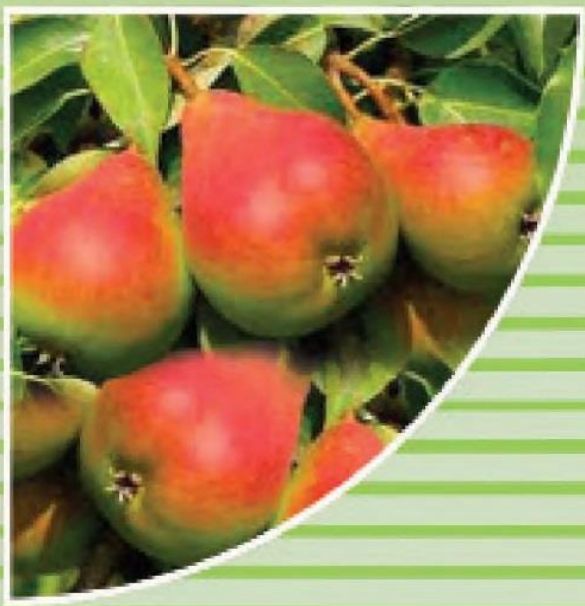
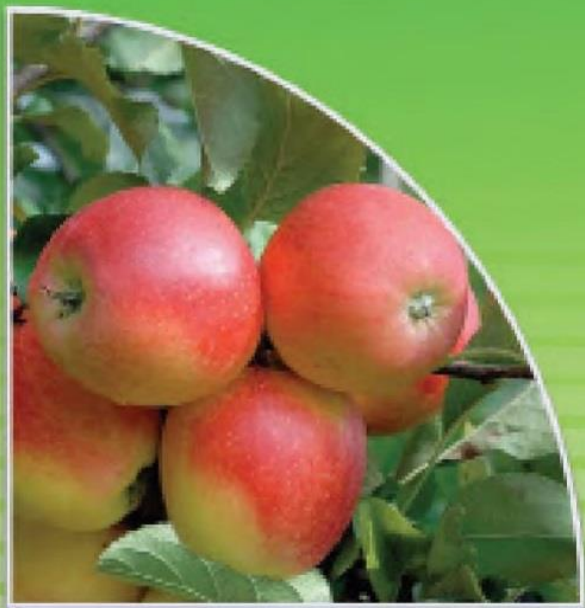
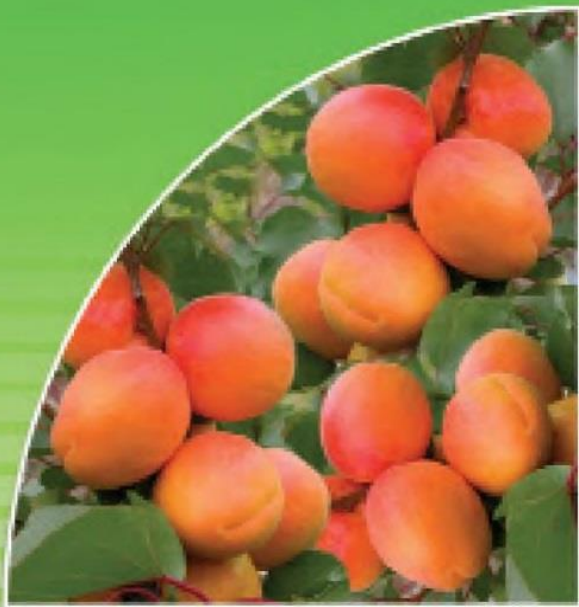


# MANUAL FOR GROWING ORCHARDS



**MINISTRY OF AGRICULTURE AND ENVIRONMENTAL  
PROTECTION OF TURKMENISTAN**

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**TURKMEN AGRICULTURAL INSTITUTE**

**AGRICULTURAL SCIENTIFIC-PRODUCTION CENTER**

# **MANUAL FOR GROWING ORCHARDS**

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In the manual, based on the results of research and advanced production experiments conducted at the Agricultural Research and Production Center of the Turkmen Agricultural Institute, the rules and timing of agro-technical measures to be taken in the cultivation of orchards in soil and climatic conditions of the country, as well as their main disadvantages activities are recommended. The manual also describes the characteristics of varieties of orchards used in production in our country.

The guide is intended for agricultural professionals, private landlords, tenants, teachers and students of higher and secondary schools.

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## INTRODUCTION

With the tireless care of our esteemed President, in the prosperous period of our sovereign state, the development and transformation of the agricultural sector of our country, the efficient use of land and water, the improvement of the ameliorative condition of irrigated lands, the cultivation of high-yielding varieties of agricultural crops and fruit orchards are also productive large-scale efforts are being made to ensure sustainable food abundance by scientifically improving methods and agro technical measures.

According to the decisions of the President, the long-term use of agricultural land to farmers, the financial support of producers, the adequate supply of agricultural machinery, water, seeds, chemicals are the key factors in the development of agriculture include the fruitful sector.

Horticulture is one of the lucrative industries that provide our people with a generous supply of fresh fruits and vegetables throughout the year. The soil and climatic conditions of our country are favorable for the cultivation of various types of orchards. The fruits produced in our sunny country are distinguished by their taste, ecological purity and high quality.

Fruits contain 75-90% water, 15% protein, 5-23% sugar, 2-3% organic acids (lemon, apple), fats, fragrances, various vitamins (A, B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub>, C, P, PP) and are among the most important food products for the population.

Today, a large number of varieties of Turkmenistan, which are suitable for our local soil and climatic conditions, are rich in yield and high quality of fruit. The study of valuable economic characteristics, agro-ecological characteristics of these varieties, their resistance to diseases and pests, their resistance to cold and drought is considered an important scientific and industrial task. Timely and scientifically developed agro-technical measures in the cultivation of orchards are yielding high results.

Given the above, the selection of lands for laying the foundation of young orchards in the soil and climatic conditions of our country, from the planting of the seedlings to the time of harvest, the scientific advice on the rules, methods and timing of the agro technical measures to be followed. a production manual has been prepared.

In preparing this guide, we used the advice, speeches, and scientific articles of experts, scientists who have gained a lot of experience in growing high yields of orchards.

This guide, published in 2009, is the "Guide to Growing Orchards" with amendments and additions to the scientific and production data collected in recent years.

The manual also describes the characteristics of varieties of orchards used in production in our country.

## VARIETIES OF SEED ORCHARDS

**Seed orchards include** apples, pears and **beans**. They are distinguished among orchards by their high quality of fruit, high yield and ability to adapt to natural conditions. Due to the variety of varieties and varieties of seed orchards, it is cultivated in a variety of natural conditions with its stability, drought tolerance and biological characteristics.

The fruits of the orchards are used for sweating, cooking, and processing. The fruits are processed to produce sweet drinks, jams, juice and syrups.

