

Technical Paper Series

On

"Promotion and Development of Agro-Processing Enterprises of Potential
Agro-Products in Mid-Western Development Region for Livelihood
Improvement"



Submitted to:

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(NARDF)**



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NARDF Technical Paper Series Report

This is the precise form of the Project Completion Report based on scientific writing for wide circulation through different media.

Abstract
<p>The project was basically not a research oriented type, rather was promotional and enterprise development type. As a result of study carried out under PP 207/2004/2005 it was recommended to promote and develop agro-processing enterprises based on local fruits and vegetables and product development in order to increase profit of the farmers and users of unsold surplus produces. It was found that the development of enterprises based on local fruits and vegetables can provide better income and source of employment even to small and marginalized farmers and/or entrepreneurs. For entrepreneurs involved in processing agro-enterprises, it has been found that improvement in marketing system plays the crucial role. Two models of small scale fruit and vegetable processing units at (Khajura, Banke and Ramghat, Surkhet) are established and developed to produce various products like jam, pickles and sauce etc. As a result of trainings and development funds provided to these two units a sizeable quantity of processed products (Khajura ,Banke - 500 kg and Ramghat, Surkhet – 800 kg) is already made available in the identified market outlets. At least five potential markets within and outside the project districts are identified and linked the processors with traders. The processors have claimed that there is great potential of increasing production of these processed products.</p>
Keyword
Agro-processing enterprises, entrepreneurs, processed products, potential markets
1. Introduction
<p>Agriculture plays a vital role in the overall economy of the country with a share of 38% of the total GDP during 2008/09. Agricultural production in the country is dominated by cereal crops, root crops, cash crops, horticulture crops. Fruits and vegetables, though perishable food commodities, constitute high nutrient values such as vitamins and minerals, which provides significant contribution to human diet. The nutritional status of the people could be improved to a higher extent provided these commodities could be supplied in fresh or in a preserved form round the year for consumption. Fruits and vegetables are available in large quantities during season, considerable qualities of the products are spoilt due to lack of appropriate technical knowhow about proper handling, packaging, processing, distribution, transportation, marketing and storage.</p> <p>Such losses could be minimized or lowered down through technology transfer to the needed farmers and providing adequate facilities for processing these products. Despite large quantities of production of these commodities, processing is yet to be developed properly. Interim plan has recommended for the development of agricultural processing enterprises of some key high value commodities such a fruits and vegetables and promote their trading. In this regard, fruits and vegetables are considered to be the important commodities and source of income to the poor and disadvantaged training community of Mid-Western Development Region of the country.</p> <p>The present project was initiated with the intention to increase awareness of farmers on promoting domestic and export marketing and develop small scale, agro-processing enterprises of potential agro-products such as mango, banana in fruit group and tomato, cauliflower, cabbages in vegetable group of Mid-Western Development Region for livelihood improvement through increased income especially of small and marginalized farm households.</p> <p>Besides this, womenfolk who are involved more on small processing business will be helped to earn more money needed to sustain their families and themselves.</p>
2.Review
<p>The studies and the published literatures in the past on agro-processing technology development were reviewed. Further, Some more works related to processing and marketing of the processed fruits and vegetables based products were also reviewed. The selected important and relevant</p>

studies to the present program and activities are given below.

- Promotion of marketing of selected high value agricultural commodities (fruits, vegetables and livestock) to Bangladesh and Tibet markets---HARP/DFID, 2001/03.
- Uptake pathways project to functionalize Kohalpur Market Center, Nepalgunj---HARP/DFID, 2003/04.
- Regional linkage study of fruits and vegetables in Biratnagar and Nepalgunj Region---RUPP/UNDP, 2004.
- Identify administrative and policy constraints that small farmers face in vegetable seeds & honey in Dang, market centers & vegetables in Banke and coffee in Palpa---AEC/USAID, 2004.
- Identify administrative and policy constraints that small farmers face in fresh vegetables in Surkhet, Nepalgunj and Rupendehi and analyse the functioning of existing agricultural co-operatives in those districts and identify policies for their effectiveness---AEC/USAID, 2005/06.
- Post harvest storage, handling and management of fruits and vegetable crops and vegetable seeds in the hills and tarai of Mid-Western Region (Dang, Banke, Bardia and Surkhet) and Far-Western Region (Kailali, Doti, Dadeldhura and Kanchanpur)---NARDF, 2005/07
- Identification of policy and institutional constraints and administrative issues related to operation of small scale enterprises managed by women headed dalit, janajati and minorities in Banke and Surkhet---AEC/USAID, 2007.

Salient relevant features, recommendations & results of these studies are bulleted below.

