MANUAL OF ORCHARDS' CULTIVATION

MINISTRY OF AGRICULTURE AND ENVIRONMENTAL PROTECTION OF TURKMENISTAN

TURKMEN AGRICULTURAL INSTITUTE

AGRICULTURAL RESEARCH AND PRODUCTION CENTER

MANUAL OF ORCHARDS' CULTIVATION

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The manual provides information on the timing, rules and regulations of agro technical measures for the cultivation of melons in the natural climatic conditions of the country based on the results of research and best manufacturing practices conducted in the Agricultural Research and Production Center.

The manual is intended for agricultural specialists, tenants, teachers and students of higher and secondary vocational educational institutions.

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INTRODUCTION

During the period of prosperity of our sovereign state, under the wise leadership of the esteemed President, large-scale reforms are being carried out in the agriculture of our country. Much attention is paid to the introduction of best practices, advanced technologies and agricultural science in agriculture. All conditions have been created for landowners and tenants working in agriculture in our country to obtain a good harvest from the land, for a prosperous and prosperous life.

Melons, watermelons and pumpkins, which are melon products, have been used by people since ancient times as high-quality food. This is due to the fact that melon products contain a large amount of sugar (10-17%), vitamins, magnesium, phosphorus, zinc and a number of other useful elements. These crops are not only used as food, but some of them, which have a high nutritional value, are boiled and dried.

Among the fruits produced in our country, there is no food that could compete with the Turkmen melon, which has spread throughout the world with its sweet-sugar taste, beauty and fame.

The main task of all agricultural workers and every farmer is to create an abundance of melon products in our country and bring Turkmenistan to the level of world standards.

Today, one of the most important issues is the widespread introduction into production of high-yielding, fruit, heat-resistant and disease-resistant, high-yielding varieties to obtain sustainably high yields of agricultural crops.

The task of increasing the production of fruit and vegetable products requires their introduction into production by creating high-yielding, high-quality, resistant to pests, diseases and unfavorable conditions of nature varieties, improving the agro technics of their cultivation.

The results of research and the experience of industry leaders show that timely agro technical measures for the care of melons allow them to grow high yields.

Based on the above, this guide has been prepared to raise awareness of our farmers about the cultivation of melons. It provides recommendations on the rules and timing of agro technical measures for growing melons in various soil and climatic conditions of the country.

BIOLOGY OF ORCHARDS

Watermelon, melon and pumpkin, which are melon crops, belong to the pumpkin family. These are annual plants that require high temperature, humidity, light and soil fertility. Therefore, their seeds are sown in the open ground at a temperature not lower than 150C, and full germination is achieved in 10-12 days. After the seeds germinate, the first real leaves appear in melon for 5-6 days, in watermelon - for 7-10 days, in pumpkin - for 5-8 days. The sown seeds begin to germinate 25-30 days after germination.

Melon crops belong to single-family plants by gender, i.e., both paternal and maternal flowers are formed on the same root crop. Mother flowers appear 10-15 days after the beginning of flowering. In early-maturing varieties of melons, the first female flowers begin to appear at the base of 4-11 leaves formed on the main stem, at the base of 15-18 leaves in medium-ripened varieties and at the base of the leaves. 20-25 in late-ripening varieties. The formation of paternal flowers also occurs in the same order as above. Flowering in garden crops is carried out with the help of wind, bees and insects. The rate of flowering and powdering of melon crops depends on the temperature, the quality of agricultural activities, especially on the temperature of the soil and air. When the air temperature is below 20-250C and humidity is not lower than 40-50%, flowering is normal, and when conditions fall below normal, pollination and fertilization go badly. During the growing season of melons, the better the care and the more favorable the weather conditions, the faster they bloom, the higher the yield and the faster the other growing periods. After germination of crops, their fruits ripen in 30-35 days.

Melon crops are crops rich in nutrients. Proper use of fertilizers in the cultivation of melons not only increases their yield, but also improves their taste and stability, increases the early ripening of plants. When feeding melons, they need nitrogen, phosphorus and potash fertilizers more.

The ripening period of orchards

According to the maturation period, Turkmen melons are divided into 4 groups. Early-ripening melons include such varieties as Forty-day, Zama, Karam, Monti, and Terek. These melons yield 18-23 tons per hectare. The amount of sugar in ripe melons is 14-18%. Early-ripening melons are stored little; they are used only for drying.

The group of summer melons includes vakharman, emir, shekerpalak, ak gash, akmaral, babashih, gok torly, white melon, milk melon and others. The sweetness of summer ripe melons reaches 14-19%. Summer ripe melons are used not only for fresh eating, but also for drying.

Figure 1. **Ripe melon harvest**

The group of autumn melons includes a number of varieties of melons, such as agygyz, gulaby, payendeki, gara gant, sarygyz, khojapesh, igdeyaprak, zagara gavun, shirin bishek, which are stored until the spring of next year.

The group of winter melons includes archin, ak ham, alma gulaby, mykhmansovar, omirbaky, Dashoguz gulaby, sary gulaby and other sweet varieties that can be stored for a long time.

