



The Melon Cultivation Technology in Uzbekistan

Drs. Khakimov R., Mavlyanova R.
RIVMC&P, Uzbekistan

Introduction

- In Uzbekistan, melon cultivation has a centuries-old history and during this period, melons are believed to be the most valuable food product, loved by people.
- Central Asia is the secondary centre of the origin of many cultivated plants, including melon (*Cucumis melo* L.). There is a large diversity of species concentrated.
- Breeders have developed melon varieties well adapted to different soil and climatic conditions.
- Melon is considered an invaluable food product that contributes to human health, improving human ability and prolonging life.

A diversity of melon



Useful properties of melon

- Eating of melon helps to control many physiological processes. Since ancient times, melons have been used in folk medicine in Central Asia to treat diseases such as tuberculosis, bronchitis, rheumatism, podagra, anaemia, heart disease, liver disease, and atherosclerosis. The melon seed mixture is used to treat cough, skin, and stone ailments.
- The melon pulp's composition is rich in useful substances. Melon grown in Uzbekistan contain **85-92%** water, **8-15%** dry matter, **0.8%** protein, **1.8%** fiber, **6.2%** other carbohydrates, **0.9%** oil, **0.6%** ash, **20-30 mg/%** ascorbic acid, **14-16%** sugar, **0.03-0.07 mg%** other medicinal substances, such as phosphorus, sulfur, manganese, zinc, bromine, iron, calcium, magnesium, potassium, pectin, microelements, organic and mineral salts.
- The amount of fructose in its composition gives the pulp of the melon a sweeter taste and a sweeter taste when there is an excess of glucose.

Biological features

- Melon seeds begin to flourish at **+14...+16 C⁰**. When the temperature drops beyond that, the seeds rot in the ground and germinating rarely. Therefore, it is not advisable to plant melons too early before the soil warms up.
- The optimal temperature for seed germination is **+20 C⁰**. The temperature during the day can range from **+15 up to +32 C⁰**. At this temperature, the shoots begin to grow 5-6 days after seeds sowing.
- A suitable temperature for the growth and maturing of the melon is **+25...+30C⁰**. When the temperature drops to **+12...+15 C⁰**, the flowers of the plant will fall off, they stop growing and slowly dry out.
- **0 C⁰ or -1 C⁰** kill melons shoots.



Melon growing methods

- Cultivation in unheated greenhouses.
- Temporary from seedlings and seeds under the coating of polyethene film.
- Growing from seedlings and seeds in open fields.



Melon cultivation in a greenhouse



Melon cultivation in a greenhouse



CULTIVATION TECHNOLOGY OF THE MELON

Preparation of seeds for sowing.

- To grow melons, it is necessary to use high-quality seeds of a certain variety.
- Before sowing, the seeds are stunted in a 5% solution of table salt. As a result, the dark and large fractions of seeds will sink underwater, and the small and empty seeds will stick to the water's surface.
- Soaking the seeds for 3-4 hours at the temperature $+40...+50\text{ }^{\circ}\text{C}$ increases the disease resistance of seeds and the amount of mother flowers.
- Soaking in a 1% solution of zinc for 12 hours before planting increases the yield by 13-14% and seed output by 9%.



Cultivation of melon seedlings in a greenhouse

- Sowing melon seeds begins from **1-10 of March**. The growing of seedlings in the greenhouse on special film bags, the film bag size 10x10 cm is conducted. The mixture, including 40% manure + 40% soil + 20% wood sandal, sawdust or bio humus, is put inside the bag. Then the filled bags are thoroughly watered. After their moisture impregnation, the next day seeds are sowing in the bags.
- If you soak the seeds in water for one day before sowing, seeds will germinate faster.
- After sowing the seeds, the bags are covered with polyethene film to retain moisture and heat. Daily observations are made. The temperature should be **+23...+25 C⁰** during the day and **+14...+15 C⁰** at night until the seeds germinate.
- When shoots appear, they need to be provided with optimal lighting and heat conditions. The temperature should be **+18...+20 C⁰** after seed germination.





Melon seedlings in a greenhouse

Melon seedlings agrotechnology

- During cultivation, the seedlings are fertilized two times. When the first feeding is 1-2 true leaves, 5-6 g of nitrogen, 8-10 g phosphorus, and 5-10 g of potash are mixed in 10 litres of water at the temperature +18...+20 C°.
- You can carry out foliar feeding of seedlings. For this purpose, spraying of plants' leaves by Crystallon ($N_{18}P_{18}K_{18}$) in the rate of 10 g per 10 litres of water is carried out. The second time (after 10-12 days) the amount of mineral matter should be increased ($N_{20}P_{20}K_{20}$) for dissolution 10 g per 10 litres of water.
- One week before planting of seedlings in open ground a hardening of seedlings is carried out. This time a ventilation and opening of the shelter is used.

