Transforming Indian Agriculture Through Agripreneurs

** Inderpreet Kaur Kular*
*** Amanpreet Singh Brar*

INTRODUCTION

After independence, the main focus of the Government of India was to frame the major policies on the basis of equity along with growth, and the ultimate aim was to eliminate past economic and social differences between the population. Many efforts have been made towards economic and social stabilization over the past decades, but not much progress has been achieved in the growth of the agro-industrial sector, and in turn, it has not been possible to achieve equitable distribution. Taking the first step towards achieving equitable economic distribution, the Government started with the consolidation of the land holdings, and putting up the land ceiling act. The main purpose was to give the landless some land and increasing the levels of agricultural production, by bringing the under-utilized land in larger farms under farming activities and reducing the farm sizes to a manageable size. After struggling for decades, the farmers ultimately were able to raise the productivity with the advent of the Green Revolution. However, in the late nineties, and in the early 21st century, the growth of agriculture slowed down to less than two percent in comparison to the overall growth rate of the Indian economy, which was above eight percent, which meant that the contribution of other sectors was much more as compared to agriculture. In other words, the disparity between the urban population (dependent upon the industrial and service sector) and rural population (dependent upon agriculture) has been increasing. Thus, there is a dire need to invest in agriculture, so that in addition to agricultural production, the real income of the farmers increases. Farmers lack access to adequate agricultural technology inputs, funding and commercial farming skills have put the quality under the threat. The productivity may be increasing, but better quality is not being achieved. With the increase in agricultural production, there is a need to have the proportionate growth and improvement in the agro-processing industry. The main job of this industry is to transform agricultural commodities into different forms that add value to the products. Agro processing mainly comprises of rice shelling; few cotton ginning and wheat flour mills dominate the commercial industrial sector of Punjab. These are mainly owned by the multinationals or rich industrialists of India, with interest in farm produce supplied by large-scale commercial farmers. For example, *Dabur* is the largest Honey processing company in India, as well as in Punjab. Likewise, *Kashmir Aparies* at Doraha buy honey from farmers by paying only a fraction of the selling price. It has become difficult for the small-scale farmers to provide sufficient means of livelihood for the survival of their families in rural areas. It is ,therefore, imperative to expose alternative income generating opportunities to support poor families, who can no longer fend for themselves from the land-based activities alone. Efforts have been started to bring the rural households on a diverse portfolio of activities and income sources by bringing to them activities of food processing as means to increase the livelihood. There is a huge potential in Agro-processing as it can:

- Increase marketing opportunities.
- People's livelihood gets increased.
- There is an increase in the value of the crops, and in turn, there is an increase in the yield.
- Extend the shelf life of the products.
- Increases food security.
- Constraints of seasonability and perishability can be overcome.
- Empowering women by involving them in agri-processing.

In the Agri-processing industry, the two sectors which have the potential for growth are cereals, vegetables and fruits.

* *Assistant Professor,* Guru Nanak Institute of Management and Technology, Gujarkhan Campus, Model Town, Ludhiana-141002, Punjab . E-mail: inderpreet.kular@yahoo.com
** *Assistant Professor,* Guru Nanak Institute of Management and Technology, Gujarkhan Campus, Model Town, Ludhiana-141002, Punjab.

The main problems faced by these producers are marketing of their produce - there is lack of readily available marketing information and lack of market integration, there is lack of data on supply and demand trends and prices, there is dependency on spot or road side markets, and spoilage is high for small-medium scale enterprises. To compete positively in the market place, they must adopt improved and validated food-processing technologies, there should be enforcement of good standards of quality and hygiene and regulatory instruments should be in place. There are a number of factors which may constrain the ability of small and medium-scale agri-processing enterprises to manufacture and market the processed food products competitively.

❁ Growth and development of the small and medium enterprises has been hindered by non implementation of many government policies.

❁ At the individual level of the firm, factors which have restricted the growth of these industries are limited capital, lack of proper technology, non capacity in processing the technology, the unreliable supply of raw materials, lack of management skills, poor product quality control and most importantly, the lack of proper markets and marketing systems.