CHARACTERISTICS OF CULTIVATED ORCHARDS VARIETIES

Melon varieties

Kyrkgunluk is an early-ripening variety, matures 50-60 days after mass germination. Melons of this variety are rounded, the stem is thin, and the average weight is 0.8-1.5 kg. The taste of the fruit is sweet; the sugar content reaches 10-12%. It is applied fresh. Melon cannot be stored for a long time. It cannot be dried and transported far.

Figure 2. **Kyrkgunluk melon variety**

Zaamy - early-ripening melon, created in our country, after germination of melon seeds ripen in 65-70 days. The fruit is round; the weight of the outer cut is 2-3 kg. The taste is sweet; the sugar content is 12-14%. The yield per hectare is 18-20 tons. It is consumed fresh, does not last long, and is not suitable for transportation to remote areas.

Vakharman - is a world-famous medium-growing Turkmen variety that matures 85-90 days after germination. The fruit is slightly rounded, light yellow, with a bluish mesh; the weight of the fruit is 3-6 kg. The sweetness is very high, the sugar content is up to 19%. The yield reaches 25-30 tons per hectare. It is eaten fresh and prepared for high drying. Vakharman is one of the most cultivated varieties in our country.

Figure 3. **Vakharman melon variety**

Gyzyl gulaby-498 - Turkmen varieties germinate 90-95 days after planting and mass germination. The fruit is elongated-ovoid, raised. The flesh is white, dense, thick and dense, juicy.

The weight 3-6 kg, yield 25-30 tons per hectare. The amount of sugar in ripe fruits is 16-17%. It is suitable for winter storage and long-distance transportation.

Dashoguz gulabysy - this variety, which belongs to the autumn and winter sorts, is created on a permanent basis at the Dashoguz agricultural experimental station by continuously single selection from the local black rose variety. It takes 84-105 days from germination to maturation. The fruits are egg-shaped, weighing 4-5 kg, with a yield

of 26 tons per hectare. The flesh is slightly yellowish, dense, juicy, tastes 4.5-5.0 points, contains 11.0% sugar, is convenient for transportation to remote places, can be stored until May next year.

Figure 4. **Gyzyl gulaby 498 variety of melon**

Sary gulaby - is ovoid-elongated, 40-60 cm long, weighing 4-5 kg, with 2-4 fruits in berries, the fruit is 25-30 t / ha, the peduncle is thin, the flesh is dense, fragrant. Very sweet in taste, the amount of sugar is 16-17%. It is planted late, ripens late, and matures in 85-90 days. It is suitable for transportation to the most distant places; the taste becomes sweeter and stored till March. It is widely cultivated in the Akhal, Mary, Lebap and Dashoguz regions. It has an improved appearance of Sary gulaby-497. The sowing period is April 10-20 in Turkmenistan.

Ala gurbek - the variety matures in the intermediate period. After mass germination, the plant matures in 85-90 days. The average fruit weight is 4-6 kg, the yield per hectare is 26-34 tons. It contains 13-15% sugar. It is suitable for long-distance transportation. It is a local variety of the Dashoguz region.

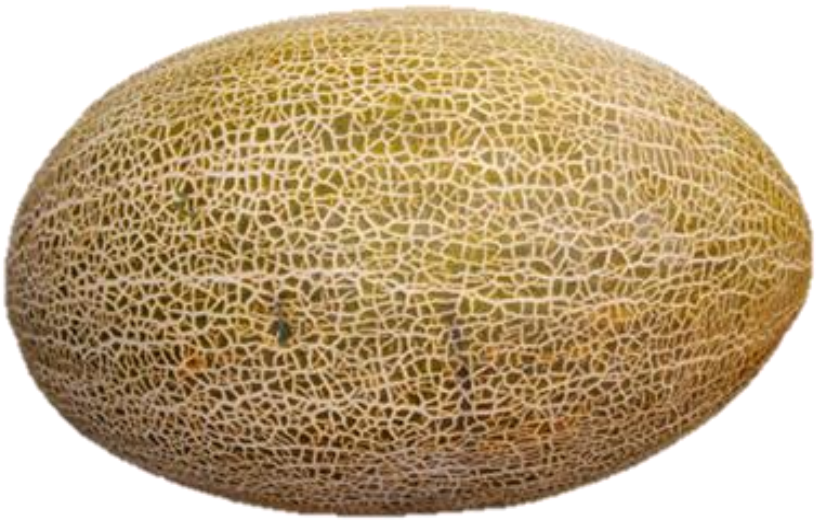

Figure 5. **Gulaby variety of melon**

Bishek - late, in 105-110 days ripens melon. The fruit is elongated-ovoid, weighing 2-4 kg. The flesh is white, dense, and fragrant, with a sugar content of 14-15%. Suitable for storage and transportation over long distances, softens gently during storage. It planted in Dashoguz region.

Akmaral - is an intermediate species, matures in about 75 days. The bulb is elongated, weighing 3-4 kg, yellowish in color. The peel is thin and firm. The meat is thick, the taste is 4.5-5 points, and the sugar content is 12%. The yield is 25-30 t / ha. Not suitable for long-distance transportation. It is intended for eating, drying and canning.

Tomusky - is an ancient melon, ripens in summer in 70-85 days. The fruit weighs 3-4 kg, the yield is 21-27 tons per hectare. The thickness of the meat is 5-6 cm, moderately dense, very juicy, and sweet in taste, sweetness is 4.8 points, and the amount of sugar is 11-12%. It is suitable for transportation to nearby places, most durable for storage among the intermediate melons.

