

AGRO- CLUSTER PROCESSING INDUSTRY: PROSPECT FOR SUSTAINABLE DEVELOPMENT IN ARUNACHAL PRADESH

Nang Rasami Thamoung*
Minam Yomso**

ABSTRACT

Arunachal Pradesh which translates to the "land of dawn-lit mountains", is also known as the orchid state of India or the paradise of the botanists. The state is blessed with over 500 species of medicinal plants, which has a huge potential for enhancing the economy of the state. Due to its wide range of agro climate condition from sub-tropical to temperate and alpine, the state is endowed with various sorts of fruits, vegetables and other agro-products, and has the potential to be the sunrise zone for food processing industry and other agri-businesses. The present paper deals with enormous potential in food processing in the region. The region enjoyed a unique advantage of growing temperate fruits and horticultural crops. Temperate fruits viz. Apple, kiwi, plum, pear, banana, pineapple, orange, kennow, mandarin etc. which are grown on small scale semi commercially but it has the vast potential in term of its favorable climate condition, which gives it, a great scope for expansion of area for temperate fruits production. And with simple value addition of cleaning, sorting and packaging, can increase the income of the farmers to a great extent. But due to lack of infrastructure facilities like poor connectivity with national and international market, inadequate supply chain and poor power supply, is hindering the development of food processing sector in the state, this is where we need to introduce cluster processing industry to utilize the natural resources efficiently and to address the problem of small and marginal farmers of the state. Cluster processing industry is a concept in which an agriculture produce processing unit will be established in the centre of the cluster of villages. It may be based on cotton, groundnut, wheat, paddy, castor, sugarcane, etc. This will bring the processing to the doorstep of the farmers, which will help farmers realize better income for their product and it will also keep a check on the price of perishables and reduce the wastage and in this process simultaneously common infrastructure are also created along with the processing units.

KEYWORDS: Cluster, Agriculture Processing Units, Temperate Fruits, Prospect in Arunachal Pradesh.

Introduction

Cluster processing industry is a segment of Industry clusters which can be defined as a groups of similar and related firms in a defined geographic area that share common markets, technologies, worker skill needs, common supply and distribution chains and which are often linked by buyer-seller relationships. Firms and workers in an industry cluster draw competitive advantage from their proximity to competitors, to a skilled workforce, to specialized suppliers and a shared base of sophisticated knowledge about their industry. Porter (2003) defines a cluster as a " geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types" Cluster processing industry is relatively a new term in india.

At present the Indian economy is witnessing a significant slowdown, with GDP growth at 4.7% in Q3 2019-2020, its lowest in nearly seven years. The COVID-19 outbreak has compounded the challenges and could send the economy hurtling toward a recession. The poor sections of the society are always the

* Assistant Professor, Department of Commerce, Jawaharlal Nehru College, Pasighat, Arunachal Pradesh, India.

** Assistant Professor, Department of Commerce, Jawaharlal Nehru College, Pasighat, Arunachal Pradesh, India.

hardest hit in any disaster or pandemic situation. With about 85 percent of Indian farm households being small and marginal farmers and a significant part of the population being landless farm labours, welfare measures to contain any damage from COVID-19 are definitely going to help them with sincere implementation. Now to revive the rural economy agro cluster processing industry can be a good measure of sustainable rural development after post-covid19 pandemic.

Literature Review

- **Definition of Clusters Industry**

Harvard Business School's Michael Porter defines "clusters as groups of similar and related firms concentrated in a small geographic area" (Porter, 1998). A cluster must consist of interconnected firms in the same fields, specialized suppliers, service providers, firms in related industries, and associated institutions (such as trade associations, universities, technology transfer centres, etc.). Through their competitive and cooperative dynamics, industry clusters are successful in creating competitive advantages for their member firms.

