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Annex 9: Main Project Completion Report

1. Background

Siraha is one of the 16 districts of the Eastern Development Region (EDR) of Nepal. The district is situated in the southern part of the country where alluvial soil of *Gangatic* plain with tropical climatic condition make the district the most promising agricultural land in the country. Agriculture is the main and traditional occupation of the habitant and takes major stakes of the household (HH) income. Beside cereal grains which generally used as staple food; fruits, vegetable, and spices also called as high value crops (HVC) are the major source of HH earnings. Area covered by the HVCs in the district is about 15 percent only; nevertheless its coverage is increasing at faster rate compare to cereals.

The district possesses 73913 ha of agricultural land of which only 60757 ha land is being used for cultivation. About 80.52 percent population has agriculture as a main occupation and 31.82 % resident survive below poverty line in the district (DADO, Siraha, 2065). Significant habitants of these sites are Dalit and OBC casts - Paswan, Chamar, Tatma, Khatabe, Dhobi, Tharu chaudhary. The proportion of HHs having the land holding of below 0.25 ha is dominating; 31.82 %, and below 0.5 ha is about 31.73 %. Involvement of female in agriculture in the district surpasses male and goes as maximum as 84.44 per cent. The district has fairly developed road linkage and most of them are graveled serving as artery for the agriculture development. The district is linked with Indian border which accelerate the market network for agricultural commodities. Likewise, east-west highway passes through the district linking with remaining parts of the nation.

HVCs especially green vegetables (**Cabbage, cauliflower, tomato, radish, guards, beans etc**) are the major source of household earning and livelihood for rural poor. They offer potentialities for high income per unit area in areas of acute land scarcity with favorable income generation, poverty reduction and environmental effects. Several high value vegetable crops like tomato, cabbage, cauliflowers, beans, hot papers, vegetables, potato, etc are being intensively cultivated in the proposed VDCs. Due to the road connectivity in almost all VDCs of the district and outsides vegetable products are fairly getting markets. Development of market facility in road accessible areas of the district provides work opportunity and cash income to the different layers of the rural people.

Nonetheless, farmers of the district particularly in the project implemented VDCs earlier do not getting maximum benefit from vegetable growing as they lack knowledge on post-harvest processing and handling of the crops (DADO A/R, 20664/65). Limited knowledge on handling, packaging, transporting, storage and processing of vegetable; growers are compel to sell commodities in cheaper prices as they are perishable in nature and cannot kept a long duration. It is continuously felt that limited knowledge and awareness and poor technical knowhow about the post-harvest processing and market networking, these farmers are not receiving proper benefit from the vegetable farming. Such issues have been constantly rising in Regional Agriculture Technical Working Group meeting in Biratnagar and

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Tarahara (RATWG) and in district level workshop organized by the DADO and DDC Siraha (Workshop reports-DADO, DDC, Siraha, 2007). Considering the challenges and related opportunity to the rural farmers NARDF has also put this topic in his list of priority. So, it is the high time to take this opportunity for the benefit of those rural farmers whose livelihood solely depends on the vegetable farming in small land holdings with limited knowledge on postharvest management and processing and access to the market being more and more competitive.

2. Research implementation performance

The research and development activities of the project implemented in participatory basis including its participant farmers, line agencies and other concerned stakeholders. While forming groups for different activities, small to medium farm holders were given priority encouraging women farmers to participate in 30-50 per cent of total members. Project focused to include disadvantaged, Dalit, Janajati and other socially depressed groups in the program.

The farmers selection, group formation and sample designing was done as follows:

Selection of 3 VDCs where vegetable grower groups are more active were considered for the study. Each VDC will be taken as a cluster and hereafter name of which is proposed based on secondary source of information. These VDCs were – Kusaha Laxminiya, Hanuman nagar pra dha and Pipra pra dha where vegetable farming are flourishing and have greater scope for improvement. Nevertheless, prior to initiation of the project activities the selected VDCs were finalized in consultation with district line agencies-DADO, Siraha and DDC-Siraha. Each cluster had 3 groups of farmers, so altogether there were 9 groups which directly involved in the implementation of project activities. Groups were formed based on the HHs having similar type of agricultural occupations or farming commodities especially vegetables so as volume of products could have market value. In each group there were at least 25 farmers – each farmers from each HH –so altogether there were at least 225 farmers/HHs participating in the project activities. A table demonstrating clear picture of selection procedure is as follows:

Table: Number of farmers selected for program implementation

Cluster	No of Group	No of farmers/group	Total no. of participants
Kusaha Laxminiya	3	25	75
Hanuman nagar pra dha	3	25	75
Pipra pra dha	3	25	75
Total	9	25	225

