

Growth and Potential of Potato Processing Industries in India

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Abstract

The purpose of this paper is to explore potato processing potentialities and growth of processing industries in organized and unorganized sectors. Potato being a bulky and perishable vegetable, its conversion to processed products not only adds shelf life, eliminates wastages and problems of storage along with providing different preferred processed products year round. There has been tremendous growth of the processing industries in the organized sector with the involvement of large number of multinational as well as national entrepreneurs in different potato growing states. The unorganized sector not only provides inexpensive processed products for the domestic markets but also caters employment generation in the rural sector. For the processing of potato specific varietal characteristics are required for which large number of varieties specifically suited for processing has been developed by CPRI Shimla. Technologies have been developed for the efficient storage of potato under cold storage to enable the regular supply of the required quality and quantity of processing type potato to the industry. An attempt has been made to review different aspects of potato processing industries in this conceptual paper.

Key words :

Potato processing; organized sector; unorganized sector.



Introduction

The food processing and value addition possess immense potential for reducing wastage, enhancing

agricultural growth along with improving the economy of the farmers. Additionally it contributes to the substantial employment generation in the rural as well as urban sectors. In the modern era of urbanization and rise in per capital income as well as increase in the number of working couples the consumption pattern in favor of processed potato has drastically increased. In this context the processing of agricultural products is very important in tropical and sub tropical countries. The importance arises due to mitigation of high post harvest losses in warmer countries particularly in fruits and vegetables.

Since potato is a bulky and perishable vegetable its conversion to various processed products is an option to extend the shelf-life, save the wastage during gluts, solve the problem of storage as well as cater to consumer preferences belonging to different age groups and social strata (Marwaha *et al.* 2006). The demand for processed potato products like chips, French fries, flakes, etc have been is continuously increasing. In spite of this spurt, organized and unorganized Indian processing industries jointly consume about 4% of the total potato produced in the country as compared to about 30–67% in the developed European countries and North America (Rana and Pandey 2007).

Potato processing is very important part of agro processing in India. With the rapid urbanization and improvement standard of living, potato processing industry has shown phenomenal growth in recent years (Rana *et al.* 2004., Pandey and Sarkar, 2005., Pandey *et al.*, 2006). Potato processing is very important in making India self reliant in sustaining the food production and nutrition. Value added processed products are opening up new market avenues in the national and international markets. This has resulted in cultivation of specific processing varieties of potato even in areas traditionally unknown to potato cultivation.

Literature Review

Indian potato processing industry can be broadly classified in organized and unorganized sectors. French fries, *aloo bhujia* and potato flakes/flour are manufactured under organized sector while potato chips are made by both the players. Dehydrated potato products like potato chips, potato shreds, potato *papads*, potato *warries* and other products having potato as full and partial content are mainly manufactured under cottage industries or at home scale processing under unorganized sector. Currently 2% of the total produce is processed in organized sector and almost similar quantity is processed by unorganized sector. The utilization of raw material by the organized potato processing industry in India has increased from 1.25 lakh tons in 2003 to 4.40 lakh tons in 2007 and the total consumption of potatoes in the organized and unorganized sector is expected to be about 17.40 lakh tons in 2010 which will be > 6% of the total potato production (Rana and Pandey, 2007).

Dhillon *et.al* (2015) studied the status and development opportunities for potato processing in Punjab and reported that in the state the present level of production of potato is about 2.1 million tones. Out of which only 0.5% of the total produce is processed indicating a huge scope for the value added products like chips, French fries, dehydrated potato, potato floor etc. They emphasize that the existing cold stored facilities in the state are inadequate and out dated and there for need modernization and also construction of efficient new cold stored facilities.