Clusters has been defined as geographical concentrations of inter connected companies engaged in similar or highly related economic activities" (UNIDO, 2005)

"Industrial clusters has been defined as the localization of private firms producing similar and related products"Otsuka and Sonobe(2011) ."

The definition of the term cluster has generated a great deal of intellectual debate and research. A cluster is a grouping of like minded companies (competitors) and talents in a specific geographic area. A feature of clusters is their Statistically significant concentrations of companies and employment in relevant business activities that share common supply and distribution chains.Clusters generate considerable employment and are an Important means of absorbing informal labor in cities(Kumral and Deger2008).

- **Current Scenario of Indian Agriculture Sector**

India's primary sector contributes to about 16% of the total GDP .about 500 million people are engaged in agriculture sector in India. Despite the fact that 60% of the indian population depend on agriculture for livelihood, we are still farming mostly on non-scientific method. In case we switch over to scientific farming only 40 million people will be required to be employed for today's agriculture produce. leading to increase rate of unemployment.

Agriculture is dying as a preferred profession. Bucolic life is not preferred by today's youth. About 65.97% of Indian population lives in rural area (2018 estimates). There is a fast depletion of rural population to urban. Farm size in india is very small.It is declining due to population growth and competition for land. Average farm size in india is 1.2 hectares only (as per estiates of National Sample Survey Office NSSO).One in three farm households has less than 0.4 hectares of land .less than 0.5 per cent are large farmers, having over 10 hectares of land.

Prospects of Cluster food processing Industry

Food Processing is an industry that has immense potential in the Arunachal Pradesh but it hasn't been explored to its optimum level yet in the state of Arunachal Pradesh. If the potentiality of food processing was traced out since from the earlier period it will be game-changer in the region. From the beginning If food processing as an industry was given a second thought by the farmers, intellectuals and other society then today it will tremendously contributes a lot in economic sector as well as it will be very much beneficial for the society of the reason. The state with its vast resources and bio-diversity produces like ample exotic fruits and vegetables can be made economically viable through the food processing industry.

The region need to accelerate development of Mega Food Parks and Mini Food Parks as envisaged and proposed. Under PMKSY, if the entrepreneurs and progressive farmers present to take full advantage they will equip themselves with prospects and benefits for the sustained development of the region. Till today agri-horti produces like kiwi, orange, apple, pineapple, banana, tea, etc, our state is underscoring despite of its large potentiality. If we efficiently and effectively utilized our agri-horti produces like storing, packaging and processing. It will added value to the products which in result create income, employment and reducing the wastage of the produces. If food processing is taken up extensively, it in itself could change the economy of the farming community and consequently, state will be economically sustainable at certain level.

Lack of market knowledge as one big hindrance in take off of the farming sector and called for enhancing farmers' knowledge on latest market trends and demands. To operate food processing as an industry it needed creating of awareness amongst the mass on the food processing sector besides central government's special assistance in grant of funds for implementation of schemes.

The state government has already prepared a roadmap to boost the agri-horti sector based on which schemes are being formulated and launched phase-wise. The State government has set a target to at least benefit 90000 farmers in the state by 2022. Being one of the sunrise industry and full of potential the food processing industry in Arunachal Pradesh needs to be promoted aggressively to achieve its success level. In Recent years it has witnessed a boom in the sector with local entrepreneurs venturing into pickle-production of home-grown products including chillies and bamboo shoot. The State Industrial Policy provides incentives to eligible food processing units with an additional state capital investment subsidy of 20 percent up to Rs 25 lakh.

Food Processing Industry has the potential of dramatically improving rural livelihood opportunities and bridging the rural-urban divide. It establishes vital linkages between the two pillars of economy i.e., agriculture and industry. The fortunes of the Arunachal Pradesh can be explored and achieved if there is a constructive partnership which would transform the food processing sector of the state and thereby also transform. To promote development of viable agribusiness and agro industry based on different agro climates and regions of the country with emphasis on institutional strengthening and capacity building across the value chain the state government, progressive farmers and the society must work in tandem.