These are the main problems faced by India as well as Punjab. The purpose of the present study is to present a road map for increasing the income of the rural households mainly through processing of agriculture produce at farm/village level by small and medium enterprises in the sector. The major focus areas are service provisions, linkages with research and extension, demand-led services, agro-processing technologies, empowering farmers, implementing policies along with government vision and gender issues.

VALUE ADDITION

Agri-processing operations can be divided into two main categories: Primary and Secondary Operations. Primary processing operations include activities such as drying of crops, threshing/shelling, cleaning, grading and packaging. These are the basic activities which are being carried out at the farm, and only transform the products into a slightly different form prior to storage, marketing or further processing. Secondary processing operations entail increasing nutritional or market value of the commodity, and the physical form or appearance of the commodity is totally changed from the original form. For e.g. milling of grains into flour, pressing oil out of vegetables. Now the thing is that milling of the grain into flour is done by the multinational companies and the flour is branded and sold for ₹ 18 to ₹ 20 per kg. Whereas, the companies purchase the gain at ₹ 10 per kg from the farmer. *Why can't we equip our farmers with the technology and train them to be entrepreneurs that they should convert their own produce into flour and then sell it in the market?*

The process of *converting the commodity* is adding value to the product. India is the second largest producer of fruits and vegetables in the world, with an annual production of approximately 50 million tons of fruits, and 85 million tons of vegetables. The matter of concern is that only 2 percent of our horticultural produce goes for processing, while 25% of the total produce is spoiled due to improper handling or for want of storage. Awareness regarding post harvest handling of horticultural produce and its processing can compensate the losses.

With change in the socio- economic status, our living pattern is also changing. More number of working women, job transfers, rising incomes, exposure to the modern concept of living has brought changes in the consumption pattern of food items. Now, people seek a variety of foods with quality standards, which are ready to eat or cook. All these have led to increased acceptance of processed food and beverages. A survey of food and beverage industry by FICCI depicts the industry growth rate of about 8 percent in terms of value. Food is going to be the sunrise industry. It has already surpassed the IT and Pharma in terms of total output addition. The Government has taken several policy initiatives in the food-processing sector, which includes:

❁ De- Licensing;

❁ Provision of Zero-duty import of capital goods and raw material for 100 % Export Oriented Units (EOUs);

❁ Exemptions from corporate taxes in case of export earnings;

❁ Exemptions from Central Excise duty for processing fruits and vegetables.

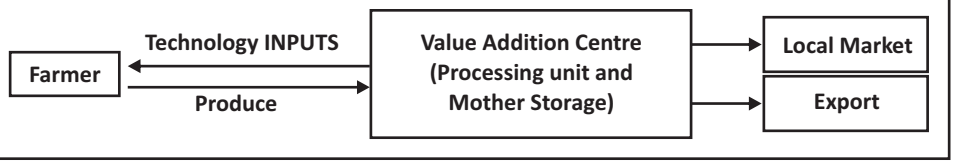
AGRO-ECONOMIC ZONES

At the ground level, there is a need of backward linkages between the processors and the farmers. Lack of linkages lead

to non-uniform and inconsistent supply of raw material, longer chain of intermediaries and lack of remunerative prices for the farmers. Thus, for a win-win type of relationship between producers and processors, there should be no intermediaries; favorable government policies, linkages between the produce processors, research and development agencies and other partners should be in place. Value addition of horticultural products is also viable at the individual or community level. Farmer agripreneurs or woman groups can adopt it on a sharing basis. Such ventures are also assisted by commercial banks in many of their operations. ATMA's (Agricultural Technology Management Agencies) and various institutes of national repute impart training on value addition to farm produce.

The Gujarat Agro Industries Corporation Ltd. has recently proposed a concept of Value Addition Centre (VAC). This VAC can also be applied in Punjab. The VAC is conceived of as a hub of activities for pre-post harvest management of agricultural produce (see Figure 1). It would function as an anchor activity for regional rural development, providing know-how, technology, inputs and market access to small and medium farmers in Punjab. Further, VACs would serve as private-public sector *"partnership nodes"* around which different types of contract farming can be organized, with the government or associated NGOs acting as intermediaries to ensure transport transactions.