Potato processing under organized sector

Potato processing industry in India is on the threshold of rapid growth and is expected to grow to about 345 thousand MT by the year 2006 and further to about 1740 MT by 2010 from a mere 125 MT in 2003. India possesses wide agro-climatic conditions and areas suitable for adequate and round the year supply of processing quality potatoes. In addition, now we have potato varieties that have been specifically bred as per requirements of the processing industry. Utilization of potato in higher proportion by the processing industries shall not only avoid glut like situations but enhance the potato revolution in India. The

estimation of the requirement of raw material (processing quality potatoes) for potato processing industry is of paramount importance. (Das, 2003).

Value-added processed products are opening up new market avenues in international agricultural trade, and as a result, the farmers are finding it highly remunerative to grow potatoes even in areas that were traditionally not under potato cultivation. The multinationals companies in India are now increasingly opting for indigenous processing varieties, which are rapidly replacing the exotic American and European varieties. At present, the global potato export stands at 13.27 million tonnes per year amounting to approximately US\$ 4.75 billion, with processed potatoes comprising 4.12 million tonnes per year with an annual turn over of US\$ 2.90 billion. To be competitive in global potato trade, which still continues to be a European affair, the country needs to accelerate the development and diffusion of suitable quality-enhancing technologies in the processing sector. However, institutional innovations must accompany the technological progress to attain a leading role in international potato processing trade. Potato processing proves to be an important option for India's becoming self-reliant in sustaining the country's food and nutrition (Pandey *et al.*,2006).

In India, major four segments of potato processed items are: potato chips, French fries, potato flakes/powder and other processed products such as dehydrated chips, *Alu Bhujia*, *Samosa*, and *Tikkis*. However, potato chips still continue to be the most common and popular processed product and presently constitute 85% of salty snack business worth Rs 25 billion (John 2005) accounting over 60% of the processing capacity of the industry. Frito Lay with 45% market share is the snack food leader followed by 27% share by Haldiram and 11% by Indian Tobacco Company (ITC) (Eijck 2007). The production of potato flakes/powder is witnessing an impressive growth with their share in total processing sector touching about 17.6% in 2005. Multinationals like M/s PepsiCo India Holdings Pvt. Ltd. and M/s McCains Food Ltd are also consolidating their market shares with diverse processed products like frozen, canned and value added potato products. Simultaneously other multinationals are also directly or indirectly tying up with their Indian counterparts on different collaborative ventures to supplement and diversify this emerging sector. About 28 industries manufacturing potato chips, flakes and French fries have come up in the organized sector in India from just 4 or 5 companies in 2003 (Singh *et al.* 2008).

Earlier all the major potato processing industries were located in and around Delhi and in Punjab, but thereafter several new multinational and Indian processing industries came into existence in different parts of India, particularly at Kolkata (West Bengal), Guwahati (Assam), Indore (MP), Rajkot and Mehsana (Gujarat), Haridwar (Uttaranchal), Pune (Maharashtra) and Coimbatore (Tamil Nadu). This has resulted due to increased demand of processed potato products availability of indigenously developed potato processing varieties in large number.

Gupta and Kamalvanshi (2008) conducted a study to determine the role of potato processing industry in increasing income and employment in Uttar Pradesh, India. It was found that processing was the most important but most neglected sector in this area. The benefit cost ratio was higher in manufacture of potato processing products like chips and Kurkure. In addition due to, multiplicity of small production centres with unskilled and unorganized setup the returns were poor. It was suggested that promotional policies can help farmers to grow processing oriented varieties and development of whole infrastructure. Processing can also help in exploring export avenues like what is being done in other crops to benefit local farmers with better share in consumer price and better products at easier and cheaper rate after processing Pandey *et al.*(2009) reviewed the potato processing scenario of India and reported that in the last ten years after the release of India's first processing varieties, Kufri Chipsona-1 and Kufri Chipsona-2, by the Central Potato Research Institute, Shimla followed by Kufri Chipsona-3 and Kufri Himsona have completely change the scenario. About 30 Indian and multinational companies manufacturing potato chips, flakes and

French fries have been installed in all the four zones of India from just 4 or 5 companies in 2003. The unavailability of good quality processing potatoes in desired quantities throughout the year is the main hindrance for the processing industries. The important requirements of the processing industry are development of suitable varieties for French fries, early maturing processing varieties for plateau region, development of temperature insensitive processing varieties, breeding varieties resistant to cold sweetening, specific breeding for problematic regions, development of yield and quality enhancing technologies for processing varieties; developing low-cost alternative storage technology; improving the infra-structural facilities and developing inexpensive technologies for the production of diverse potato products.