Emir - one of the intermediate summer melons ripens in 80-90 days. The fruits are stretch; the average weight is 3-5 kg. The flesh is dense, fragrant, and very sweet; the sugar content in the fruit is 15-

16%. It is very suitable for dehumidification. Not suitable for long-distance transportation or storage due to frequent cracks.

Figure 6. **The ripening period of the Akmaral melon variety**

Figure 7. **Melon's ripening period**

Garrygyz-700 is one of the most popular late-cooking varieties created in Turkmenistan. His melons are crispy; the stalks are thick, suitable for long-term storage. The longer the fruit is stored, the sweeter it tastes. The flesh of the melon is dense, white, and sweet in taste, the sugar content in it is up to 19%. This variety is mostly planted late, and its maturation takes about 4 months. The yield is 30-40 t / ha. The average weight of the fetus is 4-10 kg.

Watermelon varieties

Bereketli - early-ripening variety matures 70-75 days after mass germination. The fruit is spherical; the surface is smooth, weighing is about 3.5-4 kg. Watermelon contains 7-7.5% sugar, 8, 7-11, 1% dry matter, vitamin C is 7, 2-10, 5 mg / kg, sweetness 3, 9-4 marks. The yield per hectare is 20-21 tons.

Figure 8. **Bereketli variety o fwatermelon**

Akhal - is an intermediate variety, matures in 80-90 days after germination of seeds. The fruit is spherical, green in color, with a dark stripe. The average weight of the fruit is 3.8-4.2 kg. The amount of

sugar in fruits is 8.5-9%, dry matter 8.2-11.4%, vitamin C 6.6-8.7 mg / kg. The yield per hectare is 22-25 tons.

Jeyhun - is a Turkmen variety, maturing 90-104 days after full germination. The fruit is large, elongated, with a green stripe on the outside. The average weight of the fetus is 4-5 kg. Watermelon's taste is sweet, sugar content is 8.5-9%, and sweetness is 4.2-4.6 points, portable and durable. The yield per hectare is 21-23 tons. The variety is mainly grown in the Lebap region.

Gyshlyk - 344 is a moderately late-ripening variety, matures 95-100 days after germination. The fruit is spherical in shape, light green in color, weighs an average of 3.5-4.5 kg. The thickness of the stem is 1.8 cm. The sugar content in fruits is 7.5-8.2%, dry matter is 8-9.1%, and sweetness is 3.5-4 points. The yield per hectare is 23-25 tons. It is suitable for transporting watermelons to remote areas.

Spring - is a Turkmen variety that ripens in the intermediate period and ripens 80-82 days after the mass germination of seeds. The stems are densely curved and have a length of 2.5-2.8 m. The fruit is round-red with a dark inside, tastes sweet, weighs 5-6 kg, the peduncle is moderately thick. The amount of sugar in ripe fruits is 9.2-9.6%, dry matter is 9.6-10.2%. The yield per hectare is 26-30 tons.

Figure 9. **Serdar watermelon variety**

Serdar - is a variety grown in the intermediate period, created in our country and maturing 82-83 days after the mass germination of seeds. The beetle is densely curved and has an arm length of 2.6-2.9 meters. Let's take a round watermelon; the weight of the sweet is 4.7-6 kg. The yield per hectare is 25-30 tons.

In addition, watermelons are imported and hybrid varieties of early-ripening watermelons are grown.

Figure 10. **Harvested watermelon**

Pumpkin varieties

Pumpkin is a local variety that has been planted in our country for a long time. Its seeds ripen in 105-110 days after mass germination. The pumpkin of this variety is long, pear-shaped, with a belt. The finished pumpkin is yellow, the peduncle is thin. It weighs 4-6 kg. The flesh of this pumpkin is dense and sweet in taste. The amount of sugar in the cooked pumpkin reaches 11%. The yield per hectare reaches 25-30 tons.

Figure 11. **Palav pumpkin**

Yerli dash pumpkin - is a widely cultivated, very leguminous pumpkin in our country. 100-105 days after the mass germination of seeds, the pumpkin ripens. The size of the pumpkin is medium, rounded, and egg-shaped, the stem is thin. The meat is medium thick, yellow, sweet. The amount of sugar in stone pumpkin reaches 7-8%. It yields high yields, is long, well-groomed and is not damaged during transportation to remote areas.

Figure 12. **The country stone pumpkin**

Figure 13. **Khan variety of Pumpkin**

Khan Pumpkin - is a late-ripening variety that grows in 130-140 days. His pumpkin is younger and has two sides, the size is average. The peel is uneven, with thin stripes running through half, with spots of dark blue color. The leg is thin and firm. The thickness of the meat is average, it is yellowish-orange, very dense, drier and sweeter. The size of the cavity where the seeds are located is medium, yellow. In the conditions of Turkmenistan, this pumpkin yields high yields. It can be stored for a long time and is suitable for transportation to remote areas.