Being the apex industry bodies ASSOCHAM played a vital role for bringing this important agenda into notice by organizing the conclave. The agro climatic condition of Arunachal Pradesh is suitable for agricultural and horticultural crops, thus if there is the set up of effective food processing sector it would play a significant role in employment generation as well as harnessing and exploiting local resources.

Government Initiatives /Schemes

Government of India (GOI) has approved a new Central Sector Scheme – Pradhan Mantri Kisan SAMPADA Yojana (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) with an allocation of Rs. 6,000 crore for the period 2016-20 coterminous with the 14th Finance Commission cycle. The scheme will be implemented by Ministry of Food Processing Industries (MoFPI). Pradhan Mantri Kisan SAMPADA Yojana

PM Kisan SAMPADA Yojana is a comprehensive package which will result in creation of modern infrastructure with efficient supply chain management from farm gate to retail outlet. It will not only provide a big boost to the growth of food processing sector in the country but also help in providing better returns to farmers and is a big step towards doubling of farmers income, creating huge employment opportunities especially in the rural areas, reducing wastage of agricultural produce, increasing the processing level and enhancing the export of the processed foods. Under PMKSY seven schemes are being implemented viz. Mega Food Parks, Integrated Cold Chain and Value Addition Infrastructure, Creation/Expansion of Food Processing/ Preservation Capacities, Infrastructure for Agro-processing Clusters, Linkages, food safety and quality assurance infrastructure and Human Resources and Institutions and Operation. PMKSY is expected to leverage investment of Rs. 31,400 crore for handling of 334 lakh MT agro-produce valued at Rs. 1,04,125 crore, benefiting 20 lakh farmers and generating 5,30,500 direct/indirect employment in the country by the year 2019-20.

Scheme for Technology Up gradation / Establishment / Modernization of Food Processing

- Grant of Financial Assistance and Monitoring under the scheme for Technology Up gradation/Establishment / Modernization of Food Processing Industries.
- Eligibility of grant:
 - 25% of Plant and Machinery and technical civil works subject to a limit of Rs.50.00 lacs in general areas
 - 33.33% of plan Plant and Machinery and technical civil works subject to a limit of Rs.75.00 lacs in difficult areas.
 - The application should be made before commencement of commercial production.

- **Procedure Formalities**

The applicant while seeking financial assistance under the Scheme will submit an application in duplicate to any branch of banks/PLI of his choice, with the request for project appraisal and also for availing term loan. Applicant may also draw up the feasibility report with the assistance of a professional consultant and thereafter submit the same to the Bank for appraisal. The format of the application form and acknowledgement to be given by the Banks/FIs are at Annexure-I and II respectively. The respective bank may ask for additional information, wherever required, for the purpose of appraisal of the project and also relating to the loan and grant component.

Government scheme on Agro Processing Cluster

The government scheme on agro processing cluster aims at development of common facilities with modern infrastructure to encourage group of entrepreneurs to set up food processing units based on cluster approach by linking groups of farmers/ producers to the processors and markets through well-equipped supply chain with modern infrastructure.

Each agro processing clusters under the scheme has two basic components i.e.

- **Core infrastructure:** Includes food testing laboratory, cleaning, grading, sorting and packing facilities, steam generation boilers, dry warehouse, cold storage, pre-cooling chambers, ripening chambers, IQF, specialized packaging, other common processing facilities, etc
- **Basic Enabling infrastructure:** Includes site development, development of industrial plots, boundary wall, roads, drainage, water supply, electricity supply including power backup, effluent treatment plant, parking bay, weigh bridges, common office space etc. and at least 5 food processing units with a minimum investment of Rs. 25 crore.

