

# Importance of Pumpkin (*Cucurbita Pepo*) and It's Pest Management

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## Abstract

Pumpkin is an important vegetable crop in India, rich in beta carotene, energy, carbohydrates, protein, and minerals. It is also used as a food supplement for animals due to its high nutritive value. The National Cancer Institute has reported that pumpkin has cancer preventative properties. But the crop is attacked by many insect-pests those deteriorated the both yield and quality of the crop

## Introduction

Pumpkin/halva kaddu, (*Cucurbita pepo*) a member of the Cucurbitaceae family and it is highly nutritious, containing significant amounts of fiber, vitamins, minerals, nutrients and antioxidants those are very essential for human health. The pumpkin fruits used for cooking vegetable, preparation of sweets, seeds are used as dry fruits in some countries, where as the dry creepers are used as fodder for cattle. Carotene is abundant in yellow or orange-fleshed pumpkins. Pumpkins have many health benefits, including reducing swellings, cooling fevers, aiding digestion, eliminating bile, and more. The seeds also contain essential fatty acids that promote the health of blood vessels, nerves, and tissues. Aside from its anti-inflammatory properties, it has diabetic, antioxidant, anti-carcinogenic, and anti-carcinogenic properties as well. It is grown in area of 1.06 lac hectare with an annual production of 22.18 lac metric tons. (Anonymous 2024), Pumpkins fruit is characterized by its round, orange appearance, featuring a thick, ribbed outer rind and a vine stem. It is used both in immature and mature stages as a vegetable. Its young leaves, tender stem and flower are also cooked and

Table 1: Nutritive value in pumpkin fruits and seeds. (Vinmec 2023)

Nutrient in fruit	Quantity/ 100 grams	Nutrient in seed	Quantity /15 gm
Calories	137 Kcal	Calories	86
Protein	3 grams	Protein	4 grams
Fat	7 grams	Fat	7 grams
Carbohydrates	19 grams	Carbohydrates	2 grams
Fiber	7 grams	Fiber	1 gram
Vitamin A	209 % of DV	Copper	21% of the DV
Vitamin K	37% of the DV	Magnesium	20% of the DV
Copper	28% of the DV	Phosphorus	14% of the DV
Vitamin E	22% of the DV	Zinc	10% of the DV
Iron	18% of the DV		
Magnesium	13% of the DV		
Vitamin B6	10% of the DV		
Vitamin C	10% of the DV		
Potassium	10% of the DV		

DV: Daily value

## Major health benefits

**Immunity:** The pumpkin contains a significant amount of beta-carotene, which is partially converted into *vitamin A* that helps to body fight against infections. Apart from being a good source of healthy fats, pumpkin seeds are also a good source of magnesium which is beneficial for heart and bones. Additionally, it is rich in iron, polyunsaturated fatty acids as well as antioxidants such as selenium and beta carotene. The pumpkin seeds also have high content of vitamin E, A and C that helps to maintain healthy blood vessels, plays an important role in strengthening intestinal lining and making it more resistant to infection, crucial role in boosting immunity by strengthening immune cells, respectively.



consumed. The crop is vulnerable to insect-pests, those negatively impact both the quantity and quality of the crop yield (Atwal A S And Dhaliwal G S *et al* 2015).

**Bone health:** Pumpkin seed contains magnesium i.e. important mineral for bone formation. Postmenopausal women who are at risk of developing osteoporosis may have low levels of magnesium in their bloodstream.

**Weight loss and digestion:** it is rich in fiber-rich that maintain a moderate weight, improve digestion and blood sugar levels.

**Insomnia prevention:** The pumpkin seeds contain the amino acid tryptophan, which prevents insomnia. The body changes tryptophan into serotonin, a hormone that promotes feelings of well-being and relaxation, as well as melatonin, a hormone that aids in sleep.

**Sexual, prostate and urinary health:** In traditional cultures, pumpkin seeds have been considered an aphrodisiac. The pumpkin seeds are also rich in zinc, which benefit for male fertility.

**Eye health:** This fruit is rich in beta carotene, which helps the retina absorb light to keep vision sharp. The combination of other vitamins and minerals found in pumpkin may be protective against age-related macular degeneration.

**Skin health:** Antioxidants found in pumpkin are important for skin health. These include beta carotene and vitamins C and EA particular benefit of beta carotene is its ability to protect the skin against harm from ultraviolet (UV) rays, improvement of skin texture, help to protect cells against damage and slow the aging process and also help to reduce the appearance of wrinkles.