### Characteristics of apple varieties

**Gyzyl yangak (Early June).** The tree is medium and round in size. It begins to bear fruit in the 4th-5th year after planting. The fruits are dense, small, 40-50 grams each, round in shape. The color of the bark is brown, diffuse, and pink in color. The lower part of the bark of the fruit is spot-shaped, the flesh is brown in color and has a sour-sweet taste (*Fig. 1*).



*Figure 1. Gyzyl yangak variety of apples*



The fruits ripen in the first decade of June. Yields regularly, yield 40-50 kilograms of fruit at the age of 7 years. The fruits are kept intact for two weeks, and their suitability for long-distance transportation is satisfactory.

**Sowgat.** On average, the growth rate of the tree begins to bear fruit in the 4th to 5th year after transplanting and bears fruit every year. The fruits are medium in size (65-70 grams), the bark is greenish brown, and the sides are red. The flesh of the fruit is white, juicy, with a sour sweet taste.

The fruits ripen early, in the second decade of June. The tree bears 50-55 kg of fruit at the age of 7-8 years. The fruits remain unchanged for two weeks after harvesting (*Figure 2*).

It is suitable for long-distance transport of fruits.



*Figure 2. Sowgat variety of apples*

**Altynsow ajayip.** The tree is medium in size, the pillar is strong, and the circle is round. It begins to bear fruit in the 4th-5th year after planting. The fruits are medium in size, 100-110 grams, pleasing to the eye, yellow, with pink stripes on the bark. The flesh of the fruit is brown, dense, and juicy, with a sour sweet taste (*Fig. 3*).



*Figure 3. Altynsov ajayip variety of apples*

The fruits ripen in mid-July. Yields consistently well, with trees 7-8 years old producing 40-50 kilograms of fruit. The fruit keep intact for more than 30 days after harvest. It is suitable for long-distance transport of fruits.

**Nowayi.** The tree is medium in size, the branches are sparse, and the top of the tree is flat. In the 5th year after planting, it begins to bear fruit.



*Figure 4. Novayi variety of apple*

The fruits are large (200-230 grams), the lower side is elongated rather than elongated, and the top is slightly sliced. The shell is greenish-white in color and has no pinkish tinge. The flesh of the fruit



is slightly white, of medium density, and very juicy. It has slightly fragrant, sour sweet (*Figure 4*).

The fruits ripen in the second half of July. It bears good fruit on a regular basis, and every 8-year-old tree bears 35-40 kilograms of fruit. The fruits can be stored 20 days after harvest. Good for long-distance transport of fruits.

**Altyn guyma.** The tree is medium -sized, the pillar is firm, and the top of the trunk is dense. It starts to bear fruit in the 4th to 5th year after planting (*Figure 5*).



*Figure 5. Altyn guyma variety of apples*

Fruits are medium in size (100-130 grams), round, yellow. The flesh of the fruit is dense, slightly crumbly, and has a good taste of juicy, sour sweetness.

The crop ripens in late July and early August. Every 7-8 year old tree produces 35-50 kilograms. The fruits can be stored for up to a month. It is considered suitable for long-distance transport of fruits.

**Sary gabyk.** The tree is very tall; the top of the trunk is wide cone-shaped and very kind. The fruits are medium-sized, 150-180 grams, and the underside is slightly elongated. The bark is greenish-yellow in color and orange in color. There are garage points all over the shell. The flesh of the fruit is delicate, juicy, sweet, and tasteless. It begins to bear fruit in the 5-6 years after planting (*Figure 6*).



*Figure 6. Sary gabyk variety of apples*

The tree of this variety is densely branched, and the shoots are well opened. It is recommended that one-third of the annual branches be cut off and the branches of the top of the trunk are sparse.

The crop matures in the first half of August and grows on the tree stands for. Good yield, 8-year-old tree yields 50-60 kg. The fruits can be stored for two months after harvest, and are considered suitable for long-distance transport. This variety is resistant to insects and diseases.

**Gyzyl mengiz.** The tree is medium in size, the pillar is healthy, straight, the shape is like a pyramid, and the branches and leaves are dense.

When the apple is planted in the Dusen type, it begins to bear fruit in the 4th-5th year after planting, and in the 2nd year when it is planted in the Paradise type.

Fruits are medium in size (120-130 grams), rounded rather than elongated. The shell is strong and the sunset side is a large pink *spot* (Figure 7).

The trees mature prematurely by forming large amounts of ring-bearing stems, so it is advisable to shorten the ends of the branches that grow each year, as well as to reduce the old branches that bear fruit.



*Figure 7. Gyzyl mengiz variety of apples*

The fruits ripen in the first half of August. High yield , at 25 years old the yield reaches 200-300 kg. The fruits are stored for 18-20 days after harvesting and are suitable for long-distance shipment. Apples are very badly damaged by apples.



*Figure 8. Ak altyn variety of apples*

**Ak altyn.** The trees are tall, pyramid-shaped, and rarely spherical. The trees bear fruit at the age of 7-8 years, and when the apple is planted in the paradise of IX pods, it begins to bear fruit at the age of 3-4 years.

The fruits are of the same size (120-140 grams), elongated, and the top of the fruit is elongated. The bark of the fruit is yellow in color, sometimes reddish on the sunny side, the flesh is white, delicate, juicy, with a distinctive aroma, sour taste (*Fig. 8*).

This variety is distinguished by the large variety of fruit-bearing branches and the large number of shoots and twigs.

It is recommended to cut a third of the length of the annual branches of this variety. If the branches are not cut off, the size of the tree will be very large, which makes it difficult to harvest.

The fruits ripen in mid-September, and their taste is further enhanced by the end of October. The yield is very high; every 25-year-old tree produces 300-350 kilograms of fruit. The fruits retain their shape for 4-5 months after shipment. Good for long-term fruit delivery.



*Figure 9. Shapak variety of apples*

**Shapak.** The growth force of the tree is medium, the size is wide, and it has a wide pyramid-shaped top. It begins to bear fruit in the 4th to 5th year after planting, and in the 2nd year when the apple paradise paralyzes the IX pod. The fruits are 100-130 grams in medium size, round, pleasing to the eye. The bark is yellowish-green in color, and the sunny side is dark red in color. The flesh of the fruit is white, juicy, sweet, and slightly fragrant.



The fruit bears fruit in a simple ring-stem. Appropriate opening of shoots. It is advisable to cut a third of the annual stem without cutting the ends of the branches too much.

The fruits ripen in mid-September and can be stored for 3-4 months after harvest. The fruit does not fall on the ground, but stands firmly on the tree. Good yield, 25-year-old tree produces 180-200 kg of fruit (*Fig. 9*).

Good for long-distance transport.