The units are set up simultaneous along with creation of common infrastructure. At least 10 acres of land is required to be arranged either by purchase or on lease for at least 50 years for setting up of Agro Processing Cluster. To view Indicative list of identified agri-horti production clusters (fruits & vegetables) and visit Geo-Sampada on spread & depth of agri-resources

Agro processing clusters set up by Project Execution Agency (PEA)/ Organisation such as Govt./ PSUs/ Joint Ventures/ NGOs/ Cooperatives/ SHGs/ FPOs/ Private Sector/ individuals etc. and are eligible for financial assistance subject to terms and conditions under the scheme guidelines.

The Project Execution Agency (PEA) which is responsible for overall implementation of the projects undertakes various activities including formulation of the Detailed Project Report (DPR), procurement/ purchase of land, arranging finance, creating infrastructure, ensuring external infrastructure linkages for the project etc. PEA may sell/ lease plots in agro-processing cluster to other food processing units but the common facilities in the cluster cannot be sold or leased out.

Proposals for seeking assistance under the scheme are invited through Expression of Interest from time to time. To view notice inviting proposals and to submit proposals online.

Pattern of Assistance

- The Scheme envisages grants-in-aid @ 35% of eligible project cost in general areas and @50% of eligible project cost in the North East States including Sikkim and difficult areas namely Himalayan States (i.e. Himachal Pradesh, Jammu & Kashmir and Uttarakhand), State notified ITDP areas & Islands subject to max. of Rs. 10.00 crore per project.
- The grants-in-aid is credit linked but not back-ended.

Release of Grant

- First installment of 35% of the total approved grant is released to the PEA after incurring an expenditure of 35% of the bank term loan and 35% promoters contribution/ equity;
- Second installment of 40% of the total approved grant is released after incurring an expenditure of 75% of the bank term loan and 75% of promoters' contribution / equity;
- Third & final installment of 25% of the approved is on completion of the project and submission of requisite documents.

Table No.1: District wise Agri-Horti Production

S. No.	Category	Districts
1.	Kiwi	Upper Siang, Tawang, Dibang Valley, Lower Subansiri, West Kameng
2.	Walnut	Tawang, West Kameng, Lower Subansiri
3.	Apple	Tawang, Dibang Valley, Lower Subansiri, West Kameng
4.	Potato	West Siang, Tawang, Lower Dibang Valley, East Siang, Lohit
5.	Ginger	Changlang, Lower Dibang Valley, East Siang
6.	Rice	East Siang, Tawang, Dibang Valley, Lohit
7.	Maize	Tawang, East Kameng, Upper Subansiri, East Siang, Papumpare
8.	Fisheries	Papumpare, West Siang, Changlang, Upper Subansiri
9.	Sugarcane	Papumpare, Upper Subansiri, Upper Siang
10.	Cabbage	Upper Siang, West Siang, Lower Dibang Valley, East Siang, Lower subansiri
11.	Large Cardamom	Papumpare, West Kameng, Lower Subansiri, West Siang, Siang, Lohit

Source: Dept of industries govt. of Arunachal Pradesh

Table 2: Companies of Arunachal Pradesh Operating in the Area of Manufacturing of food Products

Name	Incorp. Date	Status
Dyt foods private limited	2019	Active
Jyj foods private limited	2019	Active
Pine valley fruit canning private limited	2005	Active
Pjy foods private limited	2019	Active
Mount valley foods private limited	2001	Active
Siang river beverages and bottling private limited	2019	Active
Tafragam tea co pvt ltd	1993	Active
Rangkattu tea co pvt ltd	1994	Active
Tai tea company pvt limited	1997	Active
United brothers distilleries private limited	2000	Active
Arunachal distillery & bottling private limited	2000	Active
Mtm wines and bottlers private limited	2000	Active
Eastern himalaya breweries private limited	2001	Active
Frontier distillery pvt ltd	2000	Active
Nefa breweries private limited	2013	Active
Himalayan mineral industries international pvt ltd	1995	Active