Rana et al. (2009) conducted a survey to assess the demand of processed potato in household consumption in Punjab state. It was estimated that people in Punjab spend about Rs. 331.65 crores/annum on processed potato products. This is equivalent to 17,817 MT in terms of physical quantity requiring 39,516 MT of processing quality potato. Forecasted estimates of demand of processing quality potato for the next five years based on annual compound rate, it was found that 1,76,777 MT of processed quality potato will be required for the manufacture of processed products like chips, *allo bhujia*, French fries and other products.

Per capita potato processing in India during 2007-08 was just 365 g (89.69% potato chips, or crisps, 9.28% potato powder/flakes and 1.03% French fries), using 1.475 kg potatoes per capita. This performance compares poorly with that of the leading potato-processing nations such as the UK, the USA, Canada, France and Germany (Rana, 2011).

Rana (2011) reviewed the status of potato processing industry of Punjab state. About 68.25 per cent of the potato produced in the country is consumed as vegetable (table purpose). Punjab contributes 12.17 per cent of the established potato chips capacities in India (Rana and Pandey, 2007). Punjab's proportion for national French fries capacities was 14.29 per cent while this proportion for all potato products processed under organized sector was 12.05 percent. These industries in Punjab mainly concentrate in potato chips, French fries and *Alubhujia*. The Channo (Sangrur district) plant of Frio Lay and Ludhiana plant of little Bee Implex and Partapara (Jalandar) plant of Satnam Agri Industries have raised Punjab to a respectable position in overall Indian potato processing scenario of the country. In addition, large number of small processors also manufacture and market potato products in the state.

Potato processing under unorganized sector

There is a big market for inexpensive dehydrated potato chips, cubes and other products which can be easily prepared at the cottage industry level and can provide employment to the rural youth and village women.

Sikka et al. (1989) studied the economics of potato processing at village level in Uttar Pradesh and reported that the recovery of processed product was to the tune of 17% only after incurring the cost towards production with the net profit of 28.65%. The major problems of potato processing at village level were identified as highly perishable nature of potato, higher cold storage charges, unsuitability of weather and fluctuating price of potato etc.

Rani and Ezekiel (2001) in their study conducted market surveys at Shimla, Mohali and Chandigarh to collect information on the quantity and quality of processed potato products produced under the unorganized sector. The results revealed that potato chips, potato sticks, and potato '*bhujia*' were the most common processed products available in the market. The quality of the product was poor due to poor quality of potatoes used, thin slices and unsatisfactory packaging.

Jame et al. (2001) carried out a survey to assess the market share of different processed potato products in

Meerut, Ghaziabad and Delhi, India. The results showed that processed potato products comprise a sizeable portion of snack foods. Unorganized sector had got strong market presence in the market in the processed potato products category particularly in case of potato chips where it shared equally with branded chips. However, '*lachha*' and '*bhujia*' market was still dominated by branded players. The authors suggested that potato processing in unorganized sector had a great promise provided they got an assured supply of processing quality potatoes year round.