AGROTECHNICS OF ORCHARDS' CULTIVATION

To weed the fields

To improve the quality of the herd, the areas where the orchards will be planted must be cleared of weeds and remnants of previously sown crops in autumn. It is recommended to carry out work in the southern regions of the country from 10 to 20 October, and in northern part from 1 to 20 November.

Perennial herbicides (tar, reed, acacia, stalk, etc.) that damage garden crops should use glyphos or 6-8 liters of herbicide per hectare. It works well when done beforehand, when the need arises.

To improve the quality of the herd, 600 m3 / ha of water is irrigated in the areas where melon crops will be planted. The works are scheduled for October 15-25 in the Akhal, Balkan, Mary and Lebap regions (southern districts).

Fertilizer before plowing

To obtain high yields of melon crops, it is recommended to add 15-20 tons of manure, 200 kg of superphosphate and 50 kg of potassium chloride from mineral fertilizers per hectare before plowing. Fertilizers are recommended to be applied in the southern regions from November 1 to November 20 and in the northern regions from October 15 to October 30.

WINTER PLOWING

Proper and timely plowing is an important agro technical measure that ensures effective soil salinization, irrigation, nutrition of crops and effective control of pests, diseases and weeds. The optimal time for transplanting the herd is the second half of October in areas free of alfalfa or cereals. Cotton is sown in November and in mid-December,

after which harvesting is carried out in areas free of vegetables and other crops.

Winter plowing is carried out to a depth of 30-32 cm. In areas where the clay layer is deeper, it should be plowed to a depth of 35-40 cm, but it is enough to plow 40 cm deep once every 3 years, and the rest should be plowed to a depth of 30-32 cm. In areas with saline soil and groundwater, it is recommended to drive the herd to a depth of 27-30 cm. The depth of land in newly built-up areas should be 22-25 cm, and in recent years it should be increased to 30-32 cm. To do this, you need to increase the depth of the land by 2-3 cm per year. After 1-2 years of cultivating such newly cultivated lands with manure crops, softening the lower part of the arable layer by 10-12 cm at a time and transferring the plow to a depth of 28-30 cm prevents the formation of soil with manure. The deadline for the work is November 1-25 in all regions of the country.

Preparing the field for sowing

Planting plots in the garden before sowing in the spring are decorated with double-sided (crosswise) levelers. In the southern regions, work is underway from March 20-30, in the northern - from the end of March to April 10. After leveling, the land is divided into ditches for collecting sewage and throne water. The size of the fields should be 0.15-0.25 ha on light soils and 0.25-0.35 ha on medium and heavy soils, depending on their mechanical composition. In these places, work on carving, raking and plastering should be carried out on both sides at a depth of 16-18 cm. It should be held in the southern regions from April 1 to April 10, and in the northern regions - from April 10 to April 20. Before sowing, an annual herbicide against weeds should be sprayed. After this place plantings are drawn at a distance of 180 cm and wet water is maintained at the rate of 700 m^3/ha. The work is planned to be carried out in the southern regions from April 5 to April 30, and in the northern regions - from April 15 to May 5.

Sowing

Studies have shown that the melon yield is higher when sorghum, cereals, tomatoes, peppers, cabbage, almonds, carrots, beans and peas are planted. Melon and watermelon seeds require a lot of heat and moisture to germinate. Therefore, it is recommended to sow at a temperature of 12-150C in a 10-centimeter layer of soil.

In order to speed up the ripening of melons and get a high yield, it is very important to know the best timing for each region in accordance with natural weather conditions.

Early sowing of this crop, as well as very late sowing, is considered unfavorable. Very early planting dates are even more unfortunate in the Dashoguz region, since some years are the last days of April or the beginning of May, when the crops are cold. According to numerous surveys, this situation repeats every 10-12 years.

Regardless of weather conditions, melon sows a lot of seeds into the soil at early sowing, and a significant part of it is damaged, rotting, and as a result, seeds rarely germinate. Therefore, sowing should be carried out to a depth of 8-10 cm at a temperature of + 12 + 130C. The most favorable temperature for the germination of melon seeds is + 15 + 160C.

Studies have found that seeds begin to germinate at a soil temperature of + 10 + 12^0C and germinate at + 15^0C, heat + 20 + 25^0C, and with sufficient humidity and air, crushed seeds begin to germinate after 2-3 days, and then germinate after 5-6 days. At a soil temperature below +10 0C, seeds cannot germinate and rot. If seeds that have not been crushed before sowing are not warm enough to germinate, they often lie in the ground.

Dry seeds are considered good for early sowing. In the warm season, when the seeds are crushed and sown 24 hours a day, the yield increases by 20% due to the rapid removal of pigeons. If the seeds are crushed and postponed for 1-2 days without subsequent sowing, seed germination will be disrupted and the quality will deteriorate. Therefore, slightly crushed or dried seeds should be planted early.

In Dashoguz region, late varieties of melons for the winter should not be planted too late (before June 15), because the melon fruits formed due to the cold autumn weather, they will not fully ripen. Their yield decreases, and their taste qualities deteriorate.

In Balkan, Akhal, Mary regions and in the southern districts of the Lebap region, the early planting time is March 20-30. In these regions, the best time for early sowing is April 1-10, medium - April 10-20, and for late - April 20-30.

