RAMA UNIVERSITY

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FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES

Definition

- Horticulture is gaining importance as it gives more returns per unit area and also gives nutritious food to human beings thereby improves quality of life and enhances the aesthetic beauty of nature. Vegetable growing is one of the major branches of horticulture and from the point of view of value of the products; it is the most important branch.

"Vegetables are defined as edible herbaceous plants/plant parts consumed as raw or after cooking and rich in vitamins and minerals low in calorific value".

- In technical sense all parts are vegetables used for consumption. The term, however, is usually applied to the edible plants which store up reserve food in roots, tubers, bulbs, stems, petioles, leaves, buds, flowers, fruits, and seeds which are eaten either cooked or raw.
- Growing vegetables is not only important for providing the protective food but also serve as an important subsidiary food playing a more significant role in the food consumption. They are rich in nutrients and are essential components of a balanced diet. Vegetables contribute vitally to the general well being due to the following reasons.

Rich source of basic and protective elements

- Vegetables are rich in carbohydrates, proteins, minerals, vitamins and other protective substances. They are important for neutralizing the acidic effect produced during digestion of meat, cheese and other fatty foods and roughages promote digestion and help to prevent constipation. The vitamins which are available in almost all kinds of vegetables produce profound and specific physiological effects in human body.
- Ten mineral elements are required apart from carbohydrates and proteins for proper growth and development of human health. Out of this calcium, iron and

phosphorous are required in larger quantities but they are not present in sufficient amount in other food stuff except vegetables. Iodine and sodium elements are also supplied by vegetables. The nutrients, source and deficiency symptoms presented in table 1.

Table 1: Nutrient, source and deficiency symptoms of vegetables.

Sl. No.	Type of mineral/vitamin & their role	Name of the vegetables	Deficiency symptoms
1.	Carbohydrates: Provide energy	Tuber vegetables *ie.,* potato, sweet potato, tapioca and yams.	Retarded growth
2.	Proteins: Made up of amino acids, growth and repair of the body	Immature seeds of lima bean, broad bean, peas, garlic, onion etc.	Retarded growth, retarded mental development, discoloration of skin, swelling of leg and feet, fatty liver (kwashiorkor)
3.	Calcium: Important for bones, teeth, blood clotting, resistance against infection	Amaranthus, cauliflower, drumstick leaves, lettuce, methi, carrot, onion, turnip, green peas, tomato, coriander, spinach, cabbage.	Irritability, retarded growth and bone weakness.
4.	Iron: Essential part of red blood corpuscles.	Moringa-leaves, amaranthus, methi, mint,coriander, drumstick, spinach.	Anemia, pale smooth tongue, pale lips.

5.	Phosphorus: Cell multiplication, proper maintenance of liquid content in the tissue, role in oxidation of carbohydrates	Potato, carrot, tomato, cucumber, spinach, cauliflower, lettuce, onion.	Retarded growth
6.	Vitamin A: Provides general health	Carrot, spinach, palak, leafy vegetables, sweet potato (yellow), pumpkin (yellow).	Night blindness, respiratory infections, formation of stones in kidney, rough skin, growth in children retarded.
7.	Vitamin B complex: a) Thiamin (B1) b) Riboflavin(B2) c) Niacin (B5) d) Pyridoxin(B6)	Peas, broad bean, lima bean, garlic, asparagus, corns, tomatoes	a) Beriberi : loss of appetite b) Red coloured mouth cracks in the mouth c) Sore tongue, pellagra d) Ulcer
8.	Vitamin C: Essential for growth and resistance against diseases.	Turnip, green chilli, brussels sprout, mustard, green leafy vegetables, cole crops, bitter gourd, raddish	Scurvy, bleeding gums and mucous membrane, cold, loss of energy, delay in wound

			healing
9.	Vitamin D: Essential for bone and teeth	Green leafy vegetables	Bone and teeth weakness.
10.	Vitamin E: Antisterility and essential for reproduction	Cabbage, lettuce, methi, Spinach and vegetable oils	Fertility is affected
11.	Roughage: (Cellulose and fiber) Add digestion and prevent constipation	Leafy vegetables (Cabbage, Spinach, Lettuce), most root crops	Indigestion and constipation

Employment of great number of man power per unit area

- Vegetables are usually grown with intensive cultivation practices. Vegetable industry requires more labourers for one or the other operations continuously throughout the year starting from soil preparation to marketing.