Marwaha and Sadhu (2003) studied the cottage potato processing industry. A simple, indigenous and inexpensive technique for the preparation of potato-*sabudana papads* on a small scale was developed which can be easily adopted by the cottage industry. This technique involves the preparation of *papads* from a mix prepared in the proportion of 100 g of mashed potato and 20 g of partially cooked *sabudana* powder followed by sun-drying. Four exotic (Atlantic, FL 1625, FL 1533 and FL 1584) and six Indian (K. Badshah, K. Chandramukhi, K. Jawahar, K. Jyoti, K. Lavkar and K. Pukhraj) potato cultivars were evaluated for processing into *papads* by this method. Exotic cultivars which had higher tuber dry matter content produced high yield of *papads* (36.1-47.8 g) as compared to Indian cultivars (27.9-39.2 g). On frying, the average oil uptake of the *papads* made from exotic cultivars was lower and the average expansion rate was higher as compared to Indian cultivars. Based on yield and sensory characteristics of *papads*, 'Atlantic' among exotic and 'Kufri Chandramukhi' among Indian cultivars were found to be most suitable for the preparation of *papads*. Potato *papads* were found to be acceptable up to 6 months of storage in the sealed polyethylene bags at ambient temperature without any change in sensory characteristics.

Sadhu (2008) studied manual processing of potato in Banaskantha district and revealed that the cost of manual processing per quintal of potato was Rs. 915.58 for wafer and potato stick where as for perforated wafer it was Rs. 988.58 due to higher cost of processing and less production due to wastage. The investment cost, raw materials cost and labour cost for wafer and potato sticks was Rs. 121.00, Rs. 559.58 and Rs. 235.00 where as for perforated wafer, it was Rs. 121.00, Rs. 557.58 and Rs. 310.00 respectively. The entrepreneurs get Rs. 89 per quintal raw potato where as the processors got Rs. 326 per quintal processed potato. So if the farmers sell potato after processing, they may get value addition of Rs. 326 per quintal potato. The major constraints faced by the small scale domestic potato processors face problems like inadequate marketing facilities, unsuitability of weather, limited knowledge about processing, and price instability of the raw material potato.

Dehydrated potato products are very common in Maharashtra and Gujarat. Sun drying of potatoes in the form of 2-3 mm thick slices (Chips), shreds and *papads* is quite common. Potato and *papads* and other home made products having partial potato content like *waries* and *chakari* are also common in many parts of India. Such products are also exported to meet the specific and traditional demand of NRIs in various parts of the World. (Ezeikiel *et al.* 1999., Rana , 2011).

Growth of potato processing industry

Potato processing in India has shown a tremendous growth in the recent past, creating a proportionate increase in demand for processing quality potatoes. Growth rate of potato processing in organized sector is approximately 25% which is likely to continue for the next 5 years, placing lot of demand on quality processing raw material. Amongst various processed products, French fries are in great demand. The internal demand of French fries in the country is around 8700 MT per annum, which is expected to increase to 24000 MT by 2010–2011 (Singh *et al.* 2008). There is a need to meet this demand through indigenous production of fries which will not only cut down on the cost of fries in the retail chain, but also have millions of rupees on foreign exchange through reduced imports. The demand of potato flakes is growing continuously in India due to increased usage of fried snacks (*Alu Bhujiya*), extruded products,

soup powders, pasta, fabricated chips and French fries. India presently imports about 3500 MT of potato flakes every year, although, there are 4 big flakes manufacturing industries in the country (Marwaha *et al.* 2008). According to projections, India which presently produces about 25 million tonnes of potato would be producing about 50 million tonnes by year 2020 (CPRI 1997). A conservative estimate shows that nearly 10% of this projected potato production (5 million tonnes) will account for processing.

For potato chips and *alu Bhujia* processed industry growth has been observed (Chengappa, 2004., Pandey *et al.* 2006., Rana *et al.* 2004., Pandey and Sarkar, 2005., Rana *et al.* 2008). These two processed products contribute sizely (upto 90 per cent share) followed by potato flakes (9 per cent) and French fries (1 Per cent) (Rana and Pandey, 2007). Potato chips and *alubhujia* are the most popular snacks these days among all sectors of the society and constitute 85 % of the Rs. 2500 cr salty snacks business in India (John, 2005).

