Importance of Vegetable and Spices in human nutrition and national economy

KOMAL KATHURIA
ASSISTANT PROFESSOR (HORTICULTURE)

Vegetables

- A simple definition of vegetable may be given as "An edible, usually a succulent plant or a portion of it eaten with staples as main course or as supplementary food in cooked or raw form"

- Definition of Vegetables
- Those products of herbaceous plants (mostly annual) which provide fresh material for culinary purposes and generally cooked before consumption or used as raw/salad are called vegetables.

- These are the products of herbaceous plants which are annuals, biennial and perennials (mostly annual) whose plant parts such as fruits, leaves roots, stems, petiole, flower etc. are used for culinary or consumed as raw.

Olericulture

- The science of vegetable cultivation is termed as Olericulture.
- It is derived from two Greek holar/holas + cultra.
- Vegetable crops represent a diverse group of plants.
- They vary in life span (annual, biennial, perennial), propagation (seeds, vegetative), growth habit (herbaceous, vine, shrub, tree), growing season (summer, winter) and their uses of different parts.

Importance and scope of Vegetables in India

- India: second largest producer of vegetables in world
- Area under vegetable : 10.100 million ha (2018-19)
- Total production: 185.883 million tonnes (2018-19)
- The fruits and vegetables play an important role in the balanced diet of human beings by providing not only the energy-rich food (good source of productive foods carbohydrates) but also promise supply of vital protective nutrients like minerals and vitamins.
- Consumption in sufficient quantities provides taste, palatability and increases appetite and provides fair amount of fibers.
- Currently reckoned as important adjunct for maintenance of good health and beneficial in protecting against some degenerative diseases.
- Neutralizes the acids produced during digestion of proteineous and fatty foods.
- Provide valuable roughage which promotes digestion and helps in preventing constipation.

- **Intake of 300g of vegetables every day to make our diet balanced along with other diets is recommended. This includes 125 g leafy vegetables, 75 g other vegetables and 100 g root and tuber vegetables.**
- **With the projected population of 1330 million in 2020 and 1650 millions in 2050, we have to produce at least 190 and 240 million tonnes respectively.**
- **With increasing focus on processing and exports, the production targets are likely to increase further and creating more opportunities for vegetable growers.**
- **Out of total vegetable production in the country, major share goes to potato (28.9%), tomato (11.3%), onion (10.3%), brinjal (8.1%), tapioca (5.5%), cabbage (5.4%), cauliflower (4.6%), okra (3.9%) and peas (2.4%).**

Importance of vegetables as healthy food

Vegetable serves as an important

- **Productive foods (energy-rich food) in form of carbohydrates, protein, roughages**
- **Carbohydrates-(Sweet potato, Potato, cassava, carrot, taro, pea, onion, elephant foot yam.**
- **Protein-Pea, cowpea, broad bean, lime bean, fenugreek, celery, drumstick**
- **Fats- Chilli, sweet pepper**

Protective foods

- **Vitamin A-** Carrot, Amarathus, Palak, Spinach, Fenugreek leaves, tomato.
- **Thiamine(B1)-** Palak (0.26mg), Pea (0.25 mg), tomato, chilli, musk melon, garlic
- **Riboflavin (B2)-** Palak (0.56 mg), chilli (0.39 mg), sweet pepper, lettuce, celery, Asparagus.
- **Niacin**- Palak (3.3mg), Amaranthus (1mg), bittergourd, chilli, radish, lettuce, carrot, pea.

- **Pyridoxin- Widely distributed in vegetables**

- **Vit C- Sweat pepper, chilli, cabbage, broccoli, kale, drumstick, parsley, cauliflower, bitter gourd, amaranths**

- **Vit K -Green leafy vegetables**

Minerals rich foods

- Play a major role in the functioning of physiological activities and reproduction.
- Components of various vital body constituents.
- Ca: Development of bones & teeth.
- Fe: important component of haemoglobin,
- P: Component of DNA (deoxyribonucleic acid) – basis of life.

Ca

Highest in Curry leaf . Also present in beans, palak, fenugreek.

Fe

Green leafy vegetables are rich source of Fe. Highest in Amaranthus. Also, palak, spinach, fenugreek are rich source of Fe.

P

It is present in pea, limabean, taro, mushrooms, Broccoli, bittergourd, cowpea, winged bean, hyacinth bean, globe artichoke.Highest in garlic

Vegetable cultivation as a source of income and self-employment

Yields high/Area/Time:

- Tomato-400-500 q/ha, Garden pea: 100q/ha Wheat 25-30 q/ha and Pulses 10-15 q/ha.

Important source of farm income:

- Vegetables: Net return may be 1.0-1.25 lakhs/ha which is 4-5 times more than cereals
- Cereals: Rs. 25000/ha
- Off-season: Tomato Rs 1 lakh/ha and peas Rs 80,000/ha.

Vegetable production assures more farm employment

- **Labour intensive** operations and related secondary activities like transportation and marketing, **more job opportunities/more work to the farmer/his family.**
- **Tomato requires 2180** Tomato requires 2180 (processing) to 8020 (fresh market) labour hours per ha compared to only 761 for rice (a study in Taiwan).
- Thus, vegetables have a great potential for using idle or seasonally underemployed farm workers to increase the family and total cash earnings.

