

GENERATION OF EMPLOYMENT FOR WOMEN THROUGH VALUE ADDITION IN HORTICULTURAL CROPS

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Women play a vital role in farming system and contribute substantially in the physical aspect of farming, livestock management, post-harvest and allied activities. Around 43% of the agricultural labour force of developing countries is composed of women but they are often deprived from decision making process due to financial dependency. India has achieved self sufficiency in agricultural production, but a considerable amount of food product gets spoiled in every year due to improper post-harvest operations. To uplift the livelihood and financial conditions of the rural women value addition of horticultural crops can offer tremendous opportunity. The paper discusses different value added product of horticultural crops and their utilisation pattern for large scale employment generation among rural women.

Women contribute around half of the total world population and play a vital role in the farm activities and household management. They contribute substantially in the physical aspect of farming, livestock management, postharvest and allied activities. Their direct and indirect contribution at the farm and home level along with livestock management operations has not only helped to save purchased labour cost but also led to an increase in family income. However, they often deprived from decision making process due to lack of independent income source in hand. Research data showed that around 43% of the agricultural labour force of developing countries is composed of women. Entrepreneurship development among rural

women not only increase national productivity and generates employment but also helps to develop economic independence and personal and social upliftment.

Women entrepreneurs may be defined as women or a group of women who initiate, organise and operate a business enterprise. Women entrepreneurs engage in business due to push and pull factors which encourage women to have an independent occupation and stand on their own feet. According to Sidhu and Kaur (2006) the following are some of the personal and social capabilities which are developed as a result of taking up enterprise among rural women like economic empowerment, improved standard of living, self-confidence, enhanced awareness, improvement in decision-making status, sense of achievement, increased social interaction and improvement in leadership quality.

Importance of Value Addition in Horticultural Crops

Value addition is a process that elevates a production into a product. Value addition is the enhancement added to a product or service by a company before the product is offered to the customers. It is a business strategy for creating new market demands or indulging renewed demand from the set of conventional customers. A value added horticultural product can ignore the risk of seasonality in crop availability and market vagaries. There are three ways in which value addition to farm produce is possible: the primary level involves cleaning, grading and packaging of fruits, vegetables and other horticultural crops; the secondary level includes basic processing, packaging and branding, e.g. packed item and the tertiary level

includes high-end processing which requires supply chain management, processing technology, packaging of processed foods, branding, marketing, etc., e.g. potato chips (Pal and Chatterjee, 2015). Ali (1997) in his work on postharvest processing of agricultural produce stated that value addition includes processes like sorting, grading, cutting, seeding, shelling and quality packaging, etc. The term value chain refers to the full range of activities needed to bring a product or service from conception through production and delivery to final consumers. India produces wide range of fruits and vegetables due to varied agro-climatic conditions. As per the NHB statistics, the production of fruits is 81.28 million tons and that of vegetables about 162.18 million tons (Anonymous, 2013). Fruits and vegetables are highly perishable commodities due to high moisture content and higher metabolic activities. Spoilage to fruits and vegetables mainly occur due to microbial attack, auto-oxidation and insect pest attack. As a result, about 25 to 30% of the production is lost after harvest. The role of post harvest management is important for reduction of post harvest losses of fruits and vegetables and to make them available for longer period in the market.

Value Addition in Fruits: Fruits are rich source of several vitamins and minerals. Mango, papayas are rich in vitamin A. Cashew nut and walnut are rich in vitamin-B1. Bael, papaya, litchi are rich in vitamin-B2 and Barbados cherry, aonla, guava are rich source of vitamin-C. Some fruits are also rich in some minerals like litchi is rich in calcium (Ca) and dry karonda is rich in iron (Fe). Fruits and vegetables are perishables and seasonal. Unless excess production is processed and preserved, it will be wasted. In India only 1.0% of the total fruits and

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vegetables produced are processed in the 3000 food industries .Although India is the second largest producer of fruits and vegetables only 2% is being commercially processed and wastage is estimated to be very high.