Socio-economic profiles of HHs from clusters were prepared based on semi-structured questionnaire survey as well as from the secondary sources. For the purpose, a questionnaire was prepared where input from all line agencies

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incorporated. After pretesting it was finalized and administered for the survey works. During the process, a SWOT analysis from each cluster was taken place and problems, opportunity, weakness and thrust of the HVC growers was documented which further helped for program planning and execution of activities. The data/variables gathered through survey were computed in the SPSS (statistical package for social services) soft ware package and summarized accordingly. The outputs of the survey were presented as a technical report and a copy was submitted to the NARDF administration.

3. Situation regarding delivery of outputs/results

Planned activities for the output one –minimization of post harvest losses of HVC/vegetable commodities – social mobilization and awareness campaigns, and orientation about the program were made in all 9 proposed groups. Similarly, Identification of problems, opportunity and needs of the farmers on various issues of HVCs including marketing was documented in group basis and likewise, organization of skill development training, production technology training and post harvest trainings was provided to each participant farmers (both theory and practical). Based on the knowledge and skill given to the farmers group, it was applied in the field and farm basis. Results of postharvest handling of major vegetables and spices were collected. Information on harvesting time and methods, timing and availability of transport, grading, pre-cooling, packaging and storage was documented. The losses caused by spoilage, bruising and trimmings breaking, rupturing and physically damaged was also documented. Those factors like inappropriate packaging, transportation and grading systems primarily responsible for postharvest losses were monitored quantitatively and qualitatively. These records were then analyzed using statistical tools (GenStat), compared with the earlier findings and inference was drawn accordingly. The outputs were discussed among the farmers groups.

For the second outputs – activities like market quality of HVC products enhanced-where the activities like creation of awareness on quality attributes of HVC products with market demand, environment and public health; identification of market points, buyers, suppliers in-and-outside of the district; introduction of grading, sorting, packaging, washing, drying techniques and other post-harvest operations based on market need and consumer demand, organizing interaction and visit programs for farmers' group to the market, buyer, wholesalers, processors and traders were conducted. Similarly, networking of farmers groups with input (seed, fertilizer, machinery, insecticide, and pesticides) suppliers, traders, processors, and public and private service providers including the District level line agencies, research institutions and rural finance institutions were created. Likewise, such activities as providing the farmers with skill based training in areas such as local transport; packaging – weaving of bamboo baskets used for HVC packaging and for transport; production- on farm labor for HVC; primary processing techniques, tool making and servicing – repair of small farm equipments and organization of sharing and interaction programs among farmers' groups, and farmers' clusters were

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implemented. All these activities was planned to provide in group basis to all 9 groups with 225 farmers and after all monitoring of its impact on the quality of marketable produces and their income was made. Results were compared with earlier findings with the help of statistical tools and inference was drawn accordingly.

Third output is basically designed for the up-scaling of project outcomes to wider auditory. In which, use of booklets, leaflets and posters, making a documentary based on achievements, organization of visit and interaction programs, use of local audio and print media, involvement of project partners and beneficiaries for the discussion of project outputs and for development of future action plan was carried out. Booklets and print materials were 1250 in numbers. Trimester wise technical and financial reports, annual reports, visit reports, monitoring reports, workshop reports and completion reports were prepared and submitted timely. Likewise, all the proposed research and developmental activities were implemented, and it is assumed that the outputs and purpose were achieved on given time and budget allocated.

4. Prospects for the adoption of the new technology and achievement of purpose

Small and fragmented lands characterize the major ownership of the 3 project locations of Siraha district where vegetable cultivation is the only and major means of livelihood and household income. Though the vegetable farming is traditional and inherited profession of the rural farmers of these VDCs, lack of awareness on market demands and quality, post harvest handling and processing of vegetables, essential inputs and market linkage making the business more complicated in this competitive and aggressive globalized marketing system. Moreover, perishable nature of vegetable commodities and increased demand of consumer on quality products undoubtedly make the vegetable farming more challenging. Due to these reasons farmers of the project sites were losing a major stakes of their earnings. The project attempted to make these rural poor more aware and knowledgeable towards these above mentioned issues and improve their earnings and livelihood through the contemporary knowledge, exposure to market and concerned stakeholders, market based trainings, and sharing the ideas and experiences with market people on the quality of vegetables and post harvest handling and management. Likewise, it also produced the dissemination materials for diverse and wider auditory in order to make the outputs more broad and adoptive among different layers of the farm and farm community which certainly enable and enhance their capabilities and knowhow leading to better farm return and thereby more secured financial status in the society from vegetable farming.