Suitability for succession and inter cropping resulting in greater intensity of cropping:

- Vegetables can be grown throughout the year In the perennial crop orchard vegetables can very much grown as an intercrop. Few vegetables can be grown twice or even thrice in a year.

Flexibility in production Programme:

- The production programme can be adjusted and changed for better profits according to the need compared to fruit crops. In fruit crops it is difficult, time

consuming and also expensive to change the production programme if it turns out to be unprofitable.

Aesthetic value of vegetables

- Immense joy and pleasure is derived in producing vegetables in kitchen gardens.

Scope of Vegetable production

- Vegetables combat under nourishment and are known to be the cheapest source of natural protective food.
- As per nutritionists, per capita requirements of vegetables should be 300g, in which 115 g leafy vegetables, 70g root vegetables and 115 g others.
- The deficiency of vitamin 'A' causes night blindness.
- The deficiency of vitamin 'B1 causes beriberi disease.
- Scurvy disease is due to deficiency of vitamin 'C'.
- Vitamin E is also known as antisterility vitamin.
- Agathi (seobania) is the richest source of protein and calcium.
- Rajira leaves are the richest source of Vitamin A followed by colocossia
- Radish leaves are the richest source of riboflavin followed by fenugreek leaves.
- Vitamin 'D' is essential for prevention of rickets, osteomalacia and dental diseases.
- The synthesis of prothrombin and normal blood cloting regulate by the vitamin ‘C’.
- The deficiency of calcium in body causes rickets and osteomalacia.
- Phosphorus is essential in human diet for cell multiplication of bones and soft tissue.

- The ‘goitre’ disease in human is due to deficiency of iodine.
- For good health, the requirement of vitamin 'A' per day is more than 2000 IU.
- The requirement of vitamin '13' per capita/day for good health is above 0.17 mg.
- For good health per capita/day requirement of vitamin 'C' is above 20 mg.
- Iron requirement per capita/day for good health is above 3.0 mg.
- Calcium requirement per capita/day is above 20 mg.
- Magnesium is implicated to have role in cardiovascular diseases.
- Zinc deficiency in human body leads to growth failure and poor development of body growth.
- Chromium deficiency in body leads to impaired glucose tolerance.
- Magnese deficiency in body leads to abnormality in skeletal bone mineralization.
- Excess molybednum intakes in human body may increase the risk of gout.
- Selenium deficiency in human body is also implicated as a risk factor in cancer.
- Megaloblastic anaemia in living organism is due to deficiency of vitamin B12.
- Inadequate intake of vitamin like riboflavin results in soreness of the tongue (glossaries), cracking at the angles of mouth (angular stomatitis), redness of the eye and burning sensation in eyes, scaliness of the skin in the region between the nose and the angles of the lips (seborroic dermatitis).
- Psychomotor development in children may be impaired in riboflavin deficiency.
- Vitamin A is incorporated in rhodapsin (eye pigment)

- Tapioca is the richest source of carbohydrate (38.1g) 100 g edible part) and calories followed by sweet potato.
- Chilli is the richest source of fiber (6.8 g / 100 g edible part).
- Giant chillies are the richest source of thiamine followed by peas.
- China is the largest producer of vegetables in world followed by India.
- India occupaies first position in cauliflower, second in onion and third in cabbage in the world.
- India shares 13.38 per cent of world production of vegetables.
- Vegetable crops, occupy only 2.8 per cent of the total cultivated land.
- The area and production wise largest vegetable growing states are west Bengal, Orissa and Uttar Pradesh.
- Vegetable crop varieties like in tomato (Pusa Red Plum), carrot (Pusa Yamadagni and Pusa Meghali), pumpkin (Arka Chandan), palak (Pusa Jyoti), beet root (Pusa Swarnima) and sweet potato (Pusa Sunehri) are richest source of carotene.
- Parsley is the richest source of vitamin C (281mg/ 100 g edible part).
- Sweet potato is the richest source of vitamin A (14190 11g/100g edible part).
- Protein-energy malnutrition (PEM), vitamin A deficiency, iodine deficiency disorders (IDD) and nutritional anemia- mainly resulting from iron deficiency or iron losses - are the most common serious nutritional problems in almost, all countries of Asia, Africa, Latin America and the Near East.
- RDA stands recommended dietary allowance.