Figure 1 : Value Addition Centre Concept



A completely operational VAC would provide an integrated chain from farm to the market, reducing the number of intermediaries at several stages (e.g. Commission Agent, Wholesalers). As such, the VACs would successfully compete with the current monopolistic trader network to access raw material by offering higher prices and an integrated package of services and guarantees to the farmers. Government investment would be required for Research and Development, infrastructure risk spreading, and initial transaction costs associated with pulling partners together. The overall concept of VAC is very attractive, but its organizational requirements are high to become operational in Punjab.

RESEARCH AND DEVELOPMENT

Research can play a pivotal role in identifying and proposing a system to suit the expectations of a producer as well as a consumer. Research programmes should be oriented to the developing of an orderly and efficient system in Agri based industry. In order to be able to introduce reforms, one should know the defects and shortcomings of the present system. This calls for and justifies the necessity of intensive research and investigation, particularly for guiding the farmers-what to produce and how much to produce. This is only possible if a fully strengthened research unit is established to gather market intelligence for the requirements of various commodities within the country and outside the country, which can be produced within a region. Further, the demand for processed food and its growth rate (considering the growing economy as well as the overall recession in the world economy) also need to be studied . Thus, in each state, there needs to be a permanent Research and Development wing under the Ministry of Agriculture, and states should cooperate with each other for the overall policy framework within the country and at the state level to meet the regional demands for guiding the farmers, entrepreneurs and licensing activities. Such steps will ensure that the production in the field or industry depends upon the demand of the commodity within and outside the country.

EXTENSION EFFORTS

Now-a-days, when the ratio of extension workers to beneficiaries is shrinking, the capacity of the extension personnel to reach rural masses individually is also reducing. Therefore, there is a need to organize the individual beneficiaries into a receptive unit in such a way that reaching one means benefiting the whole unit equally effectively. This can be done by organizing the farmers and rural poor in groups. This can reduce the burden on extension functionaries, as instead of contacting or providing knowledge and skill to each individual, representatives of different groups can be

contacted, trained or informed, and the representatives can then pass on the information to the other members of their respective groups. However, this initially will require some efforts from the extension workers to facilitate the formation of coherent units of target population, which can sustain their formation for a longer period of time and can be relied upon to maintain out this type of association of extension workers and beneficiaries. Apart from district/state/block level farmer organizations and farmers' association, there are two types of groups that can be formed to mobilize rural population in putting their own efforts to benefit each other. These are Self Help Groups (SHGs) and Farmer Interest Groups (FIGs).

SELF HELP GROUPS (SHGs)

A Self Help Group is an association of individuals coming together to attain some economic benefits by pooling their economic or human resources. The group is controlled by its members and the benefits are equally shared by its members. Self - help groups can be generally formed for the rural poor, who don't have their own resources to start any income generation activity or to sustain the activities they have already undertaken, or they don't have enough margin money/security to take loans from bank or other sources. At present, this scheme is patronized by nationalized banks. These groups can be motivated to take up agro based activities.

MOTIVATIONAL SUCCESS STORIES TAKEN FROM PUNJAB AGRICULTURE MANAGEMENT AND EXTENSION TRAINING INSTITUTE (PAMETI)

1) S. Surjit Singh, an Organic Farmer turned his dream into reality by mainly growing maize, wheat and sugarcane in his 30-acre farm land. Yield from different crops was not satisfactory due to poor soil health. He contacted the Department of Agriculture and discussed his problem with the block official. With the guidance of the Department of Agriculture of Hoshiarpur, he installed the first vermiculture unit in District Hoshiarpur in the year 2003.With technical guidance from the Department of Agriculture, S. Surjit Singh became the first commercial producer of vermicompost and now, he is selling his produce all over Punjab and Himachal Pradesh. He also started organic farming of agricultural commodities in his farm, which fetch him a good profit . After seeing the performance of this project, the Planning Commission , Government of India finally sanctioned a grant of ₹ 4.59 crores for the promotion of vermiculture in rural areas of the district under *Rashtriya Sam Vikas Yojana*.