This project aimed to improve the livelihood and socio-economic status of the farmers residing in the 3 selected VDCs and involved in the vegetable growing in particular and in the Siraha district in general. By aiming that, the project attempted to improve the marketable quality of vegetable produces by implication of advance post-harvest processing and handling technologies in the rural farming. Similarly, it managed to minimize post-harvest loses which farmers are facing right from farm to

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marketing. Though, few progressive farmers of the district were trying to manage the problem, however, lack of skills and knowledge about the post harvest handling and processing and awareness from the grass root level of the growers limiting the success in this regards. Limited knowledge on market information, pricing structure and weak linkage with stakeholders, suppliers and buyers were another part of coin loosing farm income. In those scenarios, the project aimed to improve the knowledge and skills of farmers and create awareness about post harvest works, quality attributes of the products and its market value, and the relation with all stakeholders including financial institutions. However, some specific purposes were as follows:

- Social mobilization and group formations including awareness campaigns on social equity issues, project interventions, and group management skills, and identification of development opportunities, and promote mixed or women only groups to enhance the participations of women;
- Identification of existing and potential vegetable crop production area and marketing points and clustering of farmers by commodities to attain economies of scale in production and ease of looking for markets with sufficient volume that will match the needs of the clients;
- Vocational and technical training on producing identified on and off-season vegetables and post-harvest practices for better market quality and shelf life;
- Capacity building in market awareness (quality, supply requirements, prices, bargaining skills/capacity) and assist in linking farmers groups or clusters to the market;
- Assist farmer groups in production planning in relation to market demand;
- Assist farmer groups in keeping simple farm record books of expenses and income for farm planning and budgeting;
- Networking of farmers groups with quality input (seed, fertilizer, machinery, insecticide, pesticides) suppliers, traders, processors, and public and private service providers including the Department of Agriculture (DOA), local based organizations and rural finance institutions;
- Providing the farmers with skill based training in areas such as transport, packaging (weaving of baskets for transport), production (on farm labor), primary processing (product washing and drying), tool making and servicing (repair of small equipment)

Involvement of indigenous ethnicity and casts, religions, gender, other backward casts (OBC), resource poor households (HHs) and marginalized farmers were received due priority during the farmers selection, group formation, trainings, and implementation of project activities. The project also analyzed the income gap between the existing and after intervention of the project and losses incurred during the whole marketing process and even in warehouses and storages.

So, in nutshell the proposed project aimed to enhance technical capabilities of the farmers through creation of awareness, group formation and mobilization,



demonstration of recent technological advancements, quality assurance and post-harvest management of products and its proper marketing with direct their involvement in the process. It also supported farmers groups to establish cordial and functional relation with district level line agencies, local CBOs, financial institutions, brokers of agricultural commodities and input suppliers.

5. Key indicators of potential impact identified by project stakeholders

Extra earnings from the same occupation of vegetable farming of the rural poor of the selected VDCs with introducing farm fit and sustainable technological intervention undoubtedly enhanced their day-to-day income. The activities which were implemented in such a way during the two year project period, that farmers get maximum experiences and knowledge about making their vegetable crops attractive and marketable with minimum losses during the entire period of farm practice right from field to fork. The practice increased their vegetable crops more demanding in the competitive market system leading to more income and poverty reduction. It is also true that quality vegetable with appropriate market size and freshness fetches more economic return. Skill based training to the each and every participant farmers, visit to the market places and making functional relation with them, direct linkage with input suppliers and buyers, and making cordial relation with concerned district level stakeholders made them more competent in the business and which certainly helped them to stand in any adverse production and marketing situation of vegetable farming. These targeted households will also receive vegetable transporting and packaging materials for better quality maintenance and minimizing postharvest losses uplifting their cash return and value to their family kitchen. So, all these activities definitely contributed to the sustained poverty reduction of the targeted households in one hand and the whole district in another.

6. Proposed follow-up

Though by the end of this project, farmer were more capable of handling and managing their fresh products in farm as well as in market to fetch more income, a refresher training and visit will be an added assets for participating farmers.

7. Lessons learned

The key lesson learned from this project is the importance of post-harvest activities for the rural farming community. Few improvements and added new skills significantly raise the living standard of the farming community.

8. Publications and contacts

500 Copies of booklets on "Post-harvest handling of fresh vegetables"

500 Copies of Leaflets "Post-harvest operation" of fresh vegetables

250 Copies of posters on "different post harvest operation"