CULTIVATION OF MELON IN AN OPEN GROUND

- **Site selection.** The surface of the field should be level and well-lit by the sun.
- **Crop rotation.** The best transitional crops for the melon crop are grain and alfalfa. If melons are planted on previously cultivated lands after cabbage, carrots, corn and hay, Fusarium wilt is less susceptible to withering disease and the yield increases.
- **Field preparation.** In the autumn, the field ploughed to a depth of 35 cm. Before ploughing the land phosphorus and potassium, and organic matter are given.

Seedlings growing for an open field



Melon cultivation technology

- The time of planting. Seeds of early-maturing varieties of melons are sown from **April 15**, medium-maturing - from **April 20 to May 10**, and late-maturing varieties from **May 15 to June 10**.
- Planting scheme. Wide spacing of 270 cm or 350 cm between rows is taken. Schemes of planting depending on the variety and conditions of the boar **(270 + 90):2x100 cm** or **(350 + 100):2x100 cm**. Seeds are sown to a depth of 3-5 cm. Depending on the size of the seeds, the sowing rate is 1.5-2.0 kg/ha.



Melon cultivation technology

- **Care includes weeding, loosening the soil, fertilizing, irrigation, weed and pest control.**
- **After two or three true leaves appear, the field is loosened, fertilized and irrigated.**
- **After 25-30 days the first care is conducted. During the vegetation period, the rows are loosened 4-5 times, and the plants' stalks are straightened to the row.**
- **Irrigation.** To correctly determine the watering time of the irrigation of furrows, it should also pay attention to the moisture content of the soil. The moisture content above the drying layer should be 55% until plant flowering and 65% during the vegetation of plants.



Melon cultivation technology

- During the vegetation period on shallow soils, enough irrigation 8-9 times at the norm of **400-500 m³/ha**. In fields with limited water resources, necessary irrigation is 4-5 times less often than in areas with shallow soils.
- After the first weeding will be completed, the field is watered. The next watering is done before the second weeding.
- When melon fruits will begin to grow, their water demand will increase. Consequently, the field should be watered every 10-12 days.
- When the fruits begin to ripen, water is given less often. When the crop is ripe, watering is stopped, otherwise, the sugar substance will be reduced and become unsuitable for long storage.



Melon cultivation technology

- **Fertilization.** To obtain a higher yield of the melon, **150** kg of nitrogen, **150** kg of phosphorus, **100** kg of potassium, and organic matter **25** tons per hectare are required.
- Compared to the annual norm, all organic and 70-75% of phosphorus are put into the main plough. The remaining 25-30% of phosphorus and 50% of nitrogen are given before planting. 50% of the nitrogen is put into the soil to a depth of 10-12 cm after the crop has produced three or four leaves.
- Feeding plants with microelements causes an increase in yield (15.7-43.0%).



Diseases and pests

- The most common diseases of melons are mildew, Rhizoctonia, fusariosis, and pests such as melons' shoots fly and melons fly, melon aphids, spider mites, and winter bits' butterflies.
- Mildew (*Sphaerotheca pannosa*).
- A white, yellowish-brown or reddish-grey thin foam forms on both sides of the leaves. Later, the leaves turn yellow, brown and dry out. The fungus overwinters in plant debris and weeds. Powdery mildew can reduce melon yields by 36-64%.
- Aphids (*Aphididae*).
- There are several types of aphids in the melon plant, some of which can reduce the yield by up to 50%.



Pests

- Winter bat (*Agrotis segetum*)
- This pest will cause damage by cutting the shoe band out of the root bud during the winter. Winter bat damage early spring crops, and late crops in August-September.
- White fly (*Trialeurodes vaporariorum*)
- On plants affected by whitefly, leaves become discoloured and curl, buds turn yellow and fall off, and plants lose vitality.
- Spider (*Tetranychis urticae koch*)
- The pest feeds by absorbing the juice of the fruit and leaf cells. If untimely struggle measures are not carried out, leaves and fruits fall off. They give from 18 to 20 generations in a year.



Diseases and pests control

- Melon fly (*Miopardalis pardalina*)
- The melon fly lays eggs on its mother's flowers, nodes and fruits. As a result, the larvae hatched from the eggs penetrate the fruits, and the resulting crop becomes unfit for consumption.