- Small scale agro-processing enterprise can be instrumental in the present project districts of Mid-Western Development Region provided an appropriate processing technology is applied for producing improved quality processed products..
- There is a need to develop post harvest technology suitable in the Nepalese Context that can be adopted to reduce the losses of the fresh products which can also generate additional income to the producers.
- Past studies identified that such programs should focus on developing infrastructure facilities, appropriate technologies for processing and manufacturing supports which are also linked to collection and marketing centers in the targeted Mid-Western Development Region were to be supported & promoted.
- Small scale enterprise managed by the small, marginalized, women headed dalits and janajati need further deeper studies for overcoming the Strategic and administrative constraints and problems.
- It was understood that enterprise development is highly governed by the availability of raw materials around market centers of the processed products. In this context, Nepalgunj market center is a combination of retail and wholesale trading center as well as a collection center for vegetable and fruit commodities. The demand for fruits and vegetables, in particular, can potentially be met by the local production. Likewise, Birendranagar is also a local trading center for fruits and vegetables supplied mainly from the local pocket areas like Ranimata, Chhinchu and Ramghat. Additionally, trading of such commodities from Nepalgunj in the tarai and potentially from the mountain hill districts like Dailekh also occur in the local markets.
- It was felt necessary to establish a full-fledged collection center for high value fruit and vegetable commodities near to the central point for the development of viable internal

marketing system as well as supporting the processing units. In this context, it was suggested that the existing agricultural marketing and collection center at Kohalpur, Nepalgunj being a central place for Banke, Bardia, Surkhet and Dang districts of Mid-Western Development Region of Nepal and also being connected by Kohalpur-Surkhet Highway and Mahendra Highway would be appropriate to be further strengthened.

- Further, the agriculture market at Khajura also is emerging as a collection and trading center. With the support programs linked to the market area, this market area has shown potential to promote the existing processing enterprise. The women group in this area is very active and enterprising.

Considering all these aspects, the present study was developed and implemented in Banke and Surkhet districts of Mid-Western Development Region focusing the existing agro-processing enterprise at Khajura, Nepalgunj and Ramghat, Surkhet.

3. Materials and methods

This study was carried out in the mid-western terai and mid-hills (Khajura, Banke and Ramghat, Surkhet). Two Krishi Sahakari Sanstha organized and run by totally women groups were identified for this study.

1. Methods used for Dissemination of appropriate fruits and vegetables processing technology to the identified rural families and skill needed for entrepreneurship of the product development are as follows:

Previous works on technology for processing of fruits and vegetables products were reviewed and emphasis was given on the use of local available raw materials for processing the identified products like tomato sauce, mango juice, mango pickles and mixed pickles. Mid-Western Regional Food Technology and Quality Control Office, Banke, District Agriculture Development Office, Nepalgunj & Surkhet provided their technical support for the product development activities.

Likewise, training courses/manuals developed earlier on fruits and vegetable technology was also reviewed and appropriate training components as per the requirement of the product were identified. Accordingly, training curriculum was developed on the basic principle of fruits and vegetables processing, preservatives, hygienic and sanitation requirement, quality assurance and standards, food microbiology, levelling, packaging and business plan to run the enterprises.

Training program on operational mechanism of the processing enterprise to 20 participants, mostly women group from Bageshwori Bahuudesihya Krishi Bazar Sahakari Sanstha Ltd, Bageshwori VDC-2, Khajura, Banke and Bheri Pashu Tatha Krishi Utpadan Prasodhan Sahakari Sanstha Ltd, Ramghat-5, Surkhet, were provided. Ten products based on fruits and vegetables such as tomato ketchup and sauce, fruit jam & jelly, pickles and chutneys, ginger candy, petha of ashgourd (Kubhindo) & fruit squashes were produced on trial basis and production technology of those products were disseminated to the participants on practical mode. Training program was repeatedly conducted to active participants of the previous group in both theoretical and practical classes with problem causing and problem solving (PCPS) approach.

2. Methods used for Model micro-processing fruits & vegetable based enterprise developed and established.

Situation analysis of the existing fruits and vegetables processing unit and the processed products at Bageshwori, Banke and Ramghat, Surkhet were made. Focus group discussions with farmers, traders, entrepreneurs and other stakeholders related to the project were conducted. Business plan for further management of the existing fruits and vegetables processing units were developed considering technical, financial & marketing aspects.

A model of small scale fruits and vegetables processing unit was designed & established in both the project areas considering the supply and demand of the identified processing products. Seed money in terms of equipments and machineries worth about Rs. 75,000/- each were provided to operate the processing units of Banke and Surkhet. The expert group from the centre provided necessary technical inputs and orientation in coordination with the Regional Food Technology and Quality Control Office, Nepalgunj and District Agriculture Development Offices Banke and Surkhet. The identified groups will raise additional fund as seed money to run the processing unit in future.

3. Methods used for Market outlets within the region identified and linked with the processing units.

Meeting of the representatives of producers, traders and processors from the identified groups of Banke & Surkhet and outside groups were organized and made aware of the importance of quality assurance of the products processed on the trial basis. Training program comprising of theoretical and moreover on practical aspects were conducted. The processed products were made available in the local markets outlets as on trial basis and studied about the consumer's response and possible market linkages of the products.