Early sowing in other districts of the Lebap region begins on April 1. The best period is from April 5 to April 15, the medium-term period is from April 15 to April 25, and the deadline is from April 25 to May 5.

In Dashoguz region, early sowing begins on April 5, with a favorable period of 10-20 months, a medium-term period of May 1-20 and a late period of June 1-15.

Melons that ripen in mid- and late summer due to the scorching summer heat should also be planted in all areas of the Balkan, Akhal, Mary regions and in the southern districts of the Lebap region by the end of April. If these varieties are still planted in May or June, it should be borne in mind that leprosy, melon flies, thistles and other harmful insects that have appeared recently because of great harm to the crop.

In Dashoguz region, when melons are planted in areas free of wheat or other green crops, it is believed that they are capable of yielding good harvests, which allows the land to produce two crops a year. In Dashoguz region, it is impossible to postpone sowing from June 20, when melons are planted after wheat. In this region, when the sowing of winter melons is postponed from the specified time, the growing season of melons is shortened, and their harvest is in lower level.

When sowing orchards in small (up to 1 ha) fields, sowing is carried out manually, and in large areas 4-5 kg of seeds per hectare is consumed using a seed drill. With early sowing, the seed is poured out more superficially, and at a later time, the seed is poured out deeper.

Thus, sowing in sandy, light soils is planted to a depth of 5 cm, in clay to a depth of 3-4 cm. If at a depth of 7 cm, the melon germinates very slowly, and when dropping below 7 cm, the seeds do not germinate.

Melon sowing should be carried out in a 90 x 70 cm line.

Watermelon sowing should be carried out in a 180 x 97 cm line.

Pumpkin sowing should be carried out in a 180 x 200 cm line.

For earlier cultivation of melon crops, seeds and 25-30-day-old seedlings are planted in the open ground under a temporary tunnel-shaped shelter covered with a film. Studies show that watermelon seeds give good results when planted under a film on March 1-10 and March 15-25. When growing watermelons and melons in the open ground, their yield reaches 15-25 days earlier than the yield without envelope at normal times.

Irrigation of orchards

The cultivation of high yields of melon crops depends on the timely supply of water. By the time the crop begins to ripen, their need for water is high.

Although orchards are resistant to drought, they feel good if they are kept moist in time. The lack or excess of moisture during growth inhibits the growth of melons or creates unfavorable conditions for harvesting, which leads to excessive plant growth. In both cases, the yield decreases.

The flowering of orchards is the most crucial period of its development. At this time, fruits that have been pollinated and fertilized are formed on the mother flowers. The more embryos of flowers or fruits are formed in orchards and the more they are kept from escaping, the higher their yield. Therefore, during the flowering period of these crops, the maximum soil moisture in the layer with roots should be at least 65-70%. Numerous studies have shown that plants grow better in this sequence. As soon as the soil moisture reaches 65-70% of its moisture capacity, it should be watered next time. If water does not arrive at this time, the growth of melon crops

stops first, after which the cultures are tested - buds, flower embryos and fruits. If the plant grows it’s need for moisture increases.

The period of water from one to another varies depending on weather conditions and the degree of their development. The distance to the water source is shortened as the mass begins to bloom and the fruits grow, and then lengthens slightly until the melon ripens.

Irrigation for the germination of melon crops is regulated at the level of 600 m3 / ha.

Irrigation is carried out through caches. Metal or polyethylene pipes, siphon pipes and shock absorbers with water flow control devices are installed at the ends of the waterproofing of caches to drain water into all caches.

The length of the cache is 100-200 meters, depending on the coverage of the ground and the water absorption capacity of the soil. Irrigation of each horse should not take more than 1-2 days. Irrigation is more effective if it is carried out along a pre-laid line.

Depending on the mechanical composition of the soil and the location of groundwater, melons are given 5-7 times and watermelon, pumpkin 8-10 times growth water. The amount of water supplied each time should be 700 cubic meters per hectare. Water collection for growing crops is carried out every 10-12 times before harvesting, 6-7 times after harvesting and 8-10 times at the rate of 700 m3 / ha for 15-16 days during harvesting.

Land reclamation continues in the southern regions from May 10 to August 30, and in the northern regions - from May 20 to August 25.

Care for orchards

The first pulling is carried out after mass shoots for normal plant growth. 2 plants should be left on each nest sowing. The second task of isolation is that when plants produce 3-4 real leaves, one healthy plant remains in each cell.

During the growing season of orchards, the cultivator conducts three-row row-to-row sowing to soften the soil and remove weeds

before seeds are detected. The processing depth should be 12-14 cm. During this time, the ridges are heated 2-3 times and the bases of the boats soften. Intermediate work should be carried out in the southern regions from May 15 to June 30, and in the northern regions - from May 25 to July 10.

The first fertilizing of crops with mineral fertilizers is carried out when 3-4 real leaves appear. Then 150 kg of urea and 200 kg of superphosphate are added to the hectare. The work is planned to be carried out in the southern regions from May 25 to June 5, and in the northern regions - from the end of May to June 10. For the second time, 150 kg of ammonium nitrate and 50 kg of potassium chloride per hectare are fed with mineral fertilizers. In the southern regions, work is carried out from June 20 to July 10, in the northern - from June 25 to July 10.