French fries is relatively new processed potato product in Indian market but it being increasingly popularized by world's largest French fries company, McCain by establishing its Indian subsidiary, McCain Foods India Ltd., at Mehsana (Gujarat) during 2006 with 30,000 MT capacity of frozen French fries (Rana and Pandey, 2007., Rana, 2011). Other important French fries producing industries include Golden fries (Coimbatore) and Satnam Agri. Industries, Jalandhar. Potato Flakes/Floor is another important processed product with growth steadily increasing from 0.37 % in 2005-06 to 1.11% in 2010-11. Important players in this sector are Feber Leather (Kolkatta), potato King (Kolkatta) and Nagpur based Merino Industries Ltd. (Rana, 2011).

Shriniwas (2011) studied the growth and potential of potato processing industries in two districts of Karnataka viz., Belgum and Hassan. It was observed that in Belgaum district, the quality of potato seed by the processing industries has shown a fluctuation with significant growth rate is 1.97% while in Hassan district potato sold by the processing industries showed a fluctuation with highly significant growth rate of 3.82% because of the fact that consumer preference for processed products and potato is increasing over the years.

Ashokan and Arya (2011) reviewed the agribusiness of potatoes in Gujarat state with particular reference to a case study of McCain. McCain Foods Limited, a Canadian Multinational company. McCain though well known for French Fries (accounting one third of the world production) has a range of other frozen food products such as Appetizer, pizza, vegetables, deserts, oven meals etc. McCain has 55 production facilities worldwide in different continents and markets its products to more than 110 countries. McCain started to explore investment opportunities in India during 1994. Initially the company imported French fries and wedges for the institutional clients such as Mc Donald. It had established distribution network for its imported products. As McCain foresaw growth of their institutional clients and organized retailing the company started trials to produce the required quality in the country. McCain selected eleven imported and two local potato varieties and conducted extensive research in different parts of the country such as Punjab, West Bengal, Uttar Pradesh, Haryana, MP, Karnataka and Gujarat. The company settled for Gujarat and found suitable two imported varieties and one local variety for production and processing. It had established world class potato processing plant near Mehsana in the year 2007 with capacity of 30.000 tonnes per annum.

Currently, McCain Foods (India), a wholly-owned subsidiary of its Canadian parent, rules the potato specialty market with frozen products such as French fries, *aloo tikki*, McCain Smiles and McCain Potato Cheese Shotz. Balaji will enter this space through Iscon Balaji Foods, which currently manufactures ready-to-cook potato flakes. The firm, which has a strong backend supply of potatoes, will manufacture french fries near Ahmedabad (Ganguly and Sharmana, 2014).

A number of potato processing companies have worked with the farmers for many years and have also

started contract cultivation due to their specific requirements. Varieties like Kennebec, Shepody and Santana have been introduced by MCains for processing French fries and other potato products and Pepsi has introduced Atlanta and Lady Rossetta for processing of Wafers. The farmers have reported high profits as their yields of potato have increased up to 40 tons/ha. due to the good quality seed and technical services provided by these companies. In fact Mc Cains have also set up their processing unit in Gujarat considering good availability of potato. The other companies like Pepsi, ITC, Parle, Haldiram and Balaji are sourcing large volume of potatoes for the processing of wafers from Gujarat. Most of the potato exported from India is also of Gujarat origin. (Anonymous, 2013).

The Mehsana plant, which was initially manufacturing the international range of McCain products, is now producing products tailored to local Indian tastes, including aloo *tikki*, *tandoori* veg nuggets and chilli garlic potato bites. Besides upgrading the yield and quality of local potato varieties (Kufri Chandramukhi and Kufri Chipsona-1), McCain has also introduced international potato varieties such as Shepody, Santana and Kennebec for Gujarat farmers for processing high quality French fries. The company is working with about 1200 contract farmers over 4000 acres in Gujarat to cultivate 'processed quality' potatoes in the State. To meet the enhanced plant capacity, McCain Foods is working with contracted farmers to double the acreage under potato cultivation. (Pandit and Virendra 2015).

