



**FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES**

## GLOBE ARTICHOKE

Globe Artichoke commonly known as Artichoke is a perennial crop grown for its flower buds. It has thistle like plants. The above ground portion dies each year during winters and again emerges in spring. It is generally propagated by means of suckers or off shoots from the old root stocks and also by dividing the old crown into pieces with a portion of the stem. The buds are harvested before they become loose and fibrous. It is very nutritious as it contains appreciable quantities of proteins, carbohydrates and minerals. The present chapter will make the students understand with its importance, production technology, seed production practices and plant protection measures.

SCIENTIFIC NAME	<i>Cynara scolymus</i> L.
CENTRE OF ORIGIN	Mediterranean region
FAMILY	Compositae
VERNACULAR NAME	Hathichik
CHROMOSOME NO	2n=2x=34

- Globe artichoke commonly known as artichoke is an herbaceous perennial in which the globular immature flower heads or buds are used as vegetable.
- The cultivation of artichoke is done on a limited scale in India.
- However, it is an important vegetable crop in European countries.
- The small heads are eaten raw or cooked, white large heads are eaten only after cooking.
- The thick receptacle known as heart is used for canning.
- The flower heads are considered useful in the dietary of diabetics.
- The leaves are bitter and considered to be useful in dropsy and rheumatism.

### NUTRITIVE VALUE (per 100 g of edible portion)

Moisture (%)	84.94	Riboflavin (mg)	0.066
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Carbohydrates (g)	10.51	Niacin (mg)	1.046
Proteins (g)	3.27	Ca (mg)	44
Fat (g)	0.15	P (mg)	90
Fibre (g)	5.4	K (mg)	370
Energy (kcal)	47	Na (mg)	94
Vitamin-C (mg)	11.7	Mg (mg)	60

## CLIMATE

- It is a cool season crop and requires mild and frost free winter.
- Freezing temperature kills the plants.
- The crop can be grown successfully at a temperature of 12-18°C.
- The temperature above 22°C results in tough buds and tendency to spread.
- The roots can tolerate and survive freezing temperatures, while it is injurious to aerial portions.

## SOIL

- Globe artichoke grows on many types of soil but deep, sandy, well drained soil having adequate amount of organic matter is ideal.
- The optimum soil pH is 6-7.5.

## VARIETIES AND CULTURAL PRACTICES

### VARIETIES

#### Green Globe:

- Cultivar is typical fresh market cultivar with long and slightly pointed buds.

#### Magnifico:

- Only one new cultivar which is developed in recent years and it is grown in relatively few acres.

## **Traditional Cultivars (propagated Vegetatively)**

- Green, big: Camus de Bretagne and Castel (France), Green Globe (USA).
- Green, medium-sized: Blanca de Tudela (Spain), Argentina and Española (Chile), Blanc d'Oran (Algeria), Sakiz and Bayrampasha (Turkey).
- Purple, big: Romanesco and C3 (Italy).
- Purple, medium-sized: Violetto de Provenza (France), Brindisino, Catanese and Niscemese (Italy), Violet d'Algerie (Algeria), Baladi (Egypt).
- Spined: Spinosa Sarda (Italy), Criolla (Peru).
- Cultivars Propagated By Seeds:
  1. For industry: Madrigal, Lorca, A-106 and Imperial Star
  2. Green: Symphony Harmony
  3. Purple: Concerto, Opal and Tempo

## **PROPAGATION AND PLANTING**

- It is propagated by suckers or off-shoots from the old root stock and also by dividing the old crown into pieces with a portion of stem.
- Seeds are also used to propagate the crop but it produces highly variable plants and therefore not popular.
- The suckers or off-shoots are removed when they are 30-45cm high.
- For seed propagation, raised seed beds are prepared, and seedlings of 10-12.5cm height are used for planting.

## **SOWING TIME AND SPACING**

- The sowing time is August-October for plains and March-May for hills.
- Spacing is maintained at 120×90cm at the time of transplanting.

