

Status of Sweet Orange (Junar) Production in Sindhuli District of Nepal

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ABSTRACT

Junar (Citrus sinensis) is important cash generating fruit crop in Sindhuli district. The survey was conducted in junar growing VDCs of Sindhuli district during Aug.-Sept. 2011. Semi-structured questionnaire was used to interview the junar growers and key informants. This survey report highlights the status of junar cultivation and postharvest management of in Sindhuli district. From the study, it was found that in Sindhuli district junar is grown in 45 Village Development Committees with 1077.5 ha. total and 565.5 ha fruit bearing area. The total production of junar was 6868.25 mt. Out of total production 5-25 % junar was used as home consumption and rest was sold in the market. Nearly 15 % of junar that reached market was used for processing and rest was consumed as fresh fruit.

Key words: Junar, Sindhuli, area and production.

INTRODUCTION

Sindhuli district lies between 26°55'- 27°22' N latitude and 85°25'-86°15' E longitude. Altitude varies from 168 to 2797m asl. This district is divided into three topographical ranges—Mahabharat, Chure range and Inner Terai. There are 53 VDCs and one Kamalamai municipality (DDC, 2008). 66 % land is covered by forest in Sindhuli district. Climate of Sindhuli district is subtropical and there is ample climate for cereal farming in inner terai area, and the hill area has suitable climate for sweet orange (DADO, 2010). Sweet orange, commonly known as Junar in Nepali, is successfully grown in 47 out of 75 districts of Nepal (Ghimire *et. al.*, 2006) and Sindhuli is the leading one among them (MoAC, 2010). Fruit production is during Kartik, Mangsir till Magh months. Junar farming in Sindhuli provides good source of cash income to farmers. Because of the increasing trend in the consumption of fruits and possibility of processing through micro enterprises the domestic demand has increased these days. This study of Junar in Sindhuli district was carried out by reviewing, surveying and analysis of information to identify existing cultivated area, production and postharvest situation which will contribute for the development of concern sector.

METHODOLOGY

To conduct resource survey of junar in Sindhuli district major junar growing VDCs were chosen. The survey was carried out within five weeks on Aug.-Sept. 2011. Samples were taken by simple random sampling techniques. Among selected VDCs at least 10 Households (HHs) from each VDC were selected for study. Semi structured questionnaire was used for information collection. FGDs were conducted in village where it was necessary. All information collected from various sources was entered into MS Excel. Data tabulation, categorization was used to analyze data. Analysis was done using percentage, graphs and charts. Based on the figures of analyzed data, the results were interpreted in a logical manner to produce the final report.

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RESULT AND DISCUSSION

General Information

In Sindhuli, Junar was found cultivated in the altitude range of 800 to 1300 meter along the Mahabharat range (DADO, 2011). It is believe and evidences that the Junar fruit was originated in Sindhuli district (OVOP, 2008). These days the farmers of Sindhuli are involved cultivating junar as commercial and cash crop. Junar produced in Sindhuli have special identity and highly valued as Sindhuli ko Junar (junar of Sindhuli) in Nepali market. Junar is being cultivated in 45 VDCs of Sindhuli district. One Village One Product (OVOP) program was launched in four VDCs namely Ratanchura, Baseshwor, Tinkanya and Jalakanya for production promotion and marketing management. It was noted that Junar trees in Sindhuli start flowering in March and the fruit is ready for harvest from Nov. to Feb.

It was found that Junar is a one of the major source of income in Junar growing area of Sindhuli. The majority of growers of Sindhuli district were found cultivating Junar since 40 years but some have inherited the profession from their ancestor. Those who inherited the old trees from ancestors they consider such trees as their parent's gift to them. Some farmers were also found newly involved in Junar cultivation. Although Junar cultivation in Sindhuli district is an age old practice its use for sell and income generation instead of home consumption is rather recent developmet.