Table: 1

Value Added Products of Some Fruits in India

Crops	Existing products	New products
Apple	Juice, jam, jelly, cider, wine, pulp	Osmotically dried rings, canned apple, vinegar, carbonated juice, apple seed for nurseries, pectin.
Apricot	Pulp, squash, Ready to Serve (RTS), jam, appetiser, dried apricot.	Osmotically dried apricot, oil, apricot oil-based cream, etc.
Plum	Pulp, squash/appetiser, RTS, chutney, jam, wine/brandy	Plum sauce, seed oil
Peach	Canned peach, pulp, jam/chutney	Wine, kernel oil
Pear	Canned pear, pulp, jam	Apple pear blend, sand pear candy, vermouth
Mango	Pulp, RTS, squash, powder (amchur), slices in brine, pickle	Pulp/juice from in situ mangoes, pectin from just-ripe fruits
Banana	juice, ripe banana powderm	value addition of banana peel
Grapes	Raisin, juice	Carbonated juice/RTS
Litchi	Juice, squash, nectar/RTS	Carbonated drink

Source: Acharya et al., 2015

Value Addition in Vegetables: Vegetables are rich and cheaper source of carbohydrate, protein, fat, vitamins and minerals. The underground

storage roots and tubers like potato, colocasia, yam, tapioca, elephant foot yam etc. are rich source of carbohydrate. The leguminous vegetables like pea, cowpea, French bean, lablab bean, cluster bean etc. are rich in protein and supply as high as 14% digestible protein. Major minerals obtained from the leafy vegetables are calcium (Ca), iron(Fe) and phosphorus(P) and some of the leafy vegetables are rich in micronutrients like copper, manganese and zinc. Carrot ,pumpkin, sweet potato, colocasia are rich in vitamin A. Vitamin B is present in appreciable amount in pea, beans, garlic, tomato, colocasia, asparagus etc. Vitamin C rich vegetables are cauliflower, cabbage, knolkhol, turnip, tomato, pepper, drumstick leaves, fenugreek leaves, amaranth etc. Most leafy vegetables are rich in carotene, riboflavin (vitamin B2) and minerals. Every year large amount of fresh vegetables are lost due to seasonality and perishability and lack of attention in value addition. The wastage of vegetables can be reduced by producing different value added products of vegetables.

Table 2

Value Added Products of Some Vegetables

Crops	Value Added Products
Potato	Fried chips (chips), French fries, frozen products (potato patties, potato puffs, potato cakes, defrozen products, packed frozen dishes), dehydrated products (like potato flour, granules and flacks), wine, canned potatoes, etc.
Tomato	Tomato paste, ketchup, paste, chutney, sauce, tomato chilli sauce, tomato seed oil, canned tomato (in the form of fresh tomato, tomato juices, tomato-vegetable juice blend, tomato sauce and tomato ketchup) tomatine alkaloid, soup powder, etc.
Cabbage	Package dry leaves, Sauerkrant.
Cauliflower	Dried cauliflower, frozen cauliflower, cauliflower pickle, etc.

Carrot	Carrot shred, frozen carrot, carrot powder, soup powder.
Pea	Dehydrated peas, frozen pea, pickle, soft drinks, etc.
Cassava	Fried chips, hot fries, crisps, nutrichips.
Amaranth	Package dry leaves, Dry powder

Source: Datta et al., 2015

Value Addition in Spices: India is traditionally known as the spice bowl of the world. According to the Bureau of Indian Standards, about 63 spices are widely grown in our country of which 15 spices are grown commercially in India. India is the largest producer, consumer and exporter of spices in the world with a 46 % share by volume and 23 % share by value, in the world market. India produces 574.4 million tons of spices (Anonymous, 2013). Different value added products of spices available in India are spice oils and oleoresin, dehydrated pepper, freeze-dried green pepper, ginger candy, ginger beer/in brine/squash, ginger flakes, garlic pickle and paste, chilli powder, paste, oleoresin, etc.

Table3

Value Added Products of Some Spices in India

Spices	Value Added Products
Black pepper	Oleoresin, green pepper in brine, dehydrated green peppers, canned green pepper, frozen green pepper, cured green pepper, pepper oil, freeze-dried green pepper, white pepper powder, etc.
Ginger	Powder, wines, dry ginger, starch from spent ginger, preserves, gingeriberin oil, oleoresin, ginger candy.
Turmeric	Natural pigments, curcuminoids, oleoresins
Chillies	Powder, pickles, paste, oleoresin, oil, brined chilli, sauces

Paprika	Colour, paprika flavour
Coriander	Powder, oleoresins
Cumin	Powder, oleoresins
Fennel	Sugar-coated fennel, oleoresin, whole, etc.
Fenugreek	Powder, dried fenugreek leaves, etc.
Tree spices (cinnamon, cassia, cloves)	Obesity regulators, stimulators, nutraceuticals.
Cardamom	Encapsulated cardamom, cardamom tea, cardamom soft drink mix, cardamom oil and Oleoresin
Onion	Dehydrated onion, onion powder, onion salt.
Garlic	Garlic powder, garlic paste, garlic oleoresin