**Heart health:** Pumpkin fruit contains specific nutrients that are good for heart health. Particularly, potassium may help reduce high blood pressure levels, fiber may lower blood cholesterol levels by binding with the cholesterol in the foods and preventing absorption.

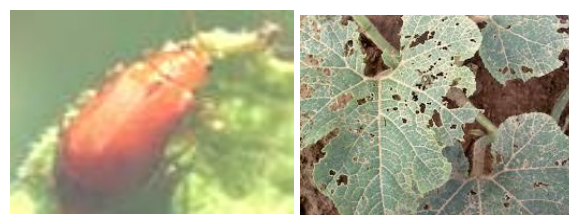
**Metabolic health:** Pumpkin, may help to improve metabolic health, maintain blood sugar and protection from cancer, asthma and heart disease and decreasing the risk of age-related macular degeneration

## Insect- Pest management

**Red pumpkin beetle:** It is most destructive during the middle of April. Adult beetles are mainly responsible for the damage of the plant above ground level,

attacking on the leaves, flowers and fruits by making holes. In case of heavy infestation, re-sowing of crop is required. The grubs live in the soil and feed on roots and stem of the plant.

**Management:** Preventing measures deep ploughing and harrowing of field after harvesting helps in destruction of adults and grubs. After germination, make dusting of dung ash on plants 3-4 times at weekly interval during initial days of crop growth. Also do collection and destruction of beetles at morning time in early stage of infestation. If possible, sow cucurbits seed in polythene bags during November in controlled conditions (protection from frost) and plant in main field in February



**Fig 1: Red pumpkin beetle and damaging symptom**

**Aphids:** These are usually feed underside of the leaves, but can attack the soft growing tips. Large populations in a seedling crop can cause curling and premature death of the leaf. In older crops, the vine development is retarded that cause reduction in fruit yield. Aphids *excrete* honeydew on crop that promotes the growth of sooty mould fungus, which reduces photosynthetic activities and also act as vectors of viral diseases. (Anonymous2021a)

**Management:** For control of aphids eradicate weeds growing on field bunds, waste lands, road side and irrigation channels/canals as they serve as reservoir for aphids. Also avoid excessive use of nitrogenous fertilizer.



**Fig 2: Fruit fly and damaging symptom in different crops**

**Fruit fly:** The adult fly resembles housefly but has conical yellowish-brown abdomen and transparent wings. The adult females' lay white eggs just under the skin of the fruits. The maggots after hatching puncture

tender fruits and feed on pulp and rendered unfit for human consumption.

**Management:** Removal and destruction of infested fruits daily to minimize the pest intensity. The deep ploughing to expose hibernating stages to sun or predators. Apply the bait spray containing 20 ml Malathion 50 EC and 200 g gur/sugar in 20 litres of water on the leaves of maize plants those grown in rows at distance of 8-10 m as trap crop because flies have the habit of resting on such tall plants. Use PAU Fruit Fly Trap @16 traps per acre during 3-4<sup>th</sup> week of April for spring and 4<sup>th</sup> week of June for rainy season crop. Recharge the traps after 25-30 days, if require.(Anonymous 2021b)



**Fig 3: PAU Fruit fly trap**

**Red spider Mite:** Mite feeding results in the destruction of chlorophyll; leaves become pale, stippled and in later stages of infestation dry up and die. Loss of color is pronounced on the under surface of leaves before it becomes apparent on the upper side.

**Management:** Several predators i.e. six spotted thrips, lady bird beetles

and lacewing larvae play an important role in regulating mite populations. Eradication of unwanted plants/ weeds growing in or at the edges of a pumpkin field. Good irrigation management increases plant tolerance to mite. (Atwal A S And Dhaliwal G S *et al* 2015)

**Whitefly:** Both young and mature insects harm plants by extracting the fluids from new growth, resulting in stunted growth, yellowing leaves, and decreased crop production

**Management:** In the beginning of crop season at whitefly's appearance, give 1-2 sprays of PAU Neem Extract @ 1200 ml in 100-125 litre of water per acre.

**Neem extract preparation:** Boil 4.0 kg terminal shoot parts (leaves, green branches and fruits) of neem trees in 10 litres of water for 30 minutes. Then filter this material through muslin cloth before spray.

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