2) Another Success Story Of Farm Women In The Field Of Food Processing : *Asli Foods*, the premier in the sector was started by young , educated ladies Mrs. Satwinder Kaur and Mrs. Harwinder Kaur (sisters) in their ancestral village - Channi Kalan in the year 1995 with the cost of ₹ 15 .00 lakh . The Horticulture Department, Punjab motivated these ladies to enter into this sector, and their brother S. Kulwinder Singh (based in U.K.) encouraged them to get the export licence also. Due to their sincere efforts, food products such as pickles, jams, squashes, canned products such as *Sarson da Saag*, *Palak Paneer*, *Karhi Pakora*, etc. got established in the domestic as well as in the international markets. Both the sisters lay emphasis on the quality of the products, the attractive appearance and good packaging to compete in the market.

3) Another successful story is of Mushroom grower, S. Harsunjeet Singh, who after passing out from college, started farming in 1993-1994. He then started Agro forestry. In the year 2000, he started mushroom cultivation after getting training from the Horticulture Department; Hoshiarpur. He produced mushrooms within the long method composting form of 3 years. In the year 2003, he took mushroom cultivation to a large scale by establishing a pasteurized composting unit (latest technology) and a cooling unit , having 4 growing chambers for production of mushrooms throughout the year at the cost of ₹ 40 lakhs. His annual production is around 300 metric tons of fresh mushrooms. He is the lone supplier of spawned compost to the lower Himachal belt (Una, Hamirpur, Kangra & Palampur). With the help of the Department of Horticulture, he has also established:-

- A vermiculture unit & vermiculture nursery for the supply of vermicompost and verms to the farmers of the district;
- Kinnow orchard (6 acres) with drip irrigation;
- Poly green house (1000 sq.mts) for the production of colored capsicum.

4) Fish Farmer, Mr. Gurmeet Singh developed a fish pond in the year 2001 by converting his 2 acres agricultural land

into a fishery unit . He took a loan of ₹ 2 lakhs from the Punjab Agriculture Development Bank, Hoshiarpur for converting agricultural land into a fish pond. The Fishers Department provided him ₹ 32000 as subsidy. Currently, he is producing about 5000 kg fish / ha /year . He is selling his fish crop @ ₹ 35-40 Kg at his pond site. He is doing fish farming by adopting the latest technology as per the guidance of the Fisheries Department.

FARMERS' INTEREST GROUPS

Cotton Growers' Group, Beekeeper Group, Mushroom Interest Groups etc.; or farmers having a common issue over their production like Vegetables' Marketing Group, Fruit Processing Group etc. The FIGs of both poor and rich farmers can be formed, who are growing the same crop, or are having the same enterprises, or are facing the same problems that require pooling of their efforts or resources. However, the most concerned ones are resource poor farmers; the resource rich can tackle their problems with their own resources. But for initiatives like processing of agricultural produce, even the so called resource rich farmers also have to pool in their resources.

Both the groups are similar in the fashion that both are democratic union of like-minded individuals requiring pooling of their efforts/resources, and benefits are equally shared by the individual members.

TIPS ON FORMATION OF SOUND GROUPS

The formation of these groups does not only offer a helping hand to farmers' and extension workers, but also contributes towards the very basic aim of extension by enabling the rural people in helping themselves. However, in order to offer benefits to both the sides, these groups need to be soundly manageable and sustainable. There are some factors or qualities of these groups, which can contribute towards effective management, efficiency and long-term stability of groups like: cohesiveness, dynamism, homogeneity, transparency, participation of each member in activities according to their ability, democratic functioning, regular meetings, writing contributions and rules to meet the exigencies are keys to the groups' success. Until and unless the beneficiaries are given opportunities to participate fully in the development, they will continue to be excluded from the full benefits of it. The formation of groups will strengthen the participation of rural community in the development process, by giving them an instrument to participate in local decision making. Furthermore, the groups are an efficient receiving mechanism for the Government and Non-Government development agencies. However, the extension workers have to play the role of group promoters, who work with the rural poor, building their confidence in their capabilities and promoting their self-reliance.