**Altyn chigit.** The tree is sprouting, the leaves are thick, the top of the stump is round, and the branches are spreading. In the 4-5 years after planting, it begins to bear fruit. The fruits are pleasing to the eye, medium in size (120-140 grams), and round in shape. The outside of the fruit is yellow and the bark is brown. The flesh of the fruit is yellow, fragrant, dense, juicy, and sweet. It has a slightly acidity (*Fig. 10*).



*Figure 10. Altyn chigit variety of apples*

The tree of this variety forms many branches, with a high degree of bud opening. It is recommended to cut a third of the annual branches and regularly cut the tops of the trees. Stopping the growth should be done by cutting off the ends of the 5-6 year old branches of the trees. It is considered a good variety for planting short-lived wild plants. High resistance to diseases and insects.

The fruits are harvested in early October, and remain unchanged from November to March. High-yielding, 25-year-old trees can



produce 150-200 kilograms. The fruits do not fall on the ground. Good for long distance shipping.

**Simirenko's Renetti. (Green apple of Chuli)** The growth rate of the tree is moderate, the top of the trunk is round, the branches are spread out, and the leaves are dense. Early harvest begins. It is medium in size and has normal and large (150-200 grams) fruits. The shape of the fruits is elongated round; the bark is yellowish-green. The flesh of the apple is white, very juicy, and has a sour-sweet taste. The taste of the fruits of this variety is not inferior to the taste of the fruits of the best European varieties.

The tree bears fruit in its simple rings, and branches. The buds are good at opening, and many twigs are formed on the tree. It is recommended to trim one-third and two-thirds of the annual branches without cutting too many branches when pruning.

The fruits are harvested in late September and early October.

The yield is very high, a 7-year-old tree produces 60-70 kg of fruit and a 25-year-old tree produces 250-300 kg of fruit. Fruits are not spilled on the ground (*Figure 11*). After harvesting, the fruit retains its taste qualities until May. Fruits are good for long-distance delivery.

**Starkrimson. (Gyzyl gabyk)** The tree has a slow-growing, palette-shaped trim, a compact branch set (bulk), densely located and thick branches. Fruits grow on simple, complex ring branches, thick and short branches, and bear fruit 3-4 years after transplanting (*Fig. 12*).



*Figure 12. Starkrimson variety of apples*

It is dark red in color, the stone is uneven, slender, weighing 180-190 grams, and has large fruits. The bottom of the fruit bark is completely dotted. The fruit has a unique aroma, sour-sweet, sweet-tasting, yellowish-white flesh.

The fruits ripen in late August. The average yield is 65-70 kilograms of fruit per 7-8 year old tree. After the fruit is harvested, it retains its taste qualities for 1-2 months. Fruits are good for long-distance delivery.

**Hasyly.** The size of the tree is medium, and the branches of the top of the trunk are spread out. It produces two crops a year. It blooms in the early spring. It begins to bear fruit in the 4th-5th year after planting. Fruits of medium size and large (160-200 grams) are yellow in color and side to side are bright pink. The flesh of the fruit is white, of medium density, and has a sour-sweet taste. This variety forms a large number of productive rods, and the shoots open well. It is advisable to cut off one-third of the annual stems when cutting the rods and to reduce the size of the stems at a young age.

The fruits ripen in late June. High-yielding 7-8 year old trees produce 60-70 kilograms of apples. It lasts 30 days. Fruits are good for long-distance delivery.



*Figure 13 . Ak guyma variety of apples*

**Ak guyma (White cast)** The tree is medium in size, with a narrow branch and a broad pyramidal shape (*Fig. 13*).

Fruits are medium in size and large in young trees (up to 150 grams). It begins to bear fruit in the 3-4th year after planting. The fruit is round, elongated. The surface of the fruit is pale, yellowish-yellow in color. The flesh of the fruit is white, soft, sour-sweet, with a pleasant taste. When the fruits are overcooked, the meat becomes softer and more tender.

The crop is often formed on ring-shaped fruit stalks. The openings of the buds on the tree are average, and the ability to form rods is weak. It is recommended to cut one-third and two-thirds of the annual shoots, and to regularize and rejuvenate the fruit stalks.

The fruits ripen in late June and early July. Deterioration is not more than a week or two. Good yields, 40-50 kg of fruit are obtained from 7-year-old trees. At 25 years old, the tree has a yield of up to 250 kilograms. Fruits are not suitable for long-distance transportation.

**Gok alma (Blue apple).** The tree is healthy and flourishing, with rounded branches and thick buds. In 4-5 years after planting, it starts to bear fruit. The fruits are large and medium in size (120-160 grams), pleasing to the eye, round.

The fruits are greenish-white, with pleasing purple stripes. The flesh of the fruit is pale-white, of medium density, fragrant, with a sour-sweet flavor (*Fig. 14*).



*Figure 14. Gok alma variety of apples*

The 2-3-year-old branches of the tree bear fruit, the buds open well, and the shoots form a lot. It is recommended to cut one-third and one-third of the annual shoots, that is, not to cut too much.

The fruits are harvested in the second decade of July. Regular and high yield, 8-year-old trees bear 50-60 kg of fruit. The fruits remain unchanged for 30 days. Fruits are good for long-distance delivery.

**Menekli gyzyl (Spotted red).** It is a tree with a dense branch, spreading outwards, which is distinguished by its strong growth towards the top. It bears fruit at the age of 4. It blooms from April 15-20. It yields from mixed fruit carriers. The fruits weigh 80-120 grams. The rounded, greenish-yellow, fruit-bearing bark is pale red (*Fig. 15*). It is fragrant, soft, sweet-tasting, light green in color.



*Figure 15. Menekli gyzyl variety of apples*

The seeds are sown on the ground, and the crop is harvested on July 5-15. Yields an average yield of 80.7 s / ha, up to 129.4 s / ha at high care. It lasts a month after it collapses. It is suitable for long-distance transport.

**Irki gyrmyzy (Early purple).** The tree is medium-sized, healthy, with rounded branches, dense. In 4-5 years it starts to bear fruit.

Fruits are medium in size (100 grams), greenish-white, pleasing to the eye. The bark of the fruits is thick, light purple in color, the flesh is juicy and the medium sweet-sour.



The fruit ripens in June and harvests 250-300 kilograms from each tree. The fruits remain unchanged for 15-20 days. It is considered unfit for export.

### **Characteristics of pear varieties**

**Gyzyl sapak (Red cheek)** The size of the tree is medium in size, the leaves are medium in size, the size is large, and the tips of the branches are pointed downwards. When the pear is planted in the wild, it begins to bear fruit in the 4th to 5th year after planting (*Fig. 16*).



*Figure 16. Gyzyl sapak variety*

The fruits are medium in size, 80-90 grams, with an elongated round shape. When the fruit is harvested, the bark is yellowish-green, and when it is ripe, the sun-shining side is pink. The flesh of the fruit is greenish-white, the taste is good, the taste is slightly sour.