- A large number of vegetable crops are being cultivated in India in temperate, tropical and sub tropical regions. Most of the vegetables are quick growing, high yielding, and give very high remuneration. India is the world’s second largest producer of vegetables next only to China. Vegetable crops in India occupy only

2.8 per cent (7.99 m.ha) of the total cultivated land producing 133.9 million tonnes of vegetables. India shares 12 per cent of world production of vegetables with a productivity of about 15 t/ha which is quite low as compared to many countries.

- The present production is not sufficient to meet the requirement of 300 g of vegetables on an average per capita per day. At present our per capita availability is around 145 g / day. By the end of 2030 according to an estimate we need 151-193 million tonnes of vegetables to meet our requirement. According to the recommendations given by ICMR, an average man with vegetarian or non vegetarian food habit should consume 125 g leafy vegetables, 100 g of roots and tubers and 75 g other vegetables. Since the availability of vegetables per day per capita is very low, it is necessary that the vegetable production and consumption in India will have to be increased three to four fold

Problems and prospects of vegetable production in India

- Indian vegetable industry is developing in faster rate. Many aspects on the vegetable improvement and the production practices are developed still the following are limitations of vegetable farming in India.

Vegetables are highly perishable:

Fresh vegetables are like living organisms and as such undergo normal life processes even after harvest. They respire, loss of water occurs through transpiration and undergo chemical changes if not sold immediately after harvest. Deterioration of vegetables is also influenced considerably by temperature, atmospheric humidity and other factors. The losses in leafy vegetables and fruit vegetables are much more than in root and tuber vegetable

crops. Thus, a considerable quantity of vegetables produced in our country is wasted every year.

Ignorance on nutritive value of vegetables:

A majority of community is quite unaware about the nutritive value of different vegetable crops. Hence, inspite of available facilities for cultivation they are not giving much attention to vegetable gardening. In our country most of the population residing in villages are not educated who do not realize the importance of vegetable crop which are an important source of vitamins and minerals.

Illiteracy and lack of technical knowledge of scientific cultivation:

Authentic literature on vegetable cultivation is still not available to the farmers. Literature is very essential for selection of suitable varieties for different regions for different purposes, economic methods of cultivation including doses of nutrients, methods of controlling insect pests and diseases and the ways to get maximum return from these crops. At present ICAR-New Delhi, CFTRI-Mysore, State Agricultural Universities are publishing literature on vegetable crops but yet there is inadequate supply of the same to growers.

Lack of transportation facility:

Timely and speedy delivery of vegetables with minimum damage and deterioration enroute at the lowest cost are important aspects of transportation. Most of the Indian villages though there are proper facilities for growing

vegetables, yet organized cultivation not taken place due to lack of proper transportation facilities,.

Lack of enough refrigeration and storage facilities:

The losses during the storage may be lesser if vegetables are stored properly under regulated conditions of temperature and humidity. In India this type of storage facility is available only in cities at higher rent. Hence a small grower cannot use it for harvested vegetables. Therefore, it could be advantageous if cold storage houses are constructed near production regions for storing the produce.

Non availability of sufficient quantity of quality seed in time:

There should be proper arrangement for supplying good vegetable seeds for both early and late crops. The vegetable seed industry is largely in the hands of private agencies and few of them have adequate facilities for scientific production. As a result, the seeds available in the market are often of doubtful origin and usually give indifferent performance. National Seed Corporation, New Delhi started supply of improved and hybrid seeds of many vegetables directly and through its branches to cultivators and vegetable growers. However, still there is a great scope for evolving and standardizing new varieties of the best quality of vegetables in India.