Fetus of the orchards

It is important to use seeds when sowing to get the maximum yield of melons (melons, watermelon, pumpkins).

The orchards are deliberately pollinated. Therefore, when planting melon seeds for sowing, their varieties should be planted at a distance of at least 1000 meters from each other. The agro technics of orchards are grown for seed production is similar to the agro technics grown for food crops. Since it takes a long time to obtain melon seeds, the spring sowing period is used. In orchards sown with seeds, the first cleaning is carried out by removing diseased, modified plants before flowering. The second time, when the crops are ripe for cleanliness, the changes in their appearance should be removed. For the third time, the melons and watermelons that were not harvested in advance are collected. Melons and watermelons collected for sowing are loaded into trucks, delivered to the sowing sites and transported using sowing machines. The resulting seeds are poured into wooden buckets or concrete pits for fermentation for 12-15 hours. Thus, the juices around the seeds are quickly washed off. The seeds are washed twice with clean water and

dried in the shade. In order to completely clean and select the dried seeds, they pass through “Petkus Super” type cleaning machines and are stored in cloth bags.

From a ton of seeds, you can get 14-16 kg of melon, 8-10 kg of watermelon and 5-10 kg of pumpkin. From the sown area per hectare of seeds, 60-100 kg of melon seeds, 120-150 kg of watermelon and 80-120 kg of pumpkin seeds are obtained.

The terms of sowing, lines and agro technics of melons, watermelons sown for seed production do not differ from those of a commercial garden. But when melons and watermelons are sown to obtain seeds, individual varieties should be planted at a distance of at least 500 and 1000 meters from each other, given that these are intentionally pollinated plants. To obtain seeds, their well-ripened varieties should be selected.

Melon and watermelon seeds are kept in specially made concrete pits or wooden containers (barrels) for 10-12 hours, lime is removed and the seeds are washed with clean water. Then the taken seeds are dried under a shadow, that is, on thin shaded areas, and the seeds are dried well.

The dried seeds are cleaned, sorted and put into bags. Outside the packages should be inscriptions indicating the name of the variety, place of origin, heat, purity, germination, humidity and other indicators.

14-16 kg of seeds can be obtained from 1 ton of melons harvested for harvest, 8-10 kg of watermelon and 5-10 kg of pumpkin seeds. 0.6-1.0% of melon, 1.2-1.5% of watermelon and 0.8-1.2 hundredweight of pumpkin seeds can be obtained from 1 sq.

The main diseases and pests of orchards

When growing melons, they mainly contain bacteriosis: bacterial necrosis (*Erwiana carnegiena*), dead rot *(Erwinia carotovora pv. ncarotovara)*, brown spotting (*pineapple Erwinia*), fungal diseases (*Alternaria cucumerina*), and anthracnose (*Colletotrichum orbiculare*)

serkosporose (*Cercospora citrulina*) and false leukemia (yalan ak dushme) is a common phenomenon.

Yalan ak dushme disease (False leprosy) (*Pseudoperonospora cubensis*) is the most common disease of orchards and affects mainly melons, watermelons, pumpkins and cucumbers. The disease first causes the appearance of spots on the leaves of the plant, which eventually turn light green, and then brown. The edges of the spots have an angular shape and are located between the veins of the leaves and merge with each other. On the reverse side of the leaf, first white and then gray, the fungus forms fungi (Fig. 14). The diseased leaves are twisted and then dried. Spores of pathogenic fungi are carried by the wind and various species.

Figure 14. **Cucumbers are infected with yalan ak dushme disease**

Disease control measures. Measures such as planting healthy and resistant varieties against melons, carrying out crop rotations, caring for fields in accordance with the requirements of agricultural technology, removing and disinfecting the remains of diseased plants are prevented. Depending on the type of disease caused by chemicals, recommended fungicides should be used (for example, ridomil gold, patamil, topaz or fullpas).

Pests that are more common in melon crops and affect the quantity and quality of the crop include juices, melon butterflies, locusts and melon flies. These pests slow down the formation of the crop, leaving the crop out of growth, reducing yield and reducing quality. The most dangerous of them is the melon's fly.

Melon fly (Myopardalis pardalina Big.) it is especially harmful to orchards such as melons, watermelons, pumpkins, cucumbers and tomatoes. In the absence of these crops, fly larvae can also switch to other crops and feed. Melon flies overwinter in the soil in the form of dolls to a depth of 3-8 cm. They also mate there. The fly lays eggs under the bark of freshly harvested melon embryos. Our research has shown that a fly can fly up to 5-8 kilometers, and that one of them can lay up to 100-123 eggs on 10-15 melons. After 2-7 days, the larvae hatch from the eggs, pierce the flesh of the melon and move into the middle cavity, where they feed for 8-15 days. Then the worms pierce the bark and get into the soil, where it becomes a false elephant (doll) and flies away after 13-21 days. Flies live on average 40-60 days, and it takes so many days to form a generation. In the conditions of our country, with a favorable year (wet, humid weather), it can give up to 5 generations. If pest control measures are not carried out on time and at a high level, up to 60-95 percent of the harvest that will be harvested will be lost, and the quality will decrease.