The fruits ripen in late July. It has high yield, each 8-9 year old tree yields up to 50 kg. Ripe fruits are poured into the ground. Fruits are swollen and damaged 4-5 days after harvest. In order to send their fruits far away, they have to reap the harvest before the bark is yellowed.

**Merdem.** The tree is sprouting, the blade is spreading, the leaves of the top are thick, and the fruit begins to bear fruit in the 4th-5th year of its growth.





*Figure 17. Merdem Variety*

Fruits are large (180-200 grams), elongated. Peel a squash, grate it and squeeze the juice. Although this variety blooms very early, the flowers are resistant to spring cold. The fruits are firmly planted in the tree (*Fig. 17*).

The crop ripens in early September. The yield is good, with an average yield of up to 90-100 kg per 9-10 year old tree. The crop can be stored until February. It is considered suitable for long-distance transport.

**Sahra gozeli.** The tree is sprouting, spreading, and the branches of the top of the hill are hanging down.

It begins to bear fruit after 7-8 years when it reaches the adult stems, and after 4-5 years when it grows into the dwarf stems.

The fruits are 115-120 grams in average size and the bottom is round. The bark is thin, not firm, smooth, greenish-yellow or golden yellow. There are small brown dots all over the shell. Peel a squash, grate it and squeeze the juice.

It begins to bloom in the second decade of April, and the cold of early spring does not affect the flowers. The fruits are solitary and in pairs.



*Figure 18. Sahra gozeli Variety*

The crop ripens in early September. Although it bears fruit every year, but it bears much fruit in a year, each aged 8-9 tree produces 50-60 kilograms, and a fully grown tree produces 200-250 kilograms of fruit. After harvest, it remains unchanged for two to three weeks. It is considered suitable for long-distance transport. In addition to eating sweets, the fruits are preserved, which is also suitable for human consumption (*Figure 18*).

**Michuri's berry.(Sary sayavan)** The tree is medium in size, the top is pyramid-shaped, and the leaves are dense.

The fruits are pear-shaped, sometimes rounded to one side, medium or high in size, each fruit weighing 170-180 grams. The tree begins to bear fruit at the age of 8-9 years (*Figure 19*).

The fruit is yellow and the sun is shining brightly. The fruit has a juicy, sweet taste of meat. The fruits are kept firmly in the tree and do not fall on the ground.

The crop ripens in August. At the end of October it becomes very sweet and more edible. The fruit of each 8-9 year old tree weighs 20-25 kilograms. When stored after freezing, the fruits retain their quality for 15-20 days, leaving their sweat and moisture. Good for long-distance transport. This pear belongs to the desert variety. Resistant to harmful insects and diseases.



*Figure 19. Michuri's berry variety*

**Altynsov (Goldish).** The tree is medium-sized, sometimes with very tall trees, the top is spread out, pyramidal-shaped, the leaves are thick, and the branches are spreading over the years. It begins to bear fruit at the age of 4-5 years (*Figure. 20*).



*Figure 20. Altynsov variety*



The fruits are medium in size, sometimes 120-200 grams in size, rounded, slightly yellowish in color, slightly yellowish on the sides. The flesh of the fruit is brown, very soft and juicy, with a sweet taste.

The crop is harvested in the second decade of August. The yield is consistent, high. Every 10-12 years old tree produces 50 kilograms and more. The fruit of this variety ripens well when stored. The fruits remain unchanged for 30-35 days. Good for long distance shipping. This dessert sort is perfect for winter.

**Altyn gabyk (Gold shell).** The size of the tree is moderate; it grows fast at a young age and then slows down its growth. The branches of the top of the stalk are sparse, spread, pyramidal-shaped, and begin to bear fruit at the age of 4-5 years.



*Figure 21. Altyn gabyk variety*

The fruits are medium in size (150-180 grams), but the adult ones are also elongated. The bark of the fruit is very thin, shiny, and turns yellow when cooked well. The flesh of the pear is yellowish white. Very juicy, sweet-tasting, delicately fragrant. It is considered one of the best growing varieties.

The crop ripens in late August. It yields annually, with an average of 80-90 pounds of fruit per 15-year-old tree. It does not

change for 20-30 days under normal conditions after departure. Good for long distance delivery (*Figure 21*).

**Turkmen gozeli (Turkmen beauty).** A tree is with sprawling branches, a round sparrow, up to 7 meters tall. The warm branches that bear much fruit are broken by the weight of their fruit. There are many productive fields with simple thick and short stems. It bears fruit for 4-6 years after planting and the full crop lasts from 8-10 years. Fruit production lasts 35-38 years. It blooms late and long-term.

The upper part is enlarged pear- shaped, each fruit has about 250-350 grams. It is fruit-bearing, fleshy, thick, and short-fruited. It has a yellowish-green glossy, dense-fruity crust. It is good-tasting, fragrant, soft, very sweet, and white-fruited.

Fruits are suitable for harvesting from July 20 to August 15. The ripening of the fruits of this variety takes 15 days. 150-200 kilograms are harvested from one tree. The fruits are stored for a short time. Good for shipment elsewhere. The fruits are applied to the sweat, sun-dried and processed.



*Figure 22. Turkmen gozeli variety*

Winter-resistant grows in different types of soil. It is resistant to heat and drought. In saline soils, swamps do not grow long and bear fruit (*Fig. 22*).

**Sary armyt (Yellow pear).** The tree is medium in size, with a broad, wide-branched, lateral branch that grows sharply from the main column. It has many fruit-bearing branches.



The pear begins to produce 4-5 years after germination of the seedlings, and 3-4 years after the cultivation of the wild beet. It blooms in April. The fruits are kept tightly on the tree, round-shaped apples, and the harvest period is dark yellow. The fruits are pale yellow in color when fully ripe. Thicken the fruit peel. The flesh of the fruit is fragrant, has a sweet taste, and is dense yellowish-white.

The fruits ripen from September 20 and are ready for harvest. It is suitable for eating after November 15. 20-40 kilograms are harvested from 8-10 year old trees. Suitable for long-distance transportation, the fruits are stored until February 26-28. The variety requires high agro technical care.

**Kopetdag.** It is a strong-growing tree with a sparrow-like trunk, up to 6 meters tall. It begins to bear fruit 4-5 years after planting. It has many fruit-bearing branches. It blooms early.

The fruits are kept tightly on the fruit-bearing branches on the tree. Fruits are medium in size (120-150 grams). The flesh of the fruit is soft, fragrant, and sweet.

Fruits ripen during the summer months from June 25 to July 5. It is used for 10-12 days to eat fruits in sweat. It yields 40-50 kilograms of fruit-bearing trees. It is considered suitable for long-distance transport. It must be planted in cold, irrigated soils.