## **FIELD PREPARATION, MANURING AND IRRIGATION**

- The field is brought to fine tilth by repeated ploughings and beds or ridges are formed at a spacing of 2.4m. being a perennial crop, it requires abundant quantity of nutrients.
- Incorporate 200-30q Farm Yard Manure per hectare in the soil at the time of field preparation.
- Besides, add 120-140kg nitrogen, 80-100kg phosphorus and 300-400kg potash per hectare should be applied to harvest higher yields.
- The whole dose of farm yard manure, phosphorus and potash should be applied at the time of land preparation but nitrogen should be applied in three split doses during the season.
- Prior to planting the soil must be ploughed deeply, working in substantial

amount of organic matter.

- Liming should be done if the pH falls below 6.5.
- About three to five irrigations are sufficient to raise the crop.
- Avoid water logging conditions.
- After each irrigation, inter spaces between the rows are hoed for weed control.
- Since the crop stands in the field for 6-7 years, after each harvest the leaves and stems are cut off below the ground level and allowed to decompose in the soil.

## **WEED CONTROL**

- Weeds are controlled with diuron or simazine applied prior to weed emergence and by cultivation.
- An application of Trifluralin (1.2kg/ha) + diuron (1.5kg/ha) before planting successfully control the broad leaved grassy weeds.

## **HARVESTING**

- The sowing of crop through suckers or off-shoots is very popular and yields (in 6-7 months after planting) earlier than seed crop (about 8 months).
- The harvest season starts from September-October.
- A native plant produces 12 or more stems and 40-50 edible buds and harvest continues throughout the winter.
- Average yield is 100-120q/ha.

## **POST HARVEST HANDLING**

- Each bud is cut along with 2-2.5cm long stem.
- The buds can be stored at 0°C with 90-95 percent relative humidity for a period of 3-4 weeks.
- Pre cooling of buds at 5°C is practiced to achieve lesser weight loss, discoloration and incidence of decay than buds that are not pre cooled.

## **DISEASES AND PESTS**

### **DISEASES**

#### **1. Curly dwarf**

- Curly dwarf is caused by virus.
- It includes leaf curl, dwarfing of the plants and reduced production of the buds and many of them misshapen.

- This virus is transplanted easily during the replanting process from propagating material if infected stumps are not culled carefully.
- Insect transmission of the disease may also occur.
- Buds may become misshapen and remain small.

#### Control measures

- Improved cultural practices including planting of garlic and onions will repel aphids, a prevalent enemy of artichokes.
- Avoid planting infected propagating material.
- Control of the insect vector that transmits the disease by repeated sprays of malathion @ 0.05 per cent is also recommended.

#### 2. Botrytis blight : (*Botrytis cinerea*)

- It appears as a fungal growth and decay on tissue damaged by insect or frost, when the weather becomes warm and moist.
- Although it infects both the plant and the flower bud, economic damage is usually limited to the harvested artichokes.

#### Control measures

- Best control for botrytis blight is low humidity and good air circulation and factors that do not enhance the infection.
- Removal of infected buds in the packing shed and storing and shipping at low temperature will control the disease.

## **PESTS**

#### 1. Artichoke plume moth : (*Platyptilia carduidactyla*)

- It is the most common pest of artichoke.
- It is a brown buff moth with narrow wing.
- The yellowish larvae with black head feed on leaves, stem and developing buds.

#### Control measures

- Spray deltamethrin (0.0025 %) for effective control

#### 2. Aphids: (*Myzus braggii*)

- Several species of aphids feed on artichoke.
- The artichoke aphid is yellowish green while where as *Myzus fabae* is black in colour.
- Both cause serious damage by sucking sap from the underside of leaves.

#### Control measures

- These aphids can be controlled with a spray of malathion (0.05%) or oxy-demeton methyl (0.025%).



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