Malpractice in marketing:

Marketing includes all the steps from the time the produce is ready for harvest till it is in the hands of the consumers. The main aim of marketing is that the producers should get a suitable price for their produce. At present due to

more middlemen and the price meant for the produce is not received by the producer.

Problem of Insect pests, diseases and weeds:

Due to the tenderness of vegetables, the insect pest, disease and weed attack is more in vegetable crops than cereals/ fruit crops/forest trees.

Lack of irrigation facilities:

Light and frequent irrigation are very essential for vegetable growing. During summer it is not possible to grow vegetables if irrigation facilities are not available. Perennial and large season vegetables are grown if better irrigation facilities are available.

Lack of research, technical guidance and sufficient capital:

Before 1970, there was no co-ordinated scheme in the country but at present All India Co-ordinated Improvement Project on potato, vegetables and tuber crops are running at country level and conducting research work on important vegetable crops. Generally vegetable growers in our country have not well developed as yet and can not afford heavy expenditure in vegetable growing. Due to lack of capital they are not using better chemicals, fertilizers and labour saving equipments. Due to these facts they are not getting better yields and quality.

- Vegetable Having Export Potential: The Agricultural and Processed Food Products Export Development Authority (APEDA) has identified traditional vegetables like onion, potato, okra, bitter gourd, chilli and non-traditional vegetables like asparagus, celery, sweet pepper, sweet corn, baby corn, green peas, French bean, cucumber and gherkin and cherry tomato having good export

potential. Among other vegetables, potato, okra, tomato, baby corn, cucumber & gherkins, chillies, French beans, capsicum, bitter gourd & bottle gourd are being exported. Vegetables are also being exported in processed form. The total export of vegetables in processed form is over Rs. 231 crores annually.

- Importing Countries: Onions and traditional vegetables are being exported to Malaysia, Singapore, Gulf Countries, Sri Lanka, Bangladesh, Pakistan and Nepal. Non¬traditional vegetables are exported to European countries and Australia in addition to Gulf countries and South East Asian countries. Onions and garlic are transported by ships and other vegetables by air. Kuwait Airways, Saudi Airways, Air India and TWA are the important airlines, which transport vegetables.
- Variety and Quality Requirement: The requirement of foreign markets in terms of varieties and qualities differ from domestic requirements. The requirement also differs between different foreign markets. European markets, Japan, Australia, USA etc., require different qualities and varieties than Gulf countries and South East Asian countries. For example, in case of onion, European and Japanese markets require yellow/brown coloured mild pungent onions of big size, whereas, gulf countries and South East Asian countries require light red to dark red coloured strong pungent onions of varying sizes. South East Asian countries and Sri Lanka also demand small rose and multiplier onions.

- Parbhani Kranti, Arka Anamika, Varsha hybrid, Varsha Uphar varieties of okra; Awsari, Panvel, G 4 and Pusa Jwala varieties of chilli; Pusa Navbahar variety of cluster bean; Contender, Premier, Tweet Wonder, Astrel and Monel varieties of French bean; Varad bottlegourd, MBTH-1 bittergourd, Agrifound Dark Red, Agrifound Light Red, Arka Niketan, Baswant 780 and N-2-4-1 varieties of common big onion in red types, Granex 33, Spanish Brown, Tana F-1 in yellow types, Agrifound Rose, Arka Bindu in small rose type, Agrifound Red, CO, & CO4 in multiplier type of onion; Sugarbaby in watermelon; Great Lake in Lettuce;

Nantes and Zino Carrot; Agrifound Parvati & G-282 in garlic are some of varieties of different crops, which are in good demand. Some of the specific requirements of size, colour, shape etc., are given in Table 2.