Varietal Choice for Processing

Certain specific quality parameters (physical and biochemical properties) are essential for consideration of a particular potato variety for its suitability for processing. Shape, size, depth of eye and reducing sugar content are important quality parameters (Marwaha *et al.* 2003). Peeling losses in small sized potatoes with deep eyes are higher than the large sized potatoes with shallow eyes (Ezekiel *et al.* 1999). Patel *et al.* (2003) reported the tuber yield, dry matter and storage behaviour of seven potato cultivars, including those suitable for processing in the subtropical plains of Gujarat, India (Kufri Badshah, Kufri Chandramukhi, Kufri Chipsona-1, Kufri Chipsona-2, Kufri Jawahar, Kufri Jyoti and Kufri Lauvkar). The physiological weight loss was lowest in Kufri Chandramukhi. Yield was highest in Kufri Badshah (417 q/ha), followed by Kufri Jawahar (389 q/ha) and Kufri Jyoti (342 q/ha). Results showed that Kufri Badshah, with high dry matter, good keeping quality and high yield, is the most suitable for cultivation in the tropical plains of Gujarat for table consumption (chip production). Kufri Jawahar, a medium early cultivar, can also be used to avoid monoculture.

Experiments were carried out to explore the possibility of increasing the availability of raw material to the processing industries in Meerut and Agra Commissionaries of Uttar Pradesh (India), which constitute approximately 30% of the total potato production in the country. Six cultivars/hybrids (Kufri Chipsona-1, Kufri Chipsona-2, Kufri Jyoti, Atlantic, FTL-1533 and HT-92-621/MF-2) were tested over different seasons or locations for yields and processing qualities. The produce of hybrid HT-92-621/MF-2 from early autumn crop could provide fresh potatoes for processing in November. Fresh potatoes obtained in March with processing cultivars Kufri Chipsona-1 and Kufri Chipsona-2 from early spring crop also had acceptable processing qualities. Agra Commissionary appeared to be a potential source of processing potatoes to feed the nearby processing industries (Pandey *et al.*, 2004).

Pandey *et al.* (2009) reported that the concerted research efforts by the Central Potato Research Institute, Shimla resulted in the release of India's first two potato processing varieties christened as Kufri Chipsona-1 and Kufri Chipsona-2 in 1998 in a record time of eight years. This was followed by the release of an improved processing variety Kufri Chipsona-3 in 2005 for the Indian plains and first chipping variety Kufri Himsona for hilly region in 2007. These processing varieties produce high yield (>30 t/ha), 21-24% dry matter, <0.1% reducing sugars on fresh tuber weight basis, low phenols and glycoalkaloids, <5% undesirable colour and <15% total defects in chips when grown at different locations in India. The

availability of quality raw material of these varieties and standardization of storage techniques for processing potatoes at 10-12°C with sprout suppressant CIPC [Isopropyl N-3-chlorophenyl carbamate] has changed the entire scenario of potato utilization in India within a short span of 10 years. From the time when the farmers were often forced to throw potatoes on road to the present situation where the processors are ready to pay good premium for processing potatoes. All these varieties are most suitable for crisps and dehydrated products.

However, Kufri Chipsona-1, due to its oblong tuber shape, is also utilized by the industry for the preparation of French fries in addition to crisps and flakes. The future thrust aims at developing (i) varieties for French fries, (ii) varieties which are resistant to cold sweetening and (iii) short duration crisping varieties. To meet the demand of French fry industries, an advanced hybrid MP/98-71 has been just released as Kufri Frysona by the Institute. Both conventional breeding and biotechnological methods are being used to develop cold chipping varieties. The Institute has developed five short duration crisping hybrids viz., MP/2000-516, MP/01-916, MP/01-1006, MP/01-1142 and MP/02-105, which are under advanced stages of testing and have produced high yield in 75 days.

