

## SCIENTIFIC CULTIVATION OF KIWI

Nikhil Gupta<sup>1</sup>, Razauddin<sup>2</sup>, Ramesh Rajbhar<sup>3</sup>, Hradesh Shivhare<sup>3</sup>

### Introduction

*Actinidia deliciosa* is the botanical name for kiwi fruit. That is an auto hexaploid  $2n=58$  crop. It originated in China but is now commercially available in New Zealand. It is also known as Chinese gooseberry, China's miracle fruit, and New Zealand's horticulture wonder. They discover brown hair and an oblong shape when the fruit is ready. This fruit flavor tastes like strawberries, raspberries, and gooseberries. The kiwi fruit is a relatively new and widely accepted fruit crop. New Zealand will promote kiwi fruit exports. The kiwi fruit was named after New Zealand's national 'bird kiwi,' which, like the kiwi fruit, has a dull hairy appearance on the surface is New Zealand's national symbol.



### Composition and applications:

They discovered that more than 90% of the edible portions, with the exception of the

skin, are edible. The entire fruit, including the seeds, is consumed. This fruit has gained nutritional value due to its high concentration of minerals, sugar, vitamins, and carbohydrates. They contain a high concentration of ascorbic acid. All of the minerals can be found in kiwi fruit. A ripe fruit has a delicate flavour and aroma. Salads are made from the fruit. The root of the kiwi fruit is used to make an insecticide that is used against rape seed insects and aphid rice borer. It is used to make wax paper, printing ink, and dyes, among other things. They discovered vitamin C at a concentration of 80-120 mg/100g and vitamin A at a concentration of 80-120 mg/100g. In cases of high fever, the fruit is used to increase platelets. In the liver, they have cholesterol control. They are highly inflammatory. They discovered a sufficient amount of fiber to be used in the treatment of constipation. That fruit is chock-full of antioxidants.

### Global production:

While the kiwi fruit originated in China, it is now commercially grown in New Zealand. It has spread to the United States, the

*Nikhil Gupta<sup>1</sup>, Razauddin<sup>2</sup>, Ramesh Rajbhar<sup>3</sup>, Hradesh Shivhare<sup>3</sup>*

*<sup>1</sup>PG Scholar, Deptt. Of Fruit science, MGUHF Durg*

*<sup>2</sup>Ph.D. Scholar, Deptt. Of Horticulture, BBAU Lucknow*

*<sup>3</sup>Ph.D. Scholar, Deptt. Of Vegetable science, ANDUAT Ayodhya*

Soviet Union, Italy, Australia, France, England, China, Belgium, Chili, and India. New Zealand, China, and the United States are the world's leading producers of kiwi fruit. In India, kiwi fruit is grown in several states, including Uttarakhand, Himachal Pradesh, and the hilly region of Uttar Pradesh. In addition, kiwi fruit cultivation has taken place in Meghalaya, Arunchal Pradesh, Sikkim, and the Tamil Nadu Niligri hills.

### Origin and distribution:

Geographically, kiwi fruit originated in China, but wild cultivation can also be found in Siberia, Korea, and Japan via Indo China, among other places. Small kiwi fruit spp. can be found almost everywhere along the China border. China-USSR (Siberia-5 species), Korea (4), Japan (5), Indo-china (5), Thailand (2), Indian Himalaya (2), Malay (1), and Indonesia (1) are some examples.

### Taxonomy:

*Actinidia* was named by Lindley (1936) in taxonomy and botanical nomenclature. This corresponds to chromosome  $2n=58$ . The cultivars used are dioecious, deciduous vine fruit crops. The fruit ranges in colour from yellowish to creamy white. The kiwi fruit is a berry type of fruit. Flowers bloom on shoots from the current season. The phenotype sex expression is found in six different species grown for various purposes, including *Actinidia arguata* cold

resistant species. Gender changes occur occasionally in male vines as a result of bud mutation. *Actinidia chinensis* spp. *chinensis* and *Actinidia chinensis* spp. *hispidis* have chromosomes  $2n=58$  and  $2n=170$ , respectively, while *Actinidia arguata* has chromosome  $2n=58$ .  $X=29$  is the basic chromosome number.

### Cultivars:

In India, only *Actinidia deliciosa* cultivars are cultivated. They commercially grow some of the world's most important pistillate and staminate cultivars. Five pistillate and two staminate cultivars are listed below.

### Pistillate cultivars:

**Bruno** - That is a young cultivar. The fruit contains more Ascorbic acid than other cultivars.

**Allison** - It is similar to Abbott's cultivar. The acidity and ascorbic acid content are both low. That is average production with a higher level of sweetness than others.

**Monty** - It is a late cultivar, but it matures quickly. Prolific bearers that must be thinned from time to time.

**Hayward** - That is a cultivar developed by Hayward Wright through chance selection. The central core of this cultivar is higher than that of other cultivars.