Source: <https://www.tofler.in/companylist/arunachal-pradesh/manufacturing-food-products>**Table 3: Selected List of districts of Arunachal Pradesh where Preference will be given in Setting Up of Agro Processing Cluster near these Identified Agro-Horti Clusters**

Districts	Estimated Total Production (Fruits & Vegetables) (In '000 MT)	Major Fruits	Major Vegetables
West Siang	29.00	Kinnow/Mandarin	Cabbage, Cauliflower
Lower dibang valley	14.00	Orange, Pineapple, Banana Kinnow/Mandarin	Cabbage
Lower subansiri	23.00	Orange, Pineapple Kinnow/Mandarin Orange, Kiwi	Cabbage, Tomato, Brinjal
West kameng	13.00	Apple, Kinnow/Mandarin Orange,	Tamato

Source : Govt of india ministry of food processing industry

Production of Fruits in Arunachal Pradesh

Arunachal Pradesh produces a variety of fruits. The different agro climatic and the geographical condition in the different parts of the State enables it to produce a variety of tropical fruits like orange,

pineapple, banana, guava etc and temperate fruits like apple, kiwi, plum, walnut etc. All the districts of Arunachal Pradesh are known for its production of different kinds of fruits and vegetables. Tawang and West Kameng district is famous for its production of apples, walnut and kiwi. On the other hand, East Kameng, East Siang, West Siang, Upper Subansiri is famous for oranges. The other districts like Papumpare, Upper Subansiri, Dibang Valley, Lohit, Changlang, Tirap and Longding produces pineapples and bananas. Trend of production of some of the potential temperate fruits are discuss below with the help of the statistical data from Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.

Table 4: Trends In Apple Production In Arunachal Pradesh

Area in '000 ha.

Production in '000 MT

Crop	2015-16			2016-17			2017-18		
	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)
Apple	4.68	7.28	1.56	4.55	7.18	1.58	4.66	7.35	1.58

Sources : Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.

Arunachal Pradesh is the only State in the north eastern region of India that produces apple on large scale for commercial purposes. It is the fourth largest producer of apple in india . Though apple was being produced in the State since long back but it is of recent that the fruit is being produced for commercial purposes. The State produced 7.35 thousand metric tonnes of apples from an 4.66 thousand ha area of which share of the state in national production is 0.32%.The different varieties of apple grown in the State are Royal Delicious, Golden Delicious, Mollies Delicious, Cooper-4, Starkrimson etc.

Table 4(a): Area, Production and Productivity of Apples in Arunachal Pradesh

Year	Area	Production	Productivity
2013-14	14.27	31.87	2.23
2014-15	14.50	32.00	2.21
2015-16	4.68	7.28	1.55
2016-17	4.55	7.18	1.58
2017-18	4.66	7.35	1.58

(Area in '000HA, Production in '000MT and Productivity in MT/HA)

Source: Directorate of Horticulture, Government of Arunachal Pradesh : Indian Horticulture database from 2013 to 2018

The production of apples in the State increased it high time of 32.00 thousand ton in 2015-16 and record low of 7.35 thousand ton in 2017-18.

Table 5: Trends in mandarin Production In Arunachal Pradesh

Area in '000 ha.

Production in '000 MT

Crop	2015-16			2016-17			2017-18		
	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)
Mandarin	42.64	217.04	5.09	32.62	61.02	1.87	32.73	69.74	2.13
Total national production	396.93	4112.80	10.36	410.43	4437.50	10.81	428.31	5101.21	11.91

Sources : Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.