### **Characteristics of quince varieties**

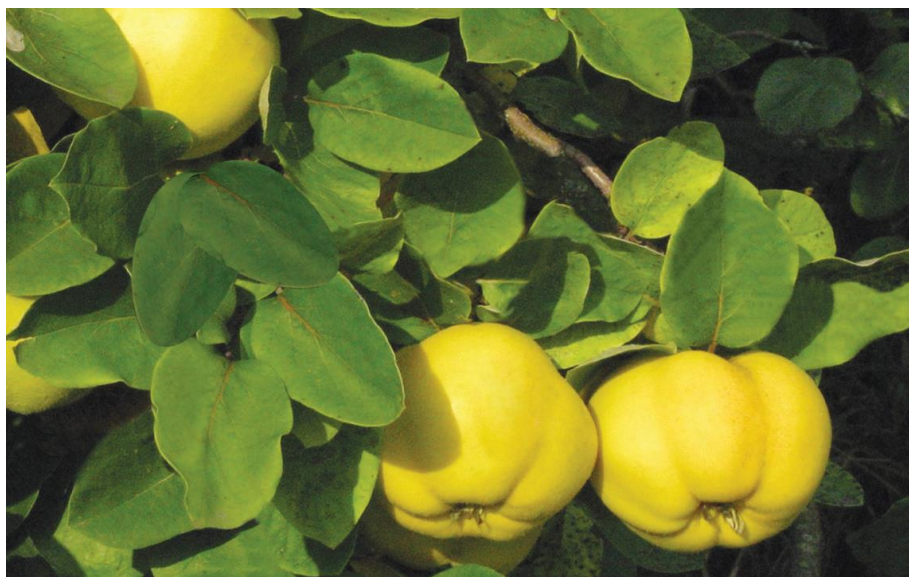
**Iri miveli (large fruited).** The tree is up to 6-7 meters tall, the leaves are dense in buds, and bloom in late May to early May. At the age of 4-5 he begins to bear fruit. The fruits are large, weighing 250-300 grams each, slightly elongated, rounded. The ripe fruit is yellowish green, the bark is thin. The flesh of the fruit is brownish and light in color, slightly sweet in taste, moderately juicy, fragrant, and yields more fruit in the summer, though it bears fruit every year.

The fruits are harvested in the first half of October. Taste is getting better in early November. The yield is 15-20 kilograms from each fruit-bearing tree. The fruits are well preserved until February after harvesting and do not lose their taste and other quality properties. The fruits are processed in addition to being eaten sweaty. Good for long distance delivery (*Figure 23*).



*Figure 23. Iri miveli variety*

**Hasyly.** The growth force of the tree is average, and the top of the tree is round. The tree begins to bear fruit at the age of 3-4. It starts to bloom late. The fruits ripen in the first half of October.



*Figure 24. Hasyly variety*

The fruits are large 300-350 grams, the upper part of the fruit is slightly elongated, the underside is round, the color is yellow, and the outside of the bark is covered with a brown tuft (*Fig. 24*).

The flesh of the fruit is white, not too hard, and juicy, the aroma is strong, and the sour taste is sweet.

The fruits are harvested in the first half of October. The yield is good, 25-30 kilograms of fruit is harvested from each fruit-bearing tree. Fruits can be stored until February after harvest. Good for long distance shipping. Resistance to pests and diseases is average.

**Sary yygyrtly (Yellow-wrinkled).** The tree is sprouting, the blade is wide, pyramidal in shape, and the leaves are dense in the stem. The tree of this variety begins to bear fruit at the age of 3-4 years. It begins to bloom late in the third decade of April (*Fig. 25*).



*Figure 25. Sary yygyrtly variety*

The fruits are medium in size or large (240-300 grams). The top of the fruit is elongated, the main round is rough, the surface is round, and the piece is pointed. The fruit is yellowish-brown, covered with a brownish tinge. The flesh of the fruit is greenish-yellow in color, juicy, fragrant, and has a good sweet sour taste.

The fruits ripen in the first days of October. High yielding, 5-6 year old tree yields 15-20 kg. After the fruit is shipped, it stays unchanged until February, and is good for long-distance shipment. Diseases and pests do not do much harm.

**Sary togalak (Yellow round).** The tree is medium in size, the top of the tree is round, and the leaves are thick. After 3-4 years, it begins to bear fruit. Fruits are medium in size (190-250 grams),



yellow in color. The top of the fruit is slightly elongated; the stalk is round (*Fig. 26*).



*Figure 26 . Sary togalak variety*

The flesh of the fruit is brown in color, moderately juicy, and has a sour sweet taste. The fruits ripen in early October. The yield is good. Each 7-8 year old tree produces about of 50-60 kilograms. After the fruits are harvested, they are kept in good condition until February. It is good for long distance shipment.



*Figure 27. Anev variety*

**Anev.** The growth rate of the tree is normal; the top of the trunk is spread out, pyramidal-shaped. This variety begins to bear fruit at the age of 3-4 years. The fruits are large (300-700 grams), slightly elongated, slightly translucent, slightly yellowish-green, the bark is greenish-yellow in color, the stone is light brown in color and pale in color.

The flesh of the fruit is yellow, juicy, dense, and fragrant, with a sour sweet taste.

It blooms late in the second decade of April. The fruits ripen in late September, in the first half of October. The 5-6 year old tree of the variety bears 25-30 kg of fruit.

Once the fruits are harvested, they can be stored well until February. Good for long distance shipping. Fruits are eaten sweaty. Pests are very harmful to their fruits (*Figure 27*).

**Yengiji (Winner)** . The tree has a strong growth, spreading, dense foliage and a pyramidal shape. This variety begins to bear fruit at the age of 3-4 years. The fruits are large (250-300 grams), pear-shaped, yellow in color, and the stone is covered with a brownish tinge. The flesh of the fruit is yellowish-white in color, moderately juicy, with a sour sweet taste, and fragrant.

The crop ripens in early October. The yield is good. A 7-8 year old tree bears 60-70 pounds of fruit. The fruits are kept unchanged until January, when they are shipped. Good for long distance shipping. Resistance to insects and diseases is average.



## VARIETIES OF STONE ORCHARDS

**Stone orchards** - apricot, peach, plum, cherry apply. Fruit-bearing orchards are distinguished by their rapid yield, early annual yield, high-yielding fruit, and drought tolerance.

The fruits of the orchards are distinguished by the fact that they are more suitable for eating sweets, preparing them for high quality, and processing them.

The fruits are processed to produce sweet drinks, jams and syrups.

### Characteristics of apricot varieties

**Ternau.** The Ternau variety of apricot was created at the Magtymguly Research and Production Experimental Center of the Turkmen Agricultural University named after S.A.Niyazov.