PRIVATIZATION OF EXTENSION SERVICES

Extension services, which were mostly public funded worldwide until a decade ago, are increasingly coming under the private domain. The transformation of agriculture from a mere subsistence activity to commercialized agribusiness in the developed and developing countries, and the associated gradual change of technology has provided incentives for commercial agencies to invest in this sector. The increasing inability of the government to adequately fund its extension machinery was, however, the real force behind the search for alternative approaches for public funded extension to privatization. Those who argue for privatization of extension education point out the defects in public funded extension, they are - highly inefficient, too bureaucratic, lack accountability, are supply driven rather demand driven, and are dominated by constraints such as operational funds, lack of trained man-power and transportation bottlenecks. Further, the growing dissatisfaction of the users with the quality of extension services available, increased flow of agricultural surplus, increased specialization among farmers and technological developments in mass media have led to the emergence of various types of privatization of extension services. It is high time that private agencies, particularly NGOs, come forward to guide the farmers and prepare projects for them so that all segments of the population grow together.

MARKETING

The agricultural marketing system is a link between the farm and the non-farm sectors. It includes the organization of agricultural raw materials supply to processing industries, the assessment of demand for farm inputs and raw materials, and the policy relating to the marketing of farm products and inputs.

According to the National Commission on Agriculture (XII Report 1976), agricultural marketing is a process which

starts with a decision to produce a saleable farm commodity, and it involves all the aspects of marketing structure or system, both functional and institutional, based on technical and economic considerations, and includes pre and post harvest operations, assembling, grading, storage, transportation and distribution.

A dynamic and growing agricultural sector requires fertilizers, pesticides, farm equipments, machinery, diesel, electricity, packing material and repair services, which are produced and supplied by the industry and non-farm enterprises. The excess of farm output stimulates forward linkages, which require transportation, storage, milling or processing, packaging and retailing to the consumers. These functions are variously performed by non-farm enterprises. Further, if the increase in agriculture production is accompanied by a rise in real income of farm families, the demand of these families for non-farm consumer goods goes up as the proportion of income spent on non-food consumer goods goes up (as the proportion of income spent on non-food consumables and durables tends to rise with the increase in real per capita income). Several industries, thus, find new markets for their products in the farm sector.

AGRI-PROCESSING

The Punjab State is major food grain producing state, but there is very little or no processing of these grains at farmers' or village level. Thus, most of the profit is mopped up by the middle men and processors. The farmers need to organize themselves into commodity interest groups, so that they can install small processing units for grain and pulse crops, which are very easy to handle and can be stored and marketed. The examples of food grains, which can be processed at farmers' level are given below:

(a) Wheat : Wheat milling process aims to break open the wheat grain, remove the outer bran layer and the wheat germ, and then grind the endosperm to the fineness of semolina (*suji*) and flour. The different types of flours that can be produced are patent flour, baker's flour, first clear flour, and second clear flour. Flour numbers indicate their suitability for the production of bread, biscuits, crackers and cakes. In India, the milling industry is producing wheat flour (*maida*), semolina, resultant *atta* and bran. There is a vast potential for the production of whole-wheat *atta* at the village level, as the demand for the *atta* exists in all the households of semi-urban and urban regions. This will help in generation of employment in the rural areas. Since the *atta* is shelf stable for 3 months, production, storage and transportation will not cause any problem. The total cost of machinery and equipments necessary for primary processing of wheat into whole-*atta* is approximately ₹ 2.7 lakhs, and the estimated electricity consumption for processing of wheat into whole wheat flour is about 100 units per tonne. The number of personnel required is seven. The production capacity of the unit is about 2.5 tonnes per 8 hour shift. Even smaller units can be installed at the village level, depending upon the demand and marketability of the entrepreneur.

(b) MAIZE

(i) Processing Of Maize For Use As Food : A major portion of maize is converted into flour and semolina in plate grinders. The grain contains 4 to 5 percent oil, most of which is present in its germ. Germ accounts for about 10 per cent of the maize kernel, and has oil content of 25 to 30 percent. It is like an oilseed having a good potential to produce nearly 1.5 to 2 lakh tones of oil to supplement the oil requirements of the country. The deoiled germ cake has a protein content of about 25 percent, which can be used to produce supplementary and health foods. The degermed grits can be further processed to produce high-value consumer products, such as maize flakes, extruded snacks and fermented beverages using the low fat, low fibre grits. These grits should be the principal focus of the dry milling process. Other maize products (germ, flour and meal) have a variety of food and feed uses. Large-scale processing of maize is mostly confined to wet milling, for which about 5 percent of the maize is utilized. Wet-milling aims at producing starch and other products for industrial applications. However, a good part of starch, dextrins and sweeteners find their way into a variety of convenience and snack foods. A product of maize with good potential is the high-fructose syrup.