Table:2 Some specific requirements for the export of vegetables

Crops	Specific requirement
Okra	Green, tender and 6-9 cm long.
Chillies	Green and 6-7cm long
Cluster bean	Green tender and 7-10 cm long.
Butter gourd	Green 20-25 cm long having short neck.
Bottle gourd	Green 20-25 cm ling having short neck
Bottle gourd	Light green straight cylindrical in shape and 25-30 cm long
Gherkin	Green small sized having 160-300 fruits/kg in premium grade
Tomato	Round, medium size reed colour in middle east, cherry tomatoes in European
French bean	Straight 10-12 cm long, round green pods in bush beans, flat beans, flat beans having 12-13 cm length and pods are also in demand in European markets.
Big onion	4-6 cm in diameter, light to dark red colour, round shape, strong pungency in gulf markets and South East Asian markets 3-4 cm in diameter, light red and round shape in Bangladesh. Yellow/brown colour, 7-8 cm in diameter, round or spindle shape in European and Japanese markets.

Small onion	Dark red, 2-3 cm in diameter and round shape
Multiple onion	2.5-3.5 cm in diameter and round shape
Garlic	white, round, 5cm or above in diameter bigger cloves of 10-12 mm and above with 10-15in number. For Bangladesh and srilanka 4-5 cm size bulbs are also acceptable.
potato	White, oval 4.5 to 60 cm in size. Bangladesh demands red types and that Iran & Iraq demand patotoes with yellow flesh.

Period of Requirement

- The quantity of different vegetables required, though, differs in different months in view of local production particularly in South East Asian countries; the demand is round the year. In European markets, the demand is from November-December to April-May, when there is no local production or even stored produce is not available. India having varied agro-climatic conditions can produce and supply the vegetables to different markets from one to the other parts comfortably round the year if necessary infrastructure facilities are created for pre-cooling and transport etc.

Producing Pockets

- As mentioned above, although, it is possible to produce vegetables in one or the other parts round the year due to ports being near and also good infrastructural facilities created, the production is presently limited in certain pockets for meeting the demands of the foreign markets. The details of some of the crops and area of production are mentioned in

Table 3.Growing pockets of some vegetable crops:

Okra	Nasik, ozar saikheda, Dindhori, Kolhar, Naraingaon and Sholapur in Maharashtra,
Chilli	Pen, alibaugh and chol inraigad district dindhori, and Niphad and itaatpuri Taluka in Nasik district of maharastra.
Watermelon	Panval near Mumbai and mlaharashtra state.
Bottle gourd and bitter gourd	Nasik and Pune district in Maharashtra
Gherkin	Nasik in Maharashtra state
Capsicum	Nasik , Pune ans Satara district un Maharashtra.
Baby corn	Bangalore in Karnataka, Nasik and Pune in Maharashtra.
French bean and	Dindhori in Nasik District, Wai in Satara Distrct and Naraingaon in Pune,
Cluster bean	Dhule and Ahmednagar.
Onion (big)	Nasik Pune and Satara district in Maharashtra Periyar and Coimbatore district in Tamil Nadu, Bhudaun in Uttar Pradesh,and Patna, Biharsharif in Bihar, Bhavnagar and Rajkot in Gujrat
Onion (small)	Kolar and Bangalore in Karnataka and cuddapah in Andhra pradesh
Onion (multiple)	Anna, Madurai, Salem and Coimbatore district of Tamilnadu.
Garlic	Indore and mandsaur in Madhya Pradesh, Ooty in Tamil Nadu, Jamnagar and Rajkot in Gujarat and kullu in

	Himachal Pradesh.
Tomato	Nasik and Pune in maharashra and Bangalore in karnataka
Potato	Jallandher and Ludhiana in Punjab Kurudshetra and Karul in Haryana Ooty in Thamil Nadu and Indore in Madyapradesh.

- competing countries: Thailand, Jordan, Lebanon, Syria, Zimbabwe, Guatemala, China, Argentina, Indonesia, Egypt, Turkey, Iran Cyprus, Australia, New Zealand and Holland re the other countries which export different vegetables to different countries details of some of the exporting counties and items being exported are given in table 4.