The tree is very large, with thick branches forming a round top. The density of the leaves is average. It begins to bear fruit in 4-5 years after planting. The fruits are medium-sized, 30-35 grams, elongated. The bark is pinkish-yellow and purple in color. The flesh of the fruit is orange-yellow, the density is average. Stretching the peel easily removes the flesh from the fruit (*Fig. 28*).



*Figure 28. Ternau variety of apricot*

This variety is distinguished by the duration of the flowering period and the large number of branches and twigs.

The fruits ripen at the end of the first decade of July, at the beginning of the second decade. Yield is average. A 10-year-old tree produces 50-60 kilograms of plum fruit. The fruits are kept unchanged for 8-10 days after shipment. Good for long distance shipping.

The fruits are processed and made in winter, in addition to being eaten in the sweat.

**Garrygala – 1305.** The Garrygala-1305 variety of the solution was created at the Magtymguly Scientific and Production Experimental Center of the Turkmen Agricultural University named after SANiyazov.

The tree is sprouting, rounded from the outline, the branches of the top are sparse, and the leaves are large. It begins to bear fruit in the 4th to 5th year after transplanting, blooming later. The fruits are large (50-55 grams), elongated round-shaped, bark thin, glossy, orange-yellow, yellowish in color. The flesh of the fruit is brown, dense and sweet. It is medium in size and brown in color, sweet in taste (*Fig. 29*).



*Figure 29. Garrygala-1305 variety of apricot*

The fruits ripen in mid-July. High yield, 100 kg of fruit can be harvested from each tree. After the fruit is shipped, the quality remains unchanged for 10-15 days. Good for long distance shipping. The fruits are eaten sweat and processed.

**Irki Sumbar (early Sumbar).** The tree is sprouting, the branches at the top of the pillar are compact, and the leaves are medium-sized, and the top of the stem has a more elongated shape. At the age of 3-4 it begins to bear fruit. It begins to bloom in early March. The fruits are medium-sized, 30-40 grams, elongated egg-shaped, brownish-yellow, one-sided reddish-brown, with a slight peeling on the surface of the thin crust. The flesh of the fruit is yellow, dense, juicy, slightly sour-sweet. The meat is medium in size and easily removed from the meat.

The seeds of discord are sweet; the fruits ripen at the end of the second decade of May, in the third decade. The ripening period of the crop is 10-15 days. A 10-year-old tree produces 45-50 kilograms. Used for sweating and processing (*Figure 30*).

After the fruits are harvested, the quality remains unchanged for 7-9 days. Good for long distance shipping.



*Figure 30. Early Sumbar variety of apricot*



**Altyn shohle (Golden ray).** The growth of the tree is moderate, the branches of the trunk are not spread out, and the leaves are dense in the stem (*Fig. 31*).

It begins to bear fruit in the 3-4th year after planting. It blooms very early, the fruits are small (23-26 grams), the size is the same, round, the top is elongated, the sides are slightly pubescent.



*Figure 31. Altyn shohle variety of apricot*

The color of the fruits is golden yellow; the bark is smooth, dense, light yellow. The flesh of the fruit is dark yellow, dense, high in sweetness, low in acidity, good in smell and taste. The butter is easily removed from the small, fruity flesh, and the essence is sweet.

The fruits ripen in mid-June. High yields. The fruit is used for eating and processing sweets, and this variety is also used for dry. After the fruits are harvested, they remain firm for 8-10 days, keeping the taste unchanged. It is highly suitable for long-term fruit delivery.

**Gyzyl yangak (Red cheek).** The tree is sprouting, the branches of the top of its stem are spreading, compact, the leaves are dense in the stem, bloom early and begin to bear fruit at the age of 4-5 years. The fruit is round-shaped, large (40-50 grams), uniform in size, dark yellow with a golden tinge, dark red on the side, dense on top, dense on the bark, thick on the surface.



The flesh of the fruit is yellow, dense, the fibers soft, juicy, sweet. The meat is medium in size, brown in color, and is easily removed from the meat. The kernel is sweet. (*Figure 32*).



*Figure 32. Gyzyl yangak variety of apricot*

The fruits at the end of second ten day of June and at the beginning of the third ten day of June grow. High-yielding, 10 year old tree harvest weight average 160-200. Firmness and his spirit are used to eating. After ripening of fruit till 3-4 days the state and taste don't change. Better adaptation of the fruit to send over long distances.

**Gulgune erik (Pink apricot).** The tree is sprouting; the branches of the top of the trunk and the leaves are moderately thick. It begins to bear fruit in the 4th to 5th year after planting, blooming later. The fruits are large (35-45 grams), round in shape, yellow in color. The bark of the fruit is pale, shiny, and firm. The flesh of the fruit is dark yellow, dense, soft, creamy, and low in acidity. The nut is elongated, brown in color, medium in size, easily removed from the fruit flesh. Its seed kernel is sweet (*Fig. 33*).

The fruits ripen in late June and early July. High yield, 10-year-old tree bears 70-90 kilograms of fruit. After harvesting, the fruit stays stable for 2-3 days and does not change its taste. It is eaten in sweat, processed and made in winter. It is suitable for long-distance fruit delivery.



*Figure 33. Gulgune erik variety of apricot*

**Gichki nohur (Late Nohur).** The late-spring variety was created at the Magtymguly Scientific and Production Experimental Center of the Turkmen Agricultural University named after S.A.Niyazov.

The tree is sprouting, the branches of the trunk are not spreading, and the leaves are dense in the stem. It begins to bear fruit in 4-5 years after planting. It blooms late, and the flowering period lasts 15-20 days.



*Figure 34. Gichki nohur variety of apricot*

Fruits are large (60-85 grams), slightly elongated, and rounded. The bark is firm and the sides of the fruit are orange. The flesh of the fruit is light brown, juicy, and tastes good. The stone is small, easily removed from the meat, and the color is brown. The essence is sweet (*Figure 34*).

This variety is distinguished by the large formation of the branches, the longevity of the productive branches and the high yield. It is resistant to fungal diseases.

Fruits are ripening in early July. 10-12 year old each tree, weight up to 100-150 fruit. After ripening of fruit, it does not change the taste of 8-10 and keeps the reconstruction so far. It is eaten as firmness. The fruits are suitable to send long-range good.

**Yashlyk (Youth).** The Yashlyk Variety of apricot was created at the Magtymguly Scientific and Production Experimental Center of the Turkmen Agricultural University named after S.A.Niyazov. The tree is tall, round in size, with branches spread out.

It begins to bear fruit in the 3-4th year after planting. The fruits are large (40-60 grams), rounded from slightly elongated, peeled, dark yellow, with a reddish-brown side. The flesh of the fruit is orange-yellow, juicy, the density is average, and the taste is good. Stretching the sleeve, the side strap is slightly loose. The essence is sweet. The trees of this variety form many branches, and the shoots open well. Flower buds are formed in short branches. The productive life span is 3-5 years. It is recommended to cut the ends of the main branches after 1-2 years and the ends of the branches after 1 year to renew the aging branches of the tree.