(ii) Processing Of Maize For Use As Feed : It is estimated that about 42 million tones of animal feed, and around 14 million tones of poultry feed are produced and used in the country. Out of this, around 3 million tones of animal feed and 4 million tones of poultry feed is produced by organized feed manufacturers. Maize being an important component of feed formulations, the manufacturers need good-quality maize grits for making compound feeds.

(c) Pulses : India is the largest producer of pulses (around 14.5 million tonnes annually) in the world. Nearly 11 million tonnes of pulses are converted into *dal* (dehusked and split pulse); of the remaining 3.5 million tonnes, a large proportion is utilized as whole grain for cooking, and the rest is used for seed purposes. Conversion of pulse grains into

dal is one of the important food-processing industries, as pulses in India are consumed mostly as *dal*. Although a large quality of pulses are processed by medium and small-scale industries, about 1.5 million tonnes of pulses are still processed in the rural sector without proper machinery, which not only affects the availability of *dal* in the rural sector (due to loss of *dal :dal yield* - 65-68%), but also results in the yield of inferior quality products (removal of husk - 93-95%). This inferior quality *dal* fetches 20% less value in the market than the average quality *dal* and hence, it is generally sold in the rural market only, denying the good-quality *dal* to rural consumers.

(D) FRUITS AND VEGETABLES

(i) Dehydration : Dehydration represents the simplest technology of value addition and extension of storage life of fruits or vegetables, by removal of water content to a residual moisture of around 5 percent. This requires the installation of mechanical driers at the rural centres. Owing to the problem of availability of electricity, solar driers can be used to remove moisture levels of fresh commodities. However, solar driers cannot fine-tune the residual moisture to the range of 5 to 8 percent. Another dimension of dehydration is osmo-dehydration, which encounters the use of sugar/salt solution depending on the desired fruit or vegetable. Use of mechanical driers after osmotic removal of water ensures fine quality product and microbiological safety. Osmo-dried fruit products maintain excellent texture and flavour with added sugar. Dehydration has many advantages of reducing the bulk, reducing the freight charges and enhancing the storage life. Dehydrated products could be reconstituted in water at the room temperature or with milk heat, to fresh-like fruit or vegetable, assuring easy consumption. This is applicable in the case of a number of fruits (like mango, pineapple and jack fruit), vegetables and mushrooms.

(ii) Minimal Processing of Fruits and Vegetables: Central Food Technology Research Institute, Mysore (CFTRI) has done considerable work on minimal processing of vegetables. Conditions have been established to minimally process as many as 27 vegetables and store under optimum low temperature conditions. These vegetables include ash gourd, beet root, beans, bitter gourd, carrot, cabbage, cauliflower, cluster beans, coccinia drumsticks, cucumber, field beans, green peas, green chillies, knol khol, okra, onion, plantain, ridge gourd, snake gourd, tomato, turnip and leafy vegetables such as coriander, curry mint, fenugreek and spinach. The technology has been successfully transferred to five industrial entrepreneurs, which in turn serve to link the rural production centres with the processing centre.

(iii) Processing of Under-utilized Fruits : Several fruits like *ber*, wood-apple, *jamun, amla*, and custard apple are grown under natural conditions in the forest area or wastelands without much care by the human beings. These fruits contain useful compounds of biofunctionality such as prominent anti-oxidant activity, anti-platelet aggregation, and peroxidase inhibition. Careful collection of these fruits and utilization in many ayurvedic preparations can fetch considerable income to the poor families. CFTRI is continuing to do more research on the extension of the storage life in fresh and processed forms of such fruits.

iv) Jam, Jelly and Marmalade : Jam is prepared by boiling fruit pulp with sugar to a moderate consistency. Commercially prepared product has *45* parts of fruit pulp for every *55* parts of sugar and contains about *68* percent soluble solids. Jelly is prepared by boiling clear fruit extracts with sugar and additives to a stage at which a clear gel forms. Marmalade is a fruit jelly, wherein, the fruit slices or peels are suspended. It is generally prepared from oranges and lemons.