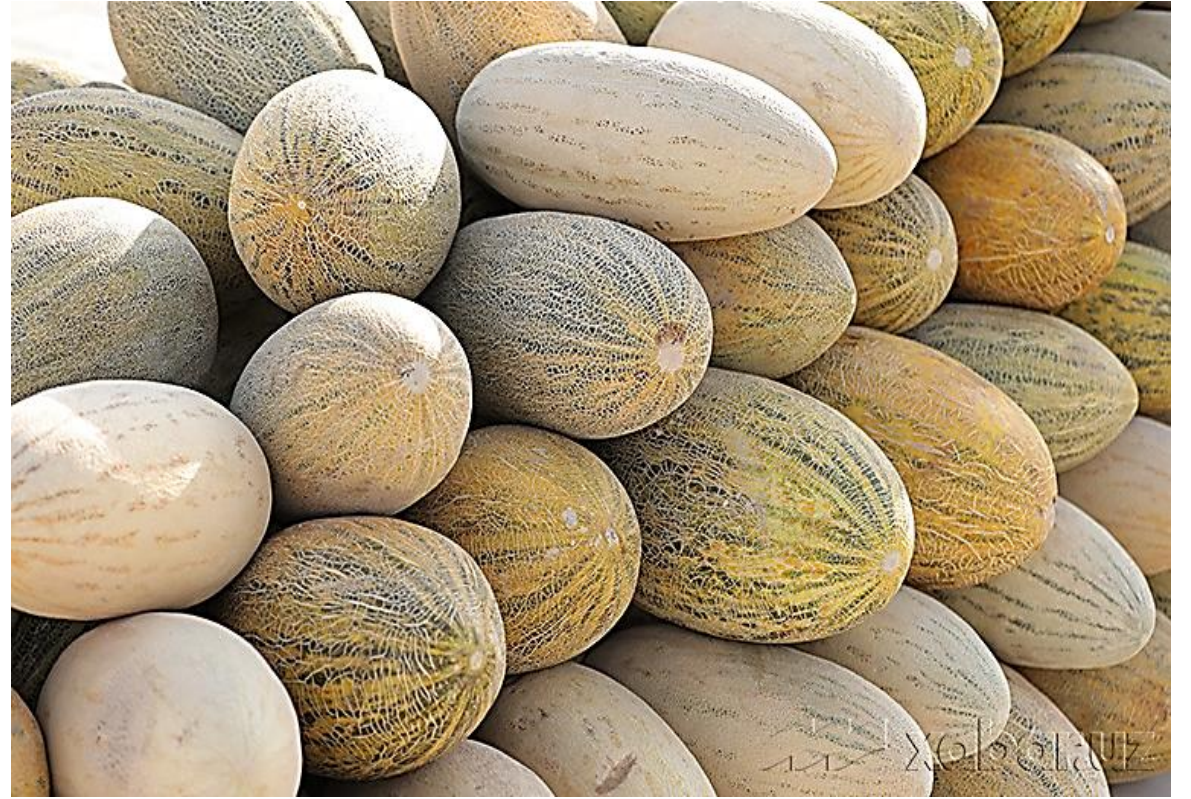
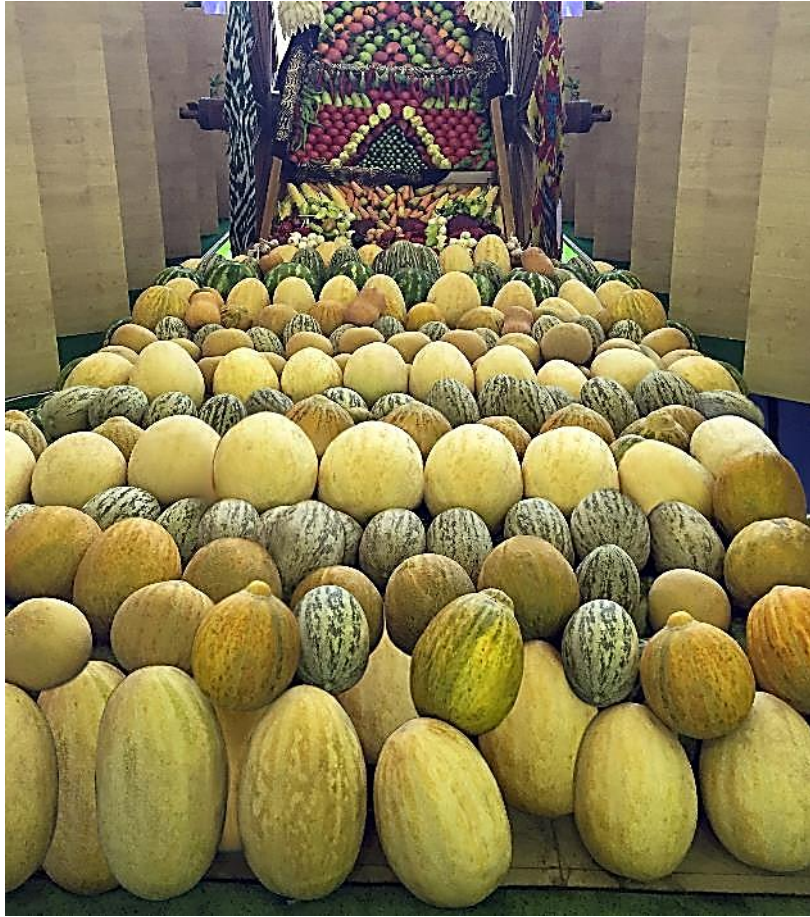
Diseases and pests control:

- *Agrotechnical measures*
- *Chemical control*
- *Biological control*

Harvest

- **Melon fruits are harvested two to three times, picking out ripened ones. Late-maturing varieties are harvested once.**
- **For long-term storage, fruits are topped in the sun for 3-4 days after harvest in the field, and then placed for storage. Every 15-20 days the condition of products is checked.**
- **Early-maturing melon varieties are sold at markets immediately.**
- **Late-maturing melon varieties ripen and become sweet during storage. Their consumption period extends from autumn to spring of the following year.**







Thank you for your attention!