Pest control should be combined with agro technical measures and chemical control measures. Pulling the land to a depth of 30-32 cm from agro technical measures, freezing and freezing wastewater in winter, carrying out crop rotation or crop replacement, weed control reduces the number of pests. One of the most important tasks is the elimination of harmful pests. Damaged fruits should be brought to the edges of the field and securely buried in a dug hole at a depth of 1.0 meters. Plant residues in the field should be set on fire on the spot and cleaned. In order to completely eradicate pests, the recommended chemicals should be sprayed three times: the first time when the embryos begin to form, the second time - during the mass formation of embryos, and the third time - 6-7 days after the second.

Harvesting

One of the most important jobs is the timely harvesting of crops. Harvesting should begin after 15% of melons and watermelons are fully ripened in the field. Mass harvesting continues after 65% of fruit ripening before the onset of cold weather.

Usually, early-ripening varieties of melon and watermelon produce 3-5 fruits on each root, late-ripening ones - 1-2 fruits on a melon and 3-4 fruits on a watermelon. But melon crops yield even more fruits under favorable climatic conditions and high-quality care.

It takes from 20 to 70 days, depending on the growing season of the planted varieties, and sometimes more, depending on the onset of the year, so that melon crops ripen from the moment they begin to bear fruit.

Figure 15. **Melon harvest**

During the ripening of orchards, the color of the melon stem changes to yellow, red or intermediate, while watermelon and pumpkin also change the color of their fruits during ripening. The lines of the melon grid become more noticeable. Small cracks form on the outside of the stem of several varieties. Early-ripening varieties exude a pleasant aroma. The stems of early and medium-ripened

varieties are easily cut off from the melon. In late-ripening varieties, the beginning of reticulation means that the melon is ripe, when the watermelon ripens, it dries the whiskers next to the stem, and ripe caddies change color.

Table 1

Agro technical measures in the cultivation of melons

No	Agro technical measures	Rules	Deadlines	
			In the Akhal, Balkan, Mary regions and in the southern districts of the Lebap region	**In Dashoguz region and in the northern districts of Lebap region**
1	*2*	*3*	*4*	*5*
1	Cleaning of the territory from weeds and plant residues	Hands	10-20.10	01-20.10
2	Carrying out weed control activities	Recommended herbicides, as a rule	10-20.10	01-20.10
3	Watering before plowing (if necessary)	600-700 m3/ha	15-25.10	
4	Fertilizer before plowing	Superphosphate 200 kg/ha, potassium chloride 50 kg/ha, manure 15-20 t/ha	01-20.11	15-30.10
5	Plowing	27-30 cm	01-25.11	01-25.11
6	Alignment	Cross section	20-30.03	30.03-10.04
7	Chisel, harrow and paddle	By width and length 16-18 cm	1-10.04	10-20.04

Continue of table 1

1	*2*	*3*	*4*	*5*
8	Carrying out weed control activities	Recommended herbicides, as a rule	05-25.04	15-25.04
9	Removal of seed beds	180 cm apart	05-25.04	15-30.04
10	Main water	600 -700 m3/ha	05-25.04	15-25.04
11	Sowing	4-6 kg of seeds per hectare	Early :01-10.04 Late : 20-30.04	10-20.04 01-15.06
12	Watering during the germination period	600 m3/ha	after sowing	
13	water, growing season	600 m3 / ha of pumpkin (6-7 times), every 10 days before harvest, every 6-7 days during flowering	10.05-30.08	20.05-25.08
14	Pulling	Manually put 1 healthy well-developed root on 1 meter in rows.	10-25.05	20.05-15.06
15	Row - to - row processing	3 times	15.05-30.06	25.05-10.07
16	Softening and grinding of roots	2 times	15.05-30.06	25.05-10.07
17	Weeding	By hand 2 times	15.05-20.07	25.05-30.07

Continue of table 1

1	*2*	*3*	*4*	*5*
18	1st fertilizing with mineral fertilizers	Urea-150 kg/ga, Superphosphate- 200 kghga	25.05-05.06	30.05-10.06
19	Pulling	Ammonium nitrate 150 kg /ha, potassium chloride 50 kg/ha	20.06-10.07	25.06-10.07
20	Pest and disease control measures	Recommended insecticides and fungicides, as a rule	If necessary	
21	Pulling fruits and berries out of the beam		10.06-20.08	15.06-25.08
22	Harvesting ripe melons, obtaining seeds	Timely collection of ripe melons by hand	Early-maturing varieties 15-30.06 Summer varieties 01.07-20.08 Autumn varieties 20.08-30.09	10.06-25.09

Note: depending on weather conditions, the recommended rules and agro technical terms may differ

Table 2

Agro technical measures for growing watermelon

T/b	Agro technical measures	Rules	Deadlines	
			In the Akhal, Balkan, Mary regions and in the southern districts of the Lebap region	In Dashoguz region and in the northern districts of Lebap region
1	*2*	*3*	*4*	*5*
1	Cleaning of the territory from weeds and plant residues	Hands	10-20.10	01-20.10
2	Carrying out weed control activities	Recommended herbicides, as a rule	10-20.10	01-20.10
3	Watering before plowing (if necessary)	600-700 m^3/ha	15-25.10	
4	Fertilizer before plowing	Superphosphate 200 kg/ha, potassium chloride 50 kg/ha, manure 15-20 t/ha	01-20.11	15-30.10
5	Plowing	27-30 sm	01-25.11	01-25.11
6	Alignment	Cross section	20-30.03	30.03-10.04