Source: Acharya et al., 2015

Value Addition in Flowers: Floriculture is presently considered as the most lucrative horti-enterprise to make profit in the global market. As the flowers are the utmost perishable horticultural farm produce, there remains some hindrance in proper marketing following the standard postharvest management practices by the common farmers. Hence, value addition has become very popular towards the expansion of floricultural trade by the art of preservation of ornamental plants and the creation of novel products that appeal to the tastes and preferences of the customers. The procreative skills such as flower arrangements, artificial colouring of flowers, aqua packing for better presentation, three dimensional windows packing of flowers, garlands, venis, bouquets, greeting cards using petal-embedded craft papers, dry flowers, potpourris, etc. are some of the value-added products that

have acquired a successive position in the global market. Other value added products obtained from flower crops are essential oils, flavours, fragrance, pharmaceutical and nutraceutical compounds, insecticidal and nematicidal compounds, pigments and natural dye, gulkand, rose water, vanilla products, etc.

Table 4
Value Added Products of Some Flowers

<i>Crops</i>	<i>Value Added Products</i>
Rose	Rose water, rose oil, concrete, Gulkand Pankhuri, Rose hips, Rose tea
Chrysanthemum	Garlands, Potpourri , Edible chrysanthemums, Chrysanthemum insecticides(pyrethrin), Medicinal chrysanthemum.
Carnation	Carnation concrete and absolutes, Dry flowers, Medicinal carnations, Edible carnations
Anthurium	Standard anthuriums, Obake anthuriums, Tulip anthuriums.
Gladiolus	Bouquets, Flower arrangement, Medicine, Edible gladiolus, Scented gladiolus
Tuberose	Floral ornaments, Essential oils, Medicines, Edible tuberose
Jasmine	Essential oils, Herbal medicines, Jasmine tea, Jasmine syrup.
Marigold	Phytochemicals, Natural dyes, essential oils, edible product like salad(<i>Tagetes lucida</i>)

Source: Mebakerlin and Chakravorty, 2015

Value Addition in Medicinal and Aromatic Plants: Value-added product refers to the processing of raw herbage into a different state which can improve its efficacy, longevity and look for whom a manifold return would become realized over the additional expenditure due to processing. Value addition becomes now a days, a

new attraction to the entrepreneurs of herbal products leading to development of several categories of produces which were only confined into limited items in the recent past. Value addition is very important in the new millennium where medicinal plants are used globally as home remedy, OTC drugs and crude drug for the manufacturers requiring proper quality standards as per worldwide recognised guidelines failing which the produce will consider as inferior and fetch a very low or no price. Value addition can be achieved in medicinal plants by direct minor processing of collected or cultivated raw herbage to improve the quality, indirectly by maintaining quality standards through some chemical test or by processing the raw herbage into different forms.

Women Entrepreneurship Through Value Addition

Value added product based entrepreneurship can be started by smaller women group with minimum initial investment. Selection of horticultural crops should be based on suitability of the crop to a particular climatic condition, easy availability of raw materials at lower cost, demand of the value added product in nearby cities, good transportation facility and smooth marketing channel.

Steps to develop small scale entrepreneurship

Identification of suitable value added product of the region: It can be made by survey of the local/adjoining markets, depending on supply of raw material, their purchasing price and marketing opportunity of the processed product.

Information on details of the production procedure of the processed product: To acquaint with the production system skill development of the members is highly essential .It can be done through proper training or good product based literature, interaction with the experts and visit to successful value added product entrepreneurs of the adjoining locality.

Details planning of the project: Threadbare discussion by the group members will be required on project area, source of raw materials, total expenditure, probable fund source, expected outcome, distribution of profit among the members, associated risk and government support etc.

Validation of the proposed project in consultation with the resource person or expert of the field from the university or government organisation or NGO covering details stepwise production procedure and target.

Approaching to the funding agency for financial support, subsidy etc.

Implementation of the project as per approved procedures and fund support.

For successful entrepreneurship development group members should possess the following qualities:

Group member should be self confident, active and independent to their attitude and activities.

Group of entrepreneurs should have a viable leader to whom the members should obey with full confidence throughout the project period.

Entrepreneurs should have ability to take wise decision during critical condition.

Members should be ready to take the risk of total failure or sudden changes or premature closing of their activities/entrepreneurship.

There should be transparency in the financial transaction of the business among the entrepreneurs.

Project proposal should be based on broader perspective for overall development of the women community.

Consultation with experienced entrepreneurs or businessman will result better management.

Conclusion

To establish women based entrepreneurship proper orientation, awareness and motivation for development of basic skill to develop and manage the enterprise is utmost important. Knowledge regarding availability of loans, technical know-how, project implementation and managing group members are the key to success. Successful women entrepreneur will contribute in family income, uplift social status and will motivate others to come forward for women entrepreneurship development in rural areas.

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