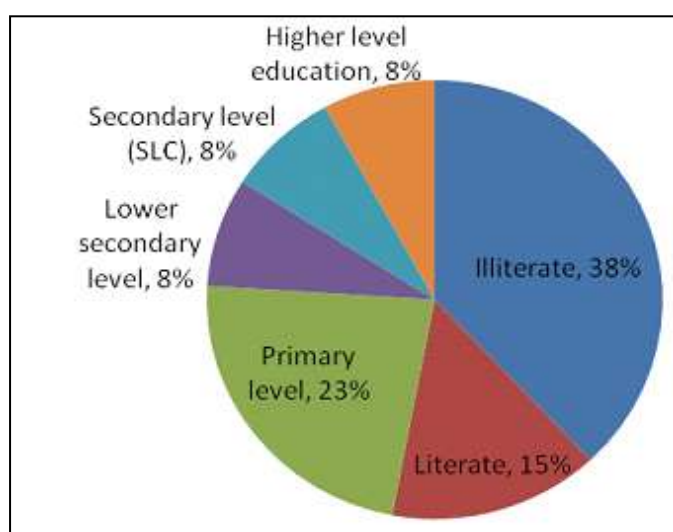


Fig.1: Level of education among the Junar farmers

There was both joint and nucleus family found in Junar growers. The active family members were found less in number that was due to movement of active member towards cities and foreign countries to earn money. The literacy level of junar grower was found very less as depicted in chart 1. Most of the Junar growers were found involved in cooperatives. There were all together 33 Junar related cooperatives and those cooperatives united to form a district level junar production cooperative union.

Status of Junar Orchard

There were old as well as newly established Junar orchards in Sindhuli. Junar orchards ranges from some Junar trees in home garden to large scale Junar orchard. Most of orchards in Sindhuli are established in Bariland. It ranges from 10-15 junar trees to 600-800 Junar trees in an orchard. Previous data during 2005 shown that the average number of sweet orange tree per household in Sindhuli district was 113 and Average Land (*ropani*) covered by Sweet Orange in Sindhuli district was 7.16 (Ghimire et. al., 2006). In Sindhuli district, Junar fruit have found cultivated semi intensively. Cropping pattern include Junar and other cereal and legume crops. Inter cropping with finger millet, chilly, was found practiced by farmers.

Table 1: Productive and non-productive junar trees and production of junar in Sindhuli

| S N | VDCs | Area under productive trees (>5 yrs) (ha.) | No. of trees | Area under non productive trees (<5 yrs) (ha.) | No. of trees |
|---|------------|--|--------------|--|--------------|
| 1 | Tinkanya | 64.5 | 19400 | 70 | 21000 |
| 2 | Ratanchura | 56.5 | 16950 | 84 | 25300 |
| 3 | Baseswor | 29 | 8700 | 35 | 10500 |
| 4 | Jalkanya | 14.5 | 4350 | 19 | 5700 |
| Sub total (OVOP program) | | 164.5 | 49400 | 208 | 62500 |
| Production @ 12.5 mt. / ha. $12.5 \times 164.5 = 2056.25$ mt. | | | | | |
| Other VDCs | | | | | |
| Bhuwaneswori, Majhuwa, Kakurthakur, Arunthakur, Jinakhu, Mahadev Danda, Ratnabati, Solpathyana, Khangsang, Kholagaun, Pokhari, Bahuntipung, Aambote, Lampantar, Hatpate, Jarayotar, Tosram Khol, Dundbhanjyang, Balajor, Bitijor, Bhimsthan, Belghari, Ranichuri, Bhimeswor, Kamalamai Municipality, Bhadrakali, Amale, Dadiguranse, Mahadevsthan, Tamajor, Bastipur, Sitalpati, Purano Jangajholi, Jhangajholi Ratmata, Kuseswor Dumja, Netrakali, Shanteswori, Kapilakot, Kyaneswor, Mahendrajhadi, Hariharpurgadi. | | | | | |
| Sub Total | | 401 ha | 120300 | 304 ha | 91200 |
| Production @ 12 mt. / ha. $12 \times 401 = 4812$ mt. | | 565.5 ha. | 169700 | 512 ha | 153700 |
| Total area under Junar = 1077.5 ha. | | | | | |
| Total Production = $2056.25 + 4812 = 6868.25$ mt. | | | | | |