The total production of mandarin in india is 5101.21thousand MT with 428.31 thousand ha area and 11.91 MT/ha as productivity . mandarin orange is most common citrus fruits grown in india and its occupies nealy 40% of the total area under citrus cultivated in india.Out of the various citrus fruits

grown in india mandarin ,lime/lemon and sweet orange has a commercial importance.Because of its high content of vitamin C it is used in preparing refreshing juice,pickles,squash ,cordials,essential oils and other by –products.The arunachal pradesh state experience humid subtropical climate with high rainfall in monsoon(summer) and low temperature during winter months just like the other north east states, which make the state suitable for citrus fruits production and has been identified as one of the hot spot for citrus. The Common rootstock used for budding of mandarin oranges are trifoliolate oranges,kharna khatta ,C.latipes and C. Jambhiri .in thye above table we can see that ,the state recorded its high production during the period 2015-16 with a total national market share of 5.277 %(217.04/4112.80) and low during 2017-18 of 1.367 % (428.31/5101.21) .and the region behind this deline is the lack of desirable planting materials,lack of application of amendment in acidic soils,no control of insect pests and diseases,lack of marketing facilities,lack of processing and lack of extension support are some of the major problems. A suitable strategies covering the integrated or the cluster approach can be formulated to address the problems for proper management of the mandarin(orange) production in the state.

Table 6: Trends In Walnut Production in India

Area in '000 ha.

Production in '000 MT

Sates Producing walnut	2015-16			2016-17			2017-18		
	Area(ha.)	Production (MT)	Productivity (MT/Ha.)	Area(ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)
Arunachal Pradesh	1.11	0.60	0.54	0.95	0.48	0.50	1.00	0.63	0.63
Himachal pradesh	4.47	2.25	0.50	4.45	2.14	0.48	4.44	2.46	0.55
Jammu & kashmir	69.24	206.43	2.98	89.34	264.24	2.95	85.62	275.45	3.22
Uttarakhand	17.24	19.32	1.12	17.37	20.47	1.17	17.56	21.17	1.20
Total	92.06	228.60	2.48	112.12	287.32	2.56	108.63	299.71	2.75

Sources : Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.

Arunachal Pradesh is one of the four states in India that can produce walnut and it's the third largest producer of walnut in India after Jammu & Kashmir and Uttarakhand ,so there is huge potential for the state for production of walnut , if scientific cultivation is adopted by the farmers. Indian premier agri-research body ICAR has worked out a plan to motivate farmers of Arunachal Pradesh to take up large scale cultivation of highly lucrative walnuts .The horticulture department of Indian council of argiculture research (ICAR)- in coordination with central institute of temperate horticulture (CITH),Srinagar and other ICAR research centres- has worked out a plan to make the state a large producer of stone fruit walnut in the country. According ICAR data, the state has 20,000 hectares of land suitable for walnut production. Arunachal Pradesh is in global map being among four Indian states including Jammu & Kashmir, himanchal Pradesh and uttarakhand, by producing and exporting walnut. India export walnuts worth Rs.66.75 crore/9.61 USD millions during the year in 2018-19 to counties like germany, UK, USA, Netherland, France. And keeping in mind the rising global demand, India is planning to increase its production in potential states.

Walnuts are the only nut to contain a significant amount of plant-based omega-3 alpha linolenic acid. According to a study in the journal of American heart association and metabolism “demonstrated that walnuts may play a vital role in achieving a ideal body weight in case of overweight and obese women when consumed a s part of overall health diet”. And as par the latest research report walnut can be included in the daily diet of the healthy elders people without having any negative impact of weight gain and weight management. It significantly lower the risk of type-2 diabetes in women compared to thoses who rarely on never consumed walnuts. Indian walnut, being of high quality kernel with good quality has tremendous potential even for exploitng as organice crops.due to its versatile use in food, pharmaceutical and cottage industries, there is likely to be huge demand for walnuts in the coming years.

Walnut, cultivated in west kameng and tawang districts in the state should be encourage by offering advanace and scientific technology to the farmers since the state has abundant uncultivable land which can be utilised .This would undoubtedly enrich the rural economy and generate employment and end the age old tendency of younger geeration to look for white colour job.the hollongi green field airport one built would serve as boon by opening the gateway to world market for exports.

Table 7: Trends In pineapple Production In Arunachal Pradesh

Area in '000 ha.

