive grapes, early apples and peaches, strawberries, blackberries, chestnuts, citrus, etc. Prominent fruit producing pockets are Pharping area, Shivapuri area, and Sankhu area. Many local and exotic fruit species are grown for commercial uses. Apricots, plums, persimmons, berries, nut crops, etc. are also grown successfully. A late maturing smooth-skinned Japanese orange 'Murkot' has shown good performance in field trials with Brix readings as high as 14.6% (HDP, 1995).

Near the highway to Kathmandu Papaya is commercially planted in Dhading district. Shyardul area is a pocket for growing mandarin orange. Pear, low chill apples and hill lemons are grown in hilly tracts. Mango, papaya, pineapples, litchis, etc. are found in lower belts. Local variety of Sarifa is also seen but improved varieties must be introduced for better commercialization in hilly districts. In Nuwakot district, banana, papaya, mango, macadamia nut, avocado, etc. are grown in tropical areas whereas strawberry and low chill apples in higher

altitudes. Most litchi trees in mid hill districts have problems of mite and bug infestation. Although some citrus such as mandarin and lemon are found in Chitwan district, the citrus is not considered commercially feasible. Mangos, guava, banana, papaya, pineapple, Jackfruit are main fruits of Chitwan. Guava is very good fruit in terms of human nutrition but its commercialization is questionable for sustaining its production because of the wilt problem. Grafting of good varieties of guava on to Chinese guava (a rootstock) could be an alternative to combat with wilt problem and make guava production sustainable. Most improved varieties of banana has cold injuries with varying degrees; William Hybrid seems to be cold tolerant. The banana variety 'FHIA-1' is good for fruit and vegetable purposes and considered a cold and pest tolerant. This variety may become a number one in future and is to be introduced.

Western Development Region:

In Western DR (13 hilly districts and 3 terai districts), Mustang grows mainly temperate fruit species such as, apple, walnut, apricot, peach, plum, almond, hazelnut, etc. Most apples are high chill types fit for high hills; but fruit size is small with good fruit color. Comice pear is a regular bearer in Marpha and can be put in a commercial production as in Himachal Pradesh of India. Kaski district has a mixed fruit species. Citrus, banana, papaya, litchi, mango, etc. are grown. Low chill apples and pears in higher altitudes are propagating in this district. Newly introduced fruit species in this district are strawberry, pecan, chestnut, avocado, and macadamia. As in Mustang, apple, walnut, peach, plum, etc. are grown in Manang district. Since wild olive trees are growing in some mid hill districts of this development region there is a good possibility of commercial types for plantation. In Myagdi and Baglung districts, depending on the altitude mixed fruit species are seen. They are apple, walnut, citrus, peach, plum, banana, mango, guava, etc. In Parbat, Palpa, Shyangja, Arghakahnchi, and Gulmi, Gorkha, Lamjung districts, low chill apples and pear, citrus, peach, plum, pecan, banana, litchi, mango, banana, litchi, etc. are grown depending on the altitude and slope of the hills. Citrus is main fruit of Shyangja, Tanahu, Kaski, and Lamjung.

High chill apples are priority crops of Rasuwa district. Walnut is also grown considerably. Low chill apples and citrus are possible for commercialization in lower altitudes. Banana and papaya are observed in hotter climates. Citrus is the main fruit of Ramechhap, where pomegranate, persimmon, apple, and pear are also grown. Kiwi and chestnut have good scope for production. Sindhuli district focuses on Citrus mainly although it can support other warm temperate fruit species adequately. Banana, papaya, pineapple, etc. are available in lower altitudes.

Mid-Western Development Region:

In Mid-western DR (12 hilly districts and 3 terai districts), all mid-hill to high hill districts grow fruit species of commercial importance. In Rukum and Rolpa, high chill apples and walnuts are grown in high hills; citrus, pear, peach, and plum are important fruits at low hills while mango, litchi, and banana are major tropical fruits at lower belts. Apples and walnuts are major fruits of Dolpa at higher altitudes while at low altitudes pomegranate and wild olive are grown. In Pyuthan, Salyan, Dailekh and Jajarkot districts, citrus, low chill apples, pear, banana, litchi, papaya, mango, etc. are profitably grown. In Surkhet, citrus, mango and banana are major fruit crops. In Jumla, Humla and Kalikot districts, Temperate fruits with varying levels of chilling requirement are grown such as, apples, walnut, apricot, almond, peach, and plum. At lower altitudes there is a possibility of growing citrus. The terai districts of this DR are Dang, Bardia, and Banke. Tropical to sub-tropical fruit species such as mango, banana, guava, papaya, etc. are grown successfully. Recently, grape cultivation is being promoted in these districts; some varieties are especially found suitable for Banke areas. In 1998, a farmer named Yogeshwor Rajaure of Kapurkot, Salyan district brought from India a good pomegranate cultivar 'Jalore Seedless' for its performance evaluation in Nepalese condition. Mr. Rajaure also brought 'Muscat White' pomegranate from India in 1999.

Far-Western Development Region:

In Far-western DR (7 hill districts and 2 terai districts), the high hills of Bajura and Bajhang districts occupy high chill apples and walnut; at low hilly areas the pear, low chill apples, citrus, pomegranate are grown. Mango, banana, and guava are also cultivated in lower warmer belts. Baitadi district occupies with similar fruit crops as grown in Bajhang with additional fruit species like apricot and persimmon. Darchula and Dadeldhura districts have also most of these fruit crops; Walnut and citrus seems to be prominent in Dadeldhura. Even the Crop Diversification Project has included citrus in its 7 project districts. In Doti and Achham, citrus are grown in higher altitudes while mango, banana, guava, Jackfruit, etc in lower altitudes. In the terai districts such as Kailali and Kanchanpur tropical fruit crops such as mango, banana, papaya, Jackfruit, and guava are commercialized.

CONCLUSION

Nepal has 75 districts; in each district a wide variety of fruits is grown. Some districts dominate in tropical fruits while other in temperate fruits. Citrus is the major fruit crop that is being grown in all hilly districts. Because of the value of fruits in human nutrition, economic well-being of farmers, sustainable development of Nepal through maintaining bio-diversity and eco-friendly productive agriculture the Agriculture Perspective Plan of 1995 has emphasized fruit production activities even stronger than it was before. Not only the commercial cultivars introduced from elsewhere countries need appropriate technology production systems but development of production packages for indigenous fruits to make them commercially viable is also needed.

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