There were all together 1077.5 ha. land covered by junar cultivation. Among the area 565.5 ha. land have productive junar trees that yield 6868.25 mt. fruits. The Tinkanya VDC has highest area under junar trees followed by Ratanchura, Baseswor and Jalkanya.

General orchard husbandry

Generally Junar was found cultivated in bari land. The land was found uneven hilly area and soil type varies according to locations. The soil found in Junar growing area were stony gravel and drainable. Mostly the Junar grown in Sindhuli was found local varieties. Farmers were found transplanted Junar saplings brought from local private nurseries and distributed from DADO. Farmers had planted the Junar seedlings propagated from seed and grafting. For grafting, trifoliolate citrus are used as root stock. These days, the grafted Junar trees are found more in Junar orchard than seedlings produced from seeds. Pit digging to transplant Junar Saplings was found prior to one month of sapling plantation and was filled with compost/FYM. Planting is usually done in rainy season. Junar trees were found planted in the spacing of 6-7 x 6-7 m. The grafted trees on Trifoliolate spp. were found planted closer (4x4m) than plants produced from seed. Manure and fertilizers were found applied during Mangsir month. Most of the Junar orchards were found having no irrigation facility. Some orchards having irrigation facility used to irrigate Junar with irrigation pipes. Amili, Banso, Bhalu Jhar, Bahudal Jhar, Chip Chipe, Kane Jhar, Laibari Jhar, Mothe, Katara Kuro, Dudhe Jhar, Ilame, Timale, Kastamale were common weeds found in Junar orchard. Weeds were found more problematic in newly transplanted saplings. Weeding is generally done manually as and when necessary. Pruning was found

practiced by removing dried, diseased and crowded stems/branches generally in Jan-Feb. Use of bourdeaux-paste and bourdeaux mixture was found common practice after pruning. But every farmers has not found followed pruning and application of Bordeaux. Citrus green bug, scale insect, borer, leaf minor, fruit fly, lemon butterfly, aphids and mites were observed important insects of Junar during field survey. Diseases of Junar such as foot and root rot, gummosis, powdery mildew, shooty mould, citrus canker and citrus decline were found harmful. Lichen was commonly observed in Junar trees moreover, fruit drop was found serious problem of Junar growers. Servo oil, Rogor (dimethoate) and some fungicides were found applied to control insects and diseases of Junar.

Harvesting, utilization of fruits and postharvest handling

Harvesting of junar fruits in Sindhuli started from Kartik till Magh months. Proper harvesting at proper level of maturity reduces the losses. Harvesting of Junar fruits was found manually hand picking. Mostly fruits were harvested on maturity and after ripening but some immature fruits were observed in market. Harvesting and selling of immature Junar fruits was found due to economical as well as technological (fruit drop) problem.

Table 2: Utilization of Junar fruits

| Home consumption | Sell | |
|------------------|-------------------|------------|
| 5-25 % | 75-95 % | |
| | Fresh consumption | Processing |
| | 75-90 % | 10-25 % |

The survey shows that out of total production of Junar, 5-25 percentages consumed at household level. Among 75-95% sold junar fruits only 10-25% fruits were found used in processing. The households who have less numbers of Junar trees these households found consumed more fruits and viceversa.

Post harvest handling of horticultural crops from harvest to the time they reach the consumers, must be understood by farmers in order to reduce losses which are caused by biological (respiration, ethylene production, compositional changes, transpiration of water, physiological break down and physical damages) and the environmental factors (temperature, relative humidity, atmospheric composition and light).