Frozen French fries are the most popular processed potato product throughout the world. India lacks a suitable potato variety for French fry production. The variety Kufri Frysona has been developed to fill this gap to provide suitable raw material to French fry industry. Kufri Frysona gives tuber yields higher than the presently used Indian processing varieties Kufri Chipsona-1 and Kufri Surya. It also excels them in giving high proportion of oblong to long French fry grade tubers and better French fries in taste, texture and colour. Kufri Frysona possesses high field resistance to late blight disease and keeps well under country storage conditions for over eight weeks (Singh *et al.*, 2010)

In order to reduce the cost of production of industries and to provide processed products to the consumers at affordable price, it is essential that the desired raw material is available to the industries at cheap price throughout the year. For this, the industries during the crisis months of August to December, should procure raw material from the identified places. This is one way of reducing the cost of production by the industries. Secondly, the use of high dry matter and low sugar varieties such as Chipsona varieties and 'Kufri Himsona', would give high chip recovery and consume less oil resulting in significant saving for the industries. Our results show that varieties having high dry matter (>21%) produce higher yield of chips with 32.3–34.3% oil uptake, while 'Kufri Jyoti' with (<18%) dry matter produces chips which absorb 38.1% oil on frying. Generally, with every 1% increase in tuber dry matter, there is about 0.75% increase in chip yield and about 1% reduction in oil content of chips (Gould, 1999). The use of high dry matter varieties produce higher chip yield (3–4%) and absorb about 4–6% less oil which lowers the cost of production. The profit earned by the industries by using high dry matter varieties should be passed on to the consumers so as to boost the consumption of processed products and create more demand for future. Besides, use of high dry matter varieties will also provide low fat and low calorie product to the consumers which will be preferred by the health conscious people. (Marwaha *et al.* 2010).

The national and multinationals potato processing companies in India now prefer indigenous processing varieties over exotic ones. These varieties have >21% tuber dry matter content, contain low reducing sugars (<0.1% on fresh wt) and are most suitable for producing chips, French fries and dehydrated products. The availability of these varieties and standardization of storage techniques for processing potatoes at 10–12°C with sprout suppressant isopropyl N-(3-chlorophenyl) carbamate have revolutionized the processing scenario within a short span of 10 years. Currently about 4% of total potato produce is being processed in organized and unorganized sector. (Marwaha *et al.* 2010)

Even though Gujarat accounts for about 5.4% of national production of potato it has a unique status of being a preferred destination for the processors and exporters. For the manufacture of potato wafers a size

of more than 45 mm is preferred by the processors, besides, high total solids (>18%) and low reducing sugar. The farmers of Gujarat by adopting the required package of practices are in a position to deliver the potato of required specifications. Similarly for processing of french fries, special varieties of potato having a length of more than 75 mm and high solids as well as low sugar are required. These varieties are cultivated in Gujarat only. The MNCs like Pepsi and McCains conducted varietal trials all over the country and have found Gujarat and parts of Madhya Pradesh suitable for cultivation of processing varieties of potato due to factors like suitable soils, day length, day and night temperature, and availability of assured irrigation facilities.

Experimental trials at Potato Research Station, Deesa on Chipsona variety of potato have shown very good results and farmers are interested in taking up commercial cultivation through contract farming. Prior to the introduction of the Chipsona, processing industry's needs were being met only from four locations – Deesa (Gujarat), Malwa (MP), Badayun (UP) and Nagrota (HP), aggregating to less than 40,000 hectare, less than 4% of the total potato acreage in the country.

Conclusion

The share of Deesa is highest and cultivation of processing varieties has started taking place in other potato producing areas in Gujarat like Gandhinagar, Sabarkantha and Kheda also. At present Gujarat is the major producer of processing type of potato and this will be of advantage to the companies planning to set up potato processing unit in the state.

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