Production in '000 MT

Crop	2015-16			2016-17			2017-18		
	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)	Area (ha.)	Production (MT)	Productivity (MT/Ha.)
Pineapple	6.96	37.33	5.36	4.00	26.97	6.74	3.09	23.11	7.47

Sources : Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.

Pineapple is one of the important fruits that is grown in arunachal Pradesh. The fruits is rich in vitamins A, B and C and is also a good sources of minerals like iron, calcium and phosphorous. This fruits is grown across all the north east states. From the above table it is clear that the production per hactor has increase from 5.36 MT/ha in 2015-16 to 7.47 MT/ha in 2017-18 in the state. But the area under the production has decrease by almost 50% and the reason behind this is that ,marketing of the horticulture crop like pineapple is very complex and risky due to its perishable nature, seasonal production and bulkiness and lack of storage and increase cost of transportation ,bound the farmer to sell the fruits to the middle man and the wholeseller and retailer at lower price giving less income to the farmers. so, there is a need for proper storage facilities and proper management of the fruits after the harvesting and establishing an agro cluster processing units which will collect the fruits from the farmers door.

Table 8: Production and share kiwi fruits in Aruanachal Pradesh

Crop	Production ('000)ton						% share in all india					
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Kiwi production	4.54	4.72	4.06	4.80	6.05	6.04	80.30	65.86	49.27	56.48	56.83	56.80

India stated consuming this kiwi fruits only since the last 20 years. Every year india import 6000 metric tonnes of kiwi fruits from countries like new zealand, italy and chile, kiwi was never thought of being a indigeneous fruits. this is because most of use are not aware of the fact that it can be grown in the hills and valley of arunachal pradesh too. The state has huge untap potential for kiwi production, thus there is huge scope to upscale kiwi production in north eastern states in general, and arunachal pradesh in particular. approximately, 56.5% of the total 12 thousand tons of the kiwis produced in the country come from arunachal Pradesh. india imports 75% of its domesc demand for fresh kiwis.

Since No reliable estimate of area under kiwi cultivation are available. the economic survey of arunachal Pradesh 2016-17 reports 3379 ha of land under kiwi fruits. According to the national horticulture board (NHB) that provides state wise information on kiwi production, arunachal Pradesh contributes more than 50% to the total kiwi production. next to arunachal pradesh ,nagaland is the second most important kiwi producing state. india produce about 12,000 tons of kiwi, just one fourth of its total demand. the kiwi fruits imports in india increase by 38 per cent from 29,941 tons to 41,375 tons . according to the chilean fruits exports association (ASOEX) director of marketing for europe, asia and middle east charif christian carvajal. which is why the kiwifruits exporting industry of chile is planning to double the quantity export to india in 2018 in the next five years. Despite the scope for huge opportunity in arunachal pradesh , there is less demand for arunachal kiwi fruits compare to foreign brand kiwi, as indian urban population prefer to go for foreign band Kiwi, though there is no difference in the taste and quality of the fruits. which is why farmers are unable to explore its full potential as a raw fruits in terms of market and price. so making wine out of it was the best option for them to preserve its nutritional value. since drinking and making wine is a traditional culture in the tribal of the state ,but preserving the drink for long duration is not possible for them due to lack of modern wine-brewing method. there is only one winery in hong ,ziro ,lower subansiri district of arunachal pradesh currently operational, so starting a food processing units with cluster approach will change the future of the farmers and the state.

Recommendations

- The set up of Mega Food Parks in the state will provide enough scope for promotion of the Sector, besides job opportunities to youths and for socio-economic development and employment generation the Food Processing Industry was of enormous significance.