Sorting

Sorting of harvested Junar fruits were found practiced by farmer. Misshapen, insect pest infected, deformed fruits were found discarded.

Grading

In Sindhuli, so far proper grading is not practiced. The grading is categorized normally as Grade A, Grade B, Grade C according to size.

Packing

Containers for packaing were found Doko, plastic crates. Cushion materials such as straw, leaves were found used against impact and compression. Fruits were found generally packed into Doko with or without cushion. Wrapping of fruits with was also found before packing into crate and sent for market or kept in storage. Most of the fruits were found sent to market without storage in farm.

Transportation

Pick up van, tractors and bus were found commonly used vehicle for transportation. Porter's transportation in Doko also found practiced.

5-10% damage was found experienced by farmers during transportation. This damage can be minimized by the use of proper container. Tomiyasu et. al., 1998 (JICA Project) reported 29% storage losses of Junar in Nepal.

Marketing of fruits

The produced junar fruits brought to Sindhulimadi market through marketing agents or farmers themselves or group of farmers or cooperatives. Then, from district market center, these fruits are sold to retailer and distant wholesaler and exporter. The junar fruit was also sent to Kathmandu, Biratnagar, Janakpur, Hetauda, Narayangarh and Sitamadi (India) market for sale directly from farm or from Sindhulimadi market. Some quantity of junar fruits was found stored in cold storage or local cellar storage that fetched higher price during off season.

Price of junar was found determined by bargaining between farmers and traders by weighing or counting. Average farmgate price was Rs 3.5 per piece of Junar ranging from Rs 2 - 5. The farmers during earlier harvest fetch lower price Rs 2-5 as compared to late harvest (Rs 5-8).

Constraints in marketing

Several marketing problems were noticed by the farmers:

- Inappropriate and fluctuating price compelled to sell at lower prices.
- Inadequate information and incomplete market information.
- Lack of roads and expensive transportation cost, difficult to get transport means.
- Lacking storage facilities, cold storage, weighing facilities.
- No knowledge of packaging, grading and quality maintenance and high wastage due to improper grading and packaging.
- Lack of processing facility.
- Unorganized market network and coordination is lacking.
- Production input not available in time and quality.

Processing scenario and potentialities

Farmers of Junar growing area found transplanting new saplings due to high demand of Junar fruits in market, increased road access for transportation. Thus, the coverage area and production of Junar seems to be increasing. In Sindhuli district, a few junar based processing plants micro enterprises were found operating.

Table 3: The Junar processing micro enterprises of Sindhuli

| S N | Fruit processing enterprises | Address |
|-----|---------------------------------|----------------------------------|
| 1 | Pragati Junar Processing Centre | Ratanchura |
| 2 | Langhali Junar Udhog | Tinkanya |
| 3 | Fikkal Fruits Processing Centre | Kamalamai Municipality, Majhitar |

Source: Survey, 2011

Most of the farmers (90%) expressed the need of establishing processing industry. However, some of the respondents (10%) suggested for not to establish the processing industry.

Table 4: Product diversity and price rate of Junar in Sindhuli Market

| S N | Fruit product | Amount | Retail price (NRs.) |
|-----|---------------|---------|---------------------|
| 1 | Junar Squash | 500 ml. | 75/- |
| | | 700 ml. | 100/- |
| 2 | Junar Jam | o.5 kg. | 160/- |

Source: Survey, 2011

CONCLUSION

Junar and Sindhuli have synonymous identity. Junar is a one of the major source of income in Sindhuli. Productive junar trees cover 565.5 ha. among 1077.5 ha. junar growing area. The Junar farming in Sindhuli is semi intensive. There should be focus on more commercialization and increase area under junar cultivation in feasible locations. Most of the fruit was found used for fresh consumption. Fruits are perishable commodity. Minimization of 10% post harvest loss is wise than producing 10 % more fruits. Thus, knowledge on postharvest management should be provided. Moreover, existing junar based micro enterprises should be promoted.

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