**Abbott** - These are early cultivar sweets in testing that are low chilling.

## Staminate cultivar:-

**Tomuri-** Good pollinizer for Hayward.

**Matua-** Good pollinizer for early and midseason pistillate cultivars.

## Climate and soil:

Kiwi fruit is a very hardy plant that can be grown in a variety of climates. It's a type of deciduous vine. Abort and *Actinidia arguata* can withstand temperatures as low as -150 degrees Celsius. The plant is not dead (-230 degrees Celsius). *Actinidia arguata* tolerates cold, whereas *Actinidia* is cold hardy. That is a short-term long-day plant. For better shoot growth and dry matter accumulation, 16 hours of sunlight per day and a temperature of 200 degrees Celsius are required for good cultivation.

Sandy loam soil with a high organic matter content is ideal for kiwi fruit cultivation. A pH of 6.0 is ideal for cultivation. Micronutrient deficiency reduces yield significantly.

## Propagation:

1. Seed propagation: Seed propagation is primarily used for the emulation of new varieties. In nature, seed propagated plants are heterozygous. This is used to propagate root stock.
2. Vegetative propagation: Commercial kiwi fruit propagation is accomplished through stem cutting and soft wood cutting.

## Pruning:

One of the most important aspects of kiwi fruit is pruning. Vine management is required for high-quality production. Flowers appear on one-year-old growth from the current season, so pruning is required. This is useful for getting rid of diseased vines. That is completed in two seasons.

1. Summer pruning: Summer pruning is done between June and July. The fruiting shoot is 6-8 buds back from the last fruit. Excess growth is removed from the T-bar system between the rows.
2. Winter pruning: This is done in order to achieve better light pruning. In the winter, Hayward cultivar shoot is cut to various lengths (5, 10, and 20 buds).

## Training:

'T' bar training system is used.

## Nutrients management:

Fertilizer is mixed into the soil around the periphery of 1-2 m<sup>2</sup> and 3-4 m<sup>2</sup> mature vines. In the soil, mix 20-30 kg FYM with 0.5 kg NPK fertiliser. According to Kumar and Singh (1995), the following nutrients should be added to the soil: 850-950g nitrogen, 500-600g phosphorus, 800g potassium, and 20-30 kg well-rotten farmyard manure.

## Intercultural operations:

Intercultural practices are generally carried out when weeds are discovered around the kiwi vine's periphery.

### Harvesting, yield, and storage:

Kiwi fruit is generally ready for harvesting when it turns brown and hair appears on the skin. In general, kiwi fruit can be stored for 3-4 weeks. Shrivelling causes a 3-4 percent weight loss in the fruit. Hayward kiwi fruit can be stored for 50 cents for 31-147 days. Harvesting takes place between the middle of October and the last week of December. Yields range from 60 to 120 kg per vine. In New Zealand, 7-year-old seedlings produce an average of 25 tonnes per hectare. Controlled atmosphere (CA) storage and modified atmosphere packaging (MAP), as well as cold chain management, are assisting in meeting the demand for quality preservation.

### Physiological disorder:

No serious physiological disorder, but post-harvest fungus such as Botrytis and Alternaria affected fruit.

### Diseases:

#### 1. Root rot, collar rot, and crown rot:

- ➔ Organism responsible: *Phytophthora spp.*
- ➔ Symptoms include delayed buds, wilting leaves, and a reduction in leaf size, as well as dieback of twigs and shoots.

- ➔ Copper oxychloride (0.25 percent) spray

- ➔ Proper drainage

- ➔ Infected shoots and roots spread the main crop

#### 2. Leaf spot:

- ➔ Causal organisms include *Alternaria spp.*, *Botryosphaeria spp.*, and others.

- ➔ Brown spots are visible on the leaf surface.

- ➔ Bordeaux mixture spray for control

### Pest control:

Scale insects and leaf rollers can be controlled with a single dose of insecticide.

It is a nematode that causes gall formation in the roots. The kiwi fruit yield is also Detrioter. This control is accomplished through the use of a Nemagone spray on the crop.

### References:

1. <https://www.wellcurve.in>
2. Bailey, F.L. (1961). Bulletin 349 (revised). Department of Agriculture, Wellington, New Zealand. 24 p.
3. Bao, L. (1979). *Progressive hort.* **11**: 37-40.
4. Buwalda, J.G. and Smith, G.S. (1988). *Science horti.* **37** : 71-86.
5. Chadha, K. L. (2001). Handbook of Horticulture. ICAR, New Delhi.

6. Chadha, K. L. (2001). Handbook of Horticulture. *Indian Council of Agricultural Research*, New Delhi.
7. Meena, N. K., Baghel, M., Jain, S. K., & Asrey, R. (2018). Postharvest biology and technology of kiwifruit. In *Postharvest Biology and Technology of Temperate Fruits* Springer, Cham. pp. 299- 329.