The fruits ripen in the first decade of July. It is considered a high-yielding variety. A 10-year-old tree bears up to 250 kilograms of fruit. After the fruits are harvested, they retain their shape and taste for 6-8 days. The fruits are eaten sweaty and processed. It is highly suitable for exporting fruits.

**Gichki hurmayy (Bunches of the late).** The tree is tall the top's branches are rare, the average density of leaves. Tree fruit begin to 5-6 years. Fruits are medium-scale, webbed, yellow, red color of the fruit gapdalynyň. The fruit is dark yellow in color, dense, not corrode lives, taste sweet türkşumtyl (*35 pictures*).



*Figure 35. Gichki hurmayy variety of apricot*

Its size is medium in size, it is easily removed from the flesh of the fruit, and the essence is sweet.

This variety is distinguished by its ability to form many branches and the short life span of the fruit-bearing branches.

The fruits ripen in mid-July. A high-yielding 10-year-old tree bears 120-140 kilograms of fruit. After the fruits are harvested, they remain unchanged for up to 10 days. Fruits are highly suitable for long-distance shipping. The fruits of this variety are eaten sweet and processed.

**Sayavan (Umbrella).** The tree is sprouting, the trunk is wide, and lives long. 7-8 years after planting begins to bear fruit. The leaves are large, spreading like a drag. It blooms for 5-7 days from March 25 to April 10. The variety does not self-pollinate.

The average weight of the fruit is 30 grams, the tip is sharply elongated, and the area close to the stem is slightly ribbed.

The bark of the fruit is dull, dense, yellow in color, unstable to the sun's rays. The flesh of the fruit is dark yellow in color, the taste is sweet, the aroma is sweet, and the sweetness of the fruit is reduced when done in person (*Fig. 36*).

The jaws are large, dark brown in color, and are easily removed from the flesh of the fruit.





*Figure 36. Sayavan variety of apricot*

The fruits ripen on July 8-12. The yield is 200 kilograms from each tree that bears fruit. Fruits retain their shape and taste for 2-3 days without change, suitable for long-distance transportation. It is well-prepared for drought-tolerant.

**Novayining shanlysy(The glory of Novayi).** The long-lived tree is tall (8-15 meters), and its size is wide. It begins to give harvest from the 4-5 year. The leaves are medium-sized, spread-out. Fruits are large (45-55 grams), round; going on one side is glossy. The fruits' color is yellowish; harvests in the middle of July.

The fruits ripen in late June and early July. A 15-year-old tree harvests 200 kilograms. Fruits are kept for 7-8 days, suitable for long-distance transportation. The fruits are eaten in the sweat and used for cooking in winter.

**(Ak shekerek) White sugar.** Fruit tree up to 4.5 meters tall, with dense foliage, round flat shell. The garden begins to bear fruit in 2-3 years. The leaves are medium in size, lightly curved. The flowers are located on annual shoots, 2-16 cm long. The fruit-bearing branch lives 4-6 years. The fruits are large 42-50 grams, juicy, fruiting from the central branches in the stem .

The fruit bark is thin; the flesh is dense, pale green. The flesh of the fruit is yellow, dense, soft, high in sweetness, and has a pleasant aroma. The kernel is easily removed from the meat and is sweet.

The fruit ripening is on the 10-12 July. It has about 60-80 fertile kilogram of tree. The fruits can be stored in 8-10 days. The fruits, high-quality, convenient to transport over long distances, firmness, and is used for processing.

**Sary Suwhan.** The tree is strongly developed; the 12-year-old tree is 8.5 m tall and begins to bear fruit in the 4th-6th year of its growth. The fruits are large, creamy yellow and dark yellow. One fruit weighs 65 grams.

The crop ripens in late July. Each tree has about 60-75 kilograms harvest. Fruits are stored for 8-10 days without damage. The fruits are of high quality, suitable for long-distance transportation, used for sweating.

**Gyzyl hurmayy (Red Palm).** It was created in the Central Asian state.

The tree is strong-growing, up to 7.5 meters tall. It yields in the 2-3rd year of growth. Fruits are medium (28 grams) and large (35-38 grams). The fruits are reddish-yellow in color, sweet in taste, sour in color, and the buds are large.

The crop ripens in early June. High yields, with an average yield of 60-80 kilograms. The fruits are stored for 10 days without damage. The fruits are of high quality, suitable for long-distance transportation, used for sweating.

### **Characteristics of peach varieties**

**Ak Farap.** The trees are strong and resistant to disease. The branches of the stem are spread out and the leaves are dense on the stem. At the 3<sup>rd</sup> year of planting it began to bear fruit. The flowers are large-rose shaped, pale-pink in color. The fruits are spherical, large (up to 150 grams), brown, with a reddish tinge. Deep lines are visible on one side of the fruit; the flesh is yellow in color, very juicy, soft, fragrant and sweet in taste. The bark of the fruit is fragrant, thin, covered with a thick layer of dense, yellowish-white, easily removed from the flesh.

In the second half of July the fruits are ripen. Higher crop yield. Each hectare gives about 100-120 centners harvest. After plucked the fruits are suitable to send saklanyjylygy and long-range high. Eat only fresh (37 pictures).



*Figure 37. White Farap variety of peach*

**Altynsow shanly (Glorious goldish).** The trees are moderately tall, the shape of the trunk is elongated, and the branches are spread out. At the age of 3 it began to bear fruit. Fruits are large, 120-140 grams, elongated round, golden yellow, with a side pink. The flesh of the fruit is orange, juicy, very sweet, and fragrant (*Fig. 38*).



*Figure 38. Altynsov shanly variety of peach*

The fruits ripen in mid-July. High yields. The tree of this variety produces 120-130 centners per hectare. The quality of the fruit is good for storage and good for long-distance shipping. This variety is resistant to clusterosporiosis. This variety is eaten by sweaters, and processed.

**Gulshen.** The trees are medium-sized, the branches are thin, the stems are wide, and they are resistant to peach juice. At the age of 2-3, it begins to bear fruit, and a 5-7 year old tree bears fruit up to 35-50 kg. There are 3-4 seedlings on one branch of the stem. It has large, dark pink flowers. It blooms from 20 to 28 March.

The fruits are round, large (100-120 grams), and oval-shaped, orange-yellow, red, spotted. The flesh of the fruit is yellow; close to the stem is pink, delicate, very juicy and fragrant, with a sour sweet taste. The fruit bark is thin; light yellow in color and hard to remove from the flesh. The butter is easily removed from the meat (Fig. 39).

It begins to ripening in late July and early August. After ripening it starts to fall on the ground. Crop harvests are 60-70 kilogram from each tree. The quality of the fruit is good for 5-6 days storage and good for long-distance. It is eaten fresh and the conversion process.