The market response with regards to the quality of the products was satisfactory. Market outlet in Nepalgunj, Khajura (Banke), Birendranagar, Chhinchu (Surkhet) in the project districts as well as Ghorahi, Butwal, Bhairahawa outside the project districts were identified and linked with the processing unit.

The constraints encountered during the implementation of the project activity was non-availability of the raw materials, packaging materials (bottles/cans), preservatives and chemicals in local markets in adequate quality and affordable price during the processing period, which affected the competitiveness of the product with the available similar imported products in the market due to high production cost. Hence, sufficient fund is required to be raised for the procurement of raw materials in time so that it could be stored for processing in lower price. Furthermore, awareness training programs need to be organized among the traders, producers & processors time to time through District Agriculture Development Offices and Regional Food Technology & Quality Control Office as a part of their annual program to sustain the enterprise even after the completion of the project activities.

4. Methods used for Final reports and documents prepared before the end of the project.

- Periodic trimester reports, annual reports along with financial expenditures statement were prepared and submitted to NARDF.
- Booklets on product diversification and development were prepared and distributed to farmers & entrepreneurs.
- Training reports were compiled and submitted to NARDF
- Technical booklet on preparation of various fruits and vegetable processed products prepared and submitted to NARDF.
- Project completion report and final report compiled and submitted to NARDF.

4. Results

- Two micro scale fruits and vegetable processing units, one in Banke and other in Surkhet were identified, developed and established.
- Although various fruits and vegetable based products were made during trial production period, project identified commercial processing of tomato sauce, mixed pickles in Bageshwori, Banke project area and tomato sauce, mango pickle, mango juice in Ramghat, Surkhet project area based on the local market demand. Bageshwori and Ramghat each produced two metric tonne of processed product.
- The trained farmers and enterprise group, mostly women from the identified processing units, about the technical and practical aspects of the processing operations of the identified products. These groups disseminated the agro-processing knowledge to

neighbouring households and surrounding VDCs.

- It could be observed that 10 metric tonne of processed products from both the enterprises could possibly produce and marketed even after the project completion.
- Seed money in terms of equipments and machineries worth about Rs. 75,000/- each were provided to operate the processing units of Banke and Surkhet.
- Quality of processed fruit and vegetable products has been identified as the key criteria for demand of processed products in the market.
- Marketing promotion activities should be continued, supported and linked.
- Revolving and development funds should be augmented made available with low interest rates
- Developed enterprises should be included in the regular support programs of DADOs, and Regional Food Technology and Quality Control Centre.

5. Discussion

The development work during the project period performed was to enhance processing and marketing of agro-products of small, marginalized and poor of rural farm households of Banke and Surkhet Districts of Mid-Western Development Region of the country. It intended to reduce poverty in the area by providing processing opportunities of locally produced agricultural commodities and create additional employment opportunities to the people residing in the project implementing rural areas. The agricultural commodities identified that have greater potential to a larger number of small, marginalized & poor households of the project areas.

The project adopted the following strategies to achieve the project purpose:

- Interactions & meetings among farmers, traders & entrepreneurs were conducted to identify the project implementing groups of Banke & Surkhet districts. The technical support from the key personnel from the field of horticulture, agriculture extension and food technology during the interactions and meetings have been fully utilized for implementing the project activities. The activities mentioned in the project proposal were carried out and completed as proposed. However, slight modifications with regards to time schedules of certain activities were made.
- Trainings & practical demonstrations were conducted for skill development and capacity build up of the group capable to come up with the proposed small scale fruits and vegetable enterprise operation.

The potential market outlets within the region & outside the region were identified and explored for different fruits and vegetable based processed products. Potential traders and entrepreneurs were contacted and linked with the identified groups of the processing units for future scaling up.

6. Conclusion and implication

In order to disseminate project results, following follow-up programs have been proposed.

- District Agriculture Development Office and Regional Food Technology and Quality Control Office should actively provide technical support for the product development activities in the coming years as well.
- Farmer to Farmer (F₁F) technology transfer programs have to be encouraged to promote and develop similar agro-processing enterprise and supported by ongoing institutes like District Agriculture Development Office and Regional Food Technology and Quality Control.
- For the promotional uptake pathways regarding the project outputs, a mechanism has to be established to link farmers, processors, traders, development agencies and local organizations in bridging the gap between productions, processing as well as marketing system of the products.
- Need to adopt and develop the mechanism for forward and backward linkage between producers and processors for the sustainability of the established enterprise.
- Additional fund has to be raised as seed money for the procurement of raw materials in time and run the processing unit smoothly.

- The developed technological package of processing, quality assurance and standards, food microbiology, hygiene and sanitation, labelling, packaging and business plan has to be followed properly.
- Government should create congenial atmosphere by removing hindrances encountered and develop clear-cut policy for establishing agro-processing enterprise and marketing the products.

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