Name of the countries	Vegetables exported
Thailand	Brinjal, Baby corn, Chillies okra, multiple onion garlic and yellow onion.
Holland	Onion, Baby corn, Capsicum, Cole crops , Tomato cucumber lettuce, root crops and tomato
Spain	Onion and garlic.
Australia	Onion, beans, cote crop, cucumber and root crops.
Iran	Onion.
Turkey	Onion.
Egypt	Onion and garlic.

China	Onion and garlic and other European vegetables
Argentina	Yellow onion.
Indonesia	Multiplier onion and bigger cloyed garlic.
Kenya	Beans, peas and okra.
Guatemala	Asparagus.
Morocco	Gherkin.
Jordon	Assorted vegetables.

Export Policy

- Fresh vegetables export other than onion is allowed freely. Under this category any person may export vegetables to any country except to a country where export is prohibited by law enforced from time to time. Government has also started the policy of giving cash incentives of 10-20 per cent depending upon the kind of vegetable being exported. Export of onion up to 20 kg per consignment is allowed by air as a part of assorted vegetables. Onion export has been canalized through National Agricultural Co¬operative Marketing Federation of India (NAFED) under the present policy of export. In this system, the exporters are required to register with NAFED and get NOC for export. Other vegetables are exported on consignment basis under OGL (Open General License).

Problems in Export

- **Inadequate Air Cargo Space:**

- Except onion and tuber vegetables, all other items are transported by air. Non-availability of sufficient air cargo space at a time has been a major constraint in increasing the export.

- **Higher Air Freight:**

- Air freight of vegetable export from India to Gulf countries and UK etc. is very high compared to Kenya, Jordan, Lebanon etc. This is one of the major bottlenecks in increasing the export.

- **Restriction in the Export:**

- Many times because of failure of a particular crop and increased local demand, the export has to be restricted. This does not allow regular export due to which we loose many foreign markets.

- **Non-Availability of Suitable Varieties:**

- In onion, we do not have production of yellow onions which are in demand in European and Japanese markets. Bigger clove garlic is also not available in adequate quantities, which are now demanded by almost every country.

- **Absence of Cultivation of Suitable Crops/Varieties Exclusively for Export as Fresh or For Processing:**

- Presently, there is no exclusive production of suitable varieties for export as fresh or processing. This increases cost which affects export adversely.

- **Improper Packing of the Produce:**

- In many vegetables, open mesh jute bags are still being used, whereas, preference is there for open mesh plastic woven bags. The corrugated fiber board boxes being used at present also do not have required strength and thus rare damaged in transit. No proper space handling / storage of material at ports/airports. Cold storage facilities at all ports or

airports do not exist. Adequate handling space also does not exist. This results in damage to stock.

- **Inadequate Research & Development Backup:**
- Not much export oriented Research & Development programmes are being taken up in vegetables. The quality of the produce is, therefore, not uniform as per the requirement of foreign markets. Lot of labour is thus wasted in sorting and grading of the produce.

Suggestions for Improvement

- In order to meet the international requirement without affecting the domestic supply, there is a need for a well thought out strategy for the coming years so as to produce quality crops at competitive price and remain regularly in the market. Followings are the suggestions for improvement:
- Export policy should be long term and consistent. Frequent changes in export policy should be avoided in view of likely adverse affects on foreign markets and growers.
- Exclusive production of different vegetables for different seasons in suitable pockets should be arranged so as to continue supply throughout the year at a competitive price without affecting domestic supply.
- Enough quality control measures should be made for weight, mixtures, size, disease etc. We must export the quality product only in order to remain in the market regularly.
- Regular assessment of international market for products originating from the local areas. Suitable diversification of export both in terms of countries and commodities for increasing the quality and also value.
- Suitable pockets for growing different vegetables economically round the year should be identified and agro techniques from export angle for production of quality produce of different crops should be standardized. Organic farming as well as integrated pest management should be introduced. Exclusive production

of suitable crop/varieties for export as fresh and in processed form should be introduced.