- 94 per cent of the state's population was dependent on agriculture as their main occupation. "The state experiences varied agro-climatic conditions and smooth topography which enables great horticultural Growth. If the state effectively exploits the untapped resources it will create huge potential for the development of the state and the socio-economic condition of the state in a far better condition.
- Arunachal Pradesh must enhance the growth in the food processing sector by creating awareness and attracting investments. It will help the sector's growth and will help encourage entrepreneurs. It must maintain the quality of products as well as the packaging.
- The state government already has several schemes to promote the sector and entrepreneurship in food processing it can help to tackle unemployment in the state. The unemployed youth must focus in this sector and they should start up their business.
- Arunachal Pradesh with its varied agriculture, horticulture and other ethnic produces has huge potential for the development of food processing industries. It contributes a total of 13 per cent to the national growth, Arunachal, though an industrially lacking state, could be developed through Small and micro industries.
- The state has an investor-friendly State Industrial Policy in place which provides incentives to eligible Food Processing Units of an additional State Capital Investment Subsidy of 20 per cent upto Rs 25 lacs. The state will generate revenue if entrepreneurs to come up and avail government schemes and set up industrial units.
- Arunachal Pradesh will earned huge accolades for its agri-horticulture and other produces if the promotion of food processing sector in state, besides regulation of market prices through organized sector and organic certification agency.
- The arunachal pradesh state experience humid subtropical climate with high rainfall in monsoon(summer) and low temperature during winter months , which make the state suitable for citrus fruits production and has been identified as one of the hot spot for citrus. Making available the desirable planting materials, amendment in acidic soils, control of insect pests and diseases, marketing facilities, processing and extension support are some of the solution to the major problems. A suitable strategies covering the integrated or the cluster approach can be formulated to address the problems for proper management of the mandarin(orange) production in the state.
- Arunachal walnut ,being of high quality has tremendous potential even for exporting as organic crops. due to its versatile use in food ,pharmaceutical and cottage industries, there is likely to be huge demand for walnuts in the coming years. since the state has abundant uncultivable land which can be utilised for production of walnut, Which is why Walnut cultivated in west kameng and tawang districts in the state should be encourage by offering advance and scientific technology to the farmers and by establishing cluster base processing units would undoubtedly enrich the rural economy and generate employment and end the age old tendency of younger generation to look for white colour job. the hollongi green field airport one built would serve as boon by opening the gateway to world market for exports.
- Marketing of the horticulture crop like kiwi and pineapple is very complex and risky due to its perishable nature, seasonal production and bulkiness and lack of storage and increase cost of transportation ,bound the farmer to sell the fruits to the middle man and the wholeseller and retailer at lower price giving less income to the farmers. so, there is a need for proper storage facilities and proper management of the fruits after the harvesting and establishing an agro cluster processing units should be promoted.
- Emphasis should be given on formation and strengthening of self-help groups(SHG) and other potential entrepreneurs to engaged then in agro-processing units.
- Information centre or a ICT facility centre should be established. That can provide information relating to the market prices, availability of raw materials, technical knowhow in connection with concerned activities, and also about the various government scheme for promotion for agro processing activities.
- Financial assistance should be provided to the potential entrepreneurs and farmers engaged in agro-processing activities.

References

- ✘ APEDA agriculture & processed food export development authority (ministry of commerce & industry, government of india)
- ✘ Horticulture Statistics Division, Department Of Agriculture, Coopn & Farmers Welfare.
- ✘ M E Porter The Economic Performance of Regions Regional Studies, volume 37, issue 6, p.549-578
- ✘ <http://foodprocessingindia.gov.in>
- ✘ <http://indarun.gov.in>
- ✘ <https://economictimes.indiatimes.com>
- ✘ <https://thedawnlitpost.com>
- ✘ <https://www.mofpi.nic.in/Schemes/about-pmksy-scheme>
- ✘ <https://www.outlookindia.com/>
- ✘ <https://www.telegraphindia.com>
- ✘ <https://www.telegraphindia.com/states/north-east/review-meet-on-arunachal-food-park/cid/1740588>
- ✘ <https://www.tofler.in/companylist/arunachal-pradesh/manufacturing-food-products>