Industrial Development

- **Processing:** Wastage avoided and availability of product for a longer period.
- **Seed Industry:** come up on a big scale.

Spices

- **Spices are those plants, the products of which are made use of as food adjuncts to add *aroma and flavour* (ex. Pepper, Cardamom, Clove, Nutmeg etc.).**

- **Condiments are also spices, the products of which are used as food adjuncts to add *taste* only.**
- **Both spices and condiments contain essential oils, which provide the flavour and taste.**
- **They are of little nutritive value. They are used as whole, ground, paste or liquid form, mainly for flavouring and seasoning food. Most spices increase the shelf-life of food, especially the dry varieties. Some are added to improve texture and some to improve a palatable colour or odour.**

Uses of spices

- The principle use of spices is to season the insipid foods to impart flavour, aroma and taste.
- They are also used as preservatives and add to shelf life of food
- Spices also find use in pharmacy and indigenous medicines.
- Spices are source of oil which are also used in perfumery, soaps, cosmetics, toothpaste, confectionery, incenses, dyes, etc.

Properties of spices

- Spices are well known as appetizers.
- They add a tang (taste) and flavour to otherwise insipid foods.
- Some of them also possess anti-oxidant properties.
- Some of them have preservative qualities (clove and mustard)
- Some have strong anti-microbial and antibiotic activities.
- Several of them possess medicinal properties.

Classification of spices

- **Botanical classification (family wise)**
- **Piperaceae - Black Pepper.**
- **Zingiberaceae – Ginger, Cardamom, Turmeric**
- **Apiaceae – Coriander, Fennel, Cumin.**
- **Myrtaceae – Clove, Nutmeg**
- **Fabaceae – Fenugreek**
- **Lauraceae – Cinnamom**

Plant part useful as spice

- **Rhizome spice** – Turmeric, Ginger
- **Bulbous spices** –Garlic
- **Bark spice** – Cinnamon
- **Leafy spices** –Coriander, Fenugreek
- **Aril spices** – Mace
- **Seedy spices** – Coriander, Cumin, Fennel
- ***Berries*** – Pepper, Allspice
- ***Capsules*** – Cardamom

Depending upon the longevity of spice plants

- **Annual spice** – Coriander, Fenugreek
- **Biennial spices** – Onion, Garlic
- **Perennial spices** – Clove, Nutmeg, Pepper etc.

Depending upon the type of the plant

Tree spices – Clove, Nutmeg, Cinnamon,

Bush spices – Cardamom

Herbaceous spices – Coriander, Fenugreek, fennel, Cumin.

Climber spices – Pepper, Vanilla.

Economic importance

Depending upon the magnitude of trade, earnings and use.

- **Major spice:** Black Pepper, Cardamom, Turmeric, Ginger, Clove, Nutmeg.
- **Minor spice:** Coriander, Fenugreek, Cumin, Fennel.

Importance of spice industry in India, historical accent, present status, future prospects

- India is often referred as —*Home of spices".* This is because many of the 109 spices grown in the world are *native to India.* Further, since antiquity, India pioneered in growing spices and exported.
- India has enjoyed virtual monopoly in the international spice trade since ancient times. Out of the 109 spices, several of them can be grown in India, whereas in other countries a few spices are only grown.
- This is because; India has a great extent of diversity in the climate and soils, which enables to grow a variety of spices. Spices are always export oriented crops not only in India, but also in other spice producing countries.

- Both spices and condiments contain essential oils, which provide the flavour and taste. They are of little nutritive value.

- They are used as whole, ground, paste or liquid form, mainly for flavouring and seasoning food. Most spices increase the shelf-life of food, especially the dry varieties.

- Some are added to improve texture and some to improve a palatable colour or odour.

- Most of the spices have potential medicinal values. Besides, they are also indirectly used as flavouring or colouring agents or as preservatives in many pharmaceutical preparations. Spices have been used in cosmetic and perfumery industries.
- Spice oils are used in the manufacture of soap, tooth pastes, talcum powder,, vanishing creams, mouth freshners etc.

- **The area covered under spices in the country is estimated to be 38.95 lakh ha with annual production of 92.16 lakh tonnes (3rd Advance Estimate , 2018-19).**

- **Among various spices grown in our country, chilli is most widely grown with a share in the total production of 22.71%.**
- **Rajasthan has leading area under Spice Production. Madya Pradesh is leading state in the production of spices followed by Rajasthan and Gujarat (3rd Advance Estimate , 2018-19).**
- **More than 90% of the spices produced in the country are used for domestic consumption and the rest exported as raw as well as value-added products.**
- **The per capita consumption of spices in Since India has been a traditional producer, consumer and exporter of spices. Almost all the states in the country grow one or more spices. So, they provide higher employment opportunity to our generation.**
- **Spices are also high value crops with high potential of value addition products *i.e.* spice oils, oleoresins, curry powders etc. so they are very good source of income generation. India is the biggest exporter of spices. Therefore, spice products have high potential for foreign exchange earnings**