- Production and distribution of quality seeds of different crops may be arranged in adequate quantities by different seed producing agencies.
- Pre-cooling units and cold storage for fresh vegetables should be established for prolonging the shelf life and minimizing the losses in post harvest handling.
- Ventilated and temperature controlled transport system should be introduced and highest priority for loading and transportation of perishable items should be given.
- Cold storage and transit ventilated storage facilities as per the need of different crops should be created at all ports/airports where from vegetables export is being taken.

Rules and Regulations for Vegetable Export and Processing Business Firm Name Registration

- If anyone is doing any business like clinic, pharmacy, agri-business with specific name than any other person cannot harm him in any way by keeping your firm name if registered. The party has right to use in the court of law. Firm registration is done under Indian Registration Act, 1958.

Trade Mark/Trade Name:

- A trademark means identification of your goods. It is a symbol, which a person uses in the courses of trade in order to that the purchasing public from similar goods of other traders may distinguish his goods. Registration of trademark done under Trade Mark and Merchandise Act, 1958.

Patent:

- A patent granted under Patent Act, 1970 centers upon the patentee, where the patent is for an article or a substance, the exclusive right by him self his agents or licensees to make use, exercise, sell or distribute such articles.

Agmark:

- Under Agmark registration, vegetable producers are covered: Vegetable oil cakes, dried edible mushroom, table potato, Kanchan (Bathua), seed potatoes, table potatoes (export), water chestnut, curry powder, chillies powder, celery seeds etc.

FPO:

- Under FPO registration, vegetable processed products are

covered:

- Dehydrated vegetables, tomato products, ketchup and sauces etc.

Quality Labelling Produce:

- Still, vegetable growers and specialists have not equipped themselves with the qualitative aspects of production and pre and post harvest core, which play a very vital role in the export of vegetable produce. This requires government intervention and also sizeable investment in research and development. It is also necessary to familiarize the growers and the exporters with the technologies to qualitative aspects.
- While promoting vegetable exports in India quality should be the watchword, we must provide such quality as would be the consumer' S delight. It is no longer

sufficient, if we ensure stomach's satisfaction. In the export world, the sum is fast transforming from customer satisfaction to consumer delight. And to achieve to this, the entire outlook in agricultural industry and business should be radically transformed to adopt the proven three pronged commitment, consistency and competence; commitment to lift agricultural from its present state of stagnated growth to achieve buoyant agrarian economy; consistency in terms of supply of quality products and competence to sell India’s products at competitive rates by increased productivity an adoption of innovative and appropriate technology and expertise.

Tomato

- Tomato has been identified as a potential vegetable for export by the Agricultural and Processed Food Products Export Development Authority (APEDA), New Delhi. The specific requirement of tomato for export in Middle East are round, medium size and red colour, while cherry tomato is preferred for export to European countries. Tomato is being exported from the areas like Nasik and Pune in Maharashtra and Bangalore in Karnataka.
- Processed products of tomato especially puree and pastes have great demand in export. Tomato is exported from India, but due to lack of suitable varieties/ hybrids exclusively for exports, our tomato do not compete in foreign market. For encouraging export potential of tomato and its products there is an urgent need for development of suitable varieties, proper packing procedure and long term and consistent export policy. Pre cooling units and cold storage for fresh tomato should be established for prolonging the shelf life and minimizing the losses in post harvest handling.

Okra

- Okra has tremendous export potential as fresh vegetable. It accounts for 70 percent of the 30 percent exchange earnings, other than onion, from export of vegetables. Major targets have been our neighboring countries in the gulf and south East Asia, particularly Singapore, Mauritius, Malaysia, Sri Lanka, Bangladesh and Middle East countries which are upcoming potential markets for export of vegetables from India. For fresh fruits export, bhendi fruits should be green, tender, 6-9 cm long. Among them the suitable varieties for export are Pusa Sawani, Parbhani Kranti, Varsha Uphar and Pusa A-4. Although bhendi is grown for export in different parts of the country, the major exporting areas are Nasik, Ozar, Saikheda, Kolhar, Dindori and Sholapur in Maharashtra.