(e) Spices : It is a process for making ready spice/curry powders for *sambher, rasam, pulao* and other preparations. The dried clean spices are powdered to *40* to *50* mesh size. The powder is cooled to room temperature and sifted. The spice powder is placed in airtight containers and fumigated. The powder is packed in flexible pouches for marketing. For curry powder preparation, the cleaned dry spices are given a mild roasting (operational step), mixed as per the recipe and ground to *40* to *50* mesh, cooled to room temperature, sifted, fumigated and packed.

CONCLUSION

To revamp agricultural production and improving the agriculture based rural economy, the following steps are proposed:

(a) Production of high value crops, where the land is suitable and irrigation potential is present.

(b) Increasing the profit margin of the farmers by introducing primary processing at the farm or village level.

(c) More employment opportunities are created for the landless population at the village level by introducing small scale agro processing units at the village level. For this purpose, research and development system under the Ministry of Agriculture and Cooperation needs to be reoriented in order to cater to the requirements of the extension system and farmers for need based production and marketing. In addition, various programme sanctioned for agriculture and rural development such as Food Security Mission, Horticulture Development Mission, *Rashtriya Krishi Vikas Yojana*, Innovations in Technology Dissemination, NREGA, *Krishi Vigyan Kendras* and Micro Irrigation Scheme etc. need to be operationalized in coordination with each other, so that the limited money and other resources are utilized efficiently.

REFERENCES

1) Boer, K., and A. Pandey, (1997), *"India's Sleeping Giant: Food"*, The McKinsey Quarterly, No.1. CEPAL/GTZ/FAO. 1998. *Agroindustriay Pequena Agricultura: Vinculos, Poencialidades y Oportunidades Comerciales, Naciones Unidas, Santiago de Chile.*

2) Gandhi Vasant, Kumar Gauri and Mansh Robin, (2001), "Agro-industry for Rural and Small Farmer Development : Issues and Lessons for India", *Indian Food and Agribusiness Management Review*, Volume 2, pp. 331-344.

3) Goyal, S.K. (1994), "Policies Towards Development of Agro-industries in India", In G. S. Bhalla, ed., *Economic Liberalization and Indian Agriculture, Chapter VII* (pp.241-286), New Delhi: Institute for Studies in Industrial Development.

4) Mhazo Norman, Mvumi B.M., Nazare R.M. and Elijah Nyakudya, (2003), *"The Status Of The Agro-Processing Industry In Zimbabwe With Particular Reference To Small And Medium Enterprises".*

5) NAAS (2006), *"Employment Opportunities in Farm and Non-farm Sectors through Technological Interventions with Emphasis on Primary value Addition"*, Policy Paper No.37.

6) Research Bureau Studies Of The Economic Times; New Delhi Various Issues.

7) Srivastava, U.K. (1989), "Agro-processing Industries: Potential, Constraints and Tasks Ahead." *Indian Journal of Agricultural Economics*, 44(3), pp. 242-256.

8) Sekhon Amandeep Singh, (2006), "A Group Approach in Agricultural Extension" , *Advances in Agriculture Technology*, published by Punjab Agriculture Management and Extension Training Institute, Ludhiana.

9) Singh Sukhwinder, Singh Parampal and Brar Aman Preet Singh, (2006), "Market Led Extension", *Advances in Agriculture Technology*, published by Punjab Agriculture Management and Extension Training Institute, Ludhiana.

10) Sharma V.K., *"Advances in Horticulture"*, Deep and Deep Publications, New Delhi.

11) Vaidya, C.S (1996), *'Strategy for Development of Agriculture in Himachal Pradesh with Reference to Economic Liberalization Policy',* Agro-Economic Research Centre, Himachal Pradesh University, Shimla.