Continue of table 2

1	*2*	*3*	*4*	*5*
7	Chisel, harrow and paddle	By width and length 16-18 cm	1-10.04	10-20.04
8	Carrying out weed control activities	Recommended herbicides, as a rule	05-25.04	15-25.04
9	Removal of seed beds	180 cm apart	05-25.04	15-30.04
10	Main water	600 -700m^3/ha	05-25.04	15-25.04
11	Sowing	4-6 kg of seeds per hectare, 6-8 cm deep per hectare or by sowing	Early : 01-10.04 Late: 15-25.06	10-20.04 01-15.06
12	Water, during the germination period	600 m^3/ha	After sowing	
13	water, growing season	600 m3 / ha of pumpkin (6-7 times), every 10 days before harvest, every 6-7 days during flowering	10.05-30.08	20.05-25.08
14	Pulling	Manually put 1 healthy well-developed root on 1 meter in rows.	10-25.05	20.05-15.06
15	Row - to - row processing	3 times	15.05-30.06	25.05-10.07
16	Softening and grinding of roots	2 times	15.05-30.06	25.05-10.07

Continuable of table 2

1	*2*	*3*	*4*	*5*
17	Weeding	By hand 2 times	15.05-20.07	25.05-30.07
18	1st fertilizing with mineral fertilizers	Urea-150 kg/ha, Superphosphate- 200 kg/ha	25.05-05.06	30.05-10.06
19	Fertilizing with mineral fertilizers 2 times	Ammonium nitrate 150 kg/ha, potassium chloride 50 kg/ha	20.06-10.07	25.06-10.07
20	Pest and disease control measures	Recommended insecticides and fungicides, as a rule	If necessary	
21	Pulling fruits and berries out of the beam	By hand	10.06-20.08	15.06-25.08
22	Harvesting ripe melons, obtaining seeds	Timely collection of ripe melons	Early varieties 01.06-15.09 Late varieties 20.07-25.10	10.06-25.09 10-25.10

Note: depending on weather conditions, the recommended rules and agro technical terms may differ.

Table 3

Agro technical measures for growing pumpkins

T/b	Agro technical measures	Rules	Deadlines	
			In the Akhal, Balkan, Mary regions and in the southern districts of the Lebap region	In Dashoguz region and in the northern districts of Lebap region
1	*2*	*3*	*4*	*5*
1	Cleaning of the territory from weeds and plant residues	Hands	10-20.10	01-20.10
2	Carrying out weed control activities	Recommended herbicides, as a rule	10-20.10	01-20.10
3	Watering before plowing (if necessary)	600-700 m^3/ha	15-25.10	
4	Fertilizer before plowing	Superphosphate 200 kg/ha, potassium chlorine 50 kg/ha, manure 15-20 t/ha	01-20.11	15-30.10
5	Plowing	27-30 см	01-25.11	01-25.11
6	Alignment	Cross section	20-30.03	30.03-10.04
7	Chisel, harrow and paddle	In length and width 16-18cm	1-10.04	10-20.04

Continue of table 3

1	*2*	*3*	*4*	*5*
8	Carrying out weed control activities	Recommended herbicides, as a rule	05-25.04	15-25.04
9	Removal of seed beds	180 cm apart	05-25.04	15-30.04
10	Main water	600 -700m^3/ha	05-25.04	15-25.04
11	Sowing	4-6 kg of seeds per hectare, 6-8 cm deep per hectare or by sowing	01-10.04	10-20.04
12	Water, during the germination period	600 m^3/ha	After sowing	
13	water, growing season	600 m3 / ha of pumpkin (6-7 times), every 10 days before harvest, every 6-7 days during flowering	10.05-20.08	20.05-25.08
14	Pulling	Manually put 1 healthy well-developed root on 1 meter in rows.	10-25.05	20.05-15.06
15	Row - to - row processing	3 times	15.05-30.06	25.05-05.07
16	Softening and grinding of roots	2 times	15.05-30.06	25.05-10.07
17	Weeding	Hand 2 times	15.05-20.07	25.05-30.07

Continue of table 3

1	*2*	*3*	*4*	*5*
18	1st fertilizing with mineral fertilizers	Urea-150 kg/ha, Superphosphate- 200 kg/ha	25.05-05.06	30.05-10.06
19	Fertilizing with mineral fertilizers 2 times	Ammonium nitrate 150 kg /ha, potassium chloride 50 kg / ha	20.06-10.07	25.06-10.07
20	Pest and disease control measures	Recommended insecticides and fungicides, as a rule	If necessary	
21	Pulling fruits and berries out of the beam	Hands	10.06-20.08	15.06-25.08
22	Harvesting ripe melons, obtaining seeds	Timely collection of ripe pumpkins	10-20.08	10-30.09

Note: Depending on weather conditions, the recommended rules and agro technical terms may vary.

CONTENT

MINISTRY OF AGRICULTURE AND ENVIRONMENTAL PROTECTION OF TURKMENISTAN

TURKMEN AGRICULTURAL INSTITUTE

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