To get a high yield, you need a well-drained soil. If the orchard is too watery or dehydrated, the fruit will have a bitter taste. It is resistant to colds and diseases.



*Figure 39. Gulshen variety of peach*



**Jeyhun.** The tree is medium in size, straight, and yields the 4th year after planting. It has flowers that resemble bells.

Fruits are round, (150 grams), pale red, slightly crusty, suitable for long-distance transportation.

The flesh of the fruit is thin-veined, sweet-tasting, light yellow in color. The fruit is easily removed from the fruit.

The fruits ripen on July 20-25. The orchard yield is 143 s / ha. After ripening of fruit it isn't damaged during 7-8 days to send the best adaptation. This is used to fasting, eating the fruit firmness.

**Aydere.** The tree forms a medium-sized, rounded bulb. It has flowers that resemble bells.

The fruit is round, lightly compressed on both sides, yellow in color, with a large number of dark brown spots on the bark. It is suitable for long transportation.

Fruit peel and peel are easily removed from the meat. The flesh of the fruit is soft, sweet and yellow. It is easy to remove from the meat.

The fruits ripen on July 12-16. The tree of this variety yields 129-139 centners per hectare. It is best to keep the fruit intact for 10 days and longer after the fruit has been harvested. Fruits are eaten sweaty (*Fig. 40*).



*Figure 40. Aydere variety of peach*

**Elwan.** The trees are mature; the 8-year-old tree is 4.5-5 meters tall. The top of the tree trunk is round. The density of the branches and the density of the leaves are moderate.

The seedlings begin to bear fruit in the 3rd year after planting. The fruits are large, 150-200 grams, round, slightly elongated. The color is orange-yellow, the density is medium, juicy, the taste is pleasant, and the sugar content is moderate.

The fruits are well kept on the branches, resistant to harmful insects and diseases.

This fasting, the fruit ripens in August. It has higher harvest every year. 70-80 kg tree harvest an average of 8 years tree (*in the figure 41*).

Fruits that are picked a few days before ripening can be stored for 10-15 days without damage. Good for long distance shipping. The fruits are eaten sweaty, made in winter and processed.



*Figure 41. Elvan variety of peach*

**Fig peach.** The tree is medium in height and resistant to peach juice. At the age of 2-3 it begins to bear fruit. The fruits are large (100-120 grams), the shape is oval, orange-yellow, juicy and fragrant, with a sour sweet taste, and the shank is red.

It ripens in August. A 5-7 year old tree produces 35-50 kilograms. The fruit has a high storage capacity and is suitable for

long-distance transportation. It is eaten in fresh, made in winter, and processed.

**Red peach.** The height of the tree is moderate, the trunk is spread out, and at the age of 2-3 it begins to bear fruit. The fruits are large (150-180 grams), round in shape, elongated red on the side. The flesh of the fruit is white, the area close to the bud is pink, juicy, and tastes good.

Harvest ripening in late August. Higher crop yield. The 8 lived tree harvests about 80-100 kg. The fruit quality is commodity, remote places better to send the suitability. Firmness of fruit is consumed and the conversion process.

### **Characteristics of plum varieties**

**Buyra.** The leaves of the round, rounded trunk are thickly wooded, with the upper branches spread out. It blooms a little later and begins to bear fruit at the age of 3-4. Fruits are medium in size (30-35 grams), rounded from slightly elongated, with a pointed top, the bottom is the main oval. The color of the fruits is purple, the flesh is yellow, juicy, and the acidity of the sugar blends to form a pleasant taste. The slices are medium in size, elongated, brown in color, easily removed from the flesh of the fruit (*Fig. 42*).



*42 pictures.* **The Buyra variety of plum**



Harvest ripening is in early August. Higher harvest every year, every tree brings 60-65 kilogram of harvest. The fruit's long-range transportation suitability is 5-7 days and good for healthy. The fruits are eaten fresh and processing of fruit firmness.

**Gyzylja.** The branches and leaves are medium-sized, rounded spruce tree are not very thick. It blooms early and begins to bear fruit at the age of 2-3. The fruits are not equal in size (30-60 grams), the underside is rounded, slightly reddish, and elongated. The entire length of the fruit is well expressed. The flesh of the fruit is crimson, dense, juicy, mixed with acidity to form a pleasant taste. The bark of the fruit is bluish-purple, covered with a dense covering, the shank is small (1.2-1.8 grams), elongated, with a strong adhesion to the flesh of the fruit.

10-15 days before the ripening t the fruit changes its color.

The fruits ripen in mid-July. The yield is good; each tree produces 60-70 kilograms. The fruits are stored for 5-6 days and are good for long -distance transport. The fruits are eaten sweaty and are used in the production of marmalade and jelly in confectionery production. (*Figure 43*).



*Figure 43. Gyzylja variety of plum*

**Gyrmyzy.** This variety was created by mixing of plum and apricot. The growth of the tree is moderate, and the leaves of the rounded leaf are thick. It blooms early and begins to bear fruit at the age of 2-3 (*Figure 44*).



The fruits aren't of the same size; the largest weight reaches 50-110 grams. The down side of the fruit is round. Fruits are fabulous, bark red it has white points. The bark of the best ripen fruits can be taken easily.



*Figure 44. Gyrmzy variety of pulm*

The flesh of the fruit is yellow; the taste is sweet and fragrant. The elbow is elongated, large (2.7-3.6 grams), brown in color. Often the branches are broken by the weight of their fruit.

The fruits ripen in August. It bears good fruit every year, and each tree bears 60-70 kilograms of fruit.

The fruits are kept intact for up to 15 days after harvest. The fruits of this variety are eaten sweaty. Cold isn't resistant and it requires a lot of heat. It grows well in light, non-saline soils.

If the groundwater level is close, the root system will slow down and rot.

**Chendir.** Spread the branches of the top of a sturdy, rounded tree. It blooms late (in the first half of April), begins to bear fruit at the age of 4-5 years and grows vigorously. This variety is self-pollinating.

The fruits are large (38-45 grams), often round, sometimes with a pointed tip, orange-purple, and the bottom of the bark is yellow. The shell is hard, dense, and the surface is ridiculous. The flesh of the fruit

is clear, yellowish-green, with axillary veins, the density is medium, juicy, moderately sour, and contains a large amount of sugar. The stone is small (1.8-2.0 grams), and on both sides it is easily removed from the flesh of the rounded, overcooked fruits.



*Figure 45. Chendir variety of pulm*

The fruits are not grown equally; they ripen in late August and mid-September. It yields high every year, with each tree producing 60-70 pounds of fruit. The fruits do not fall to the ground when it is ripen; they can be kept for 10 days after harvesting. It is considered a suitable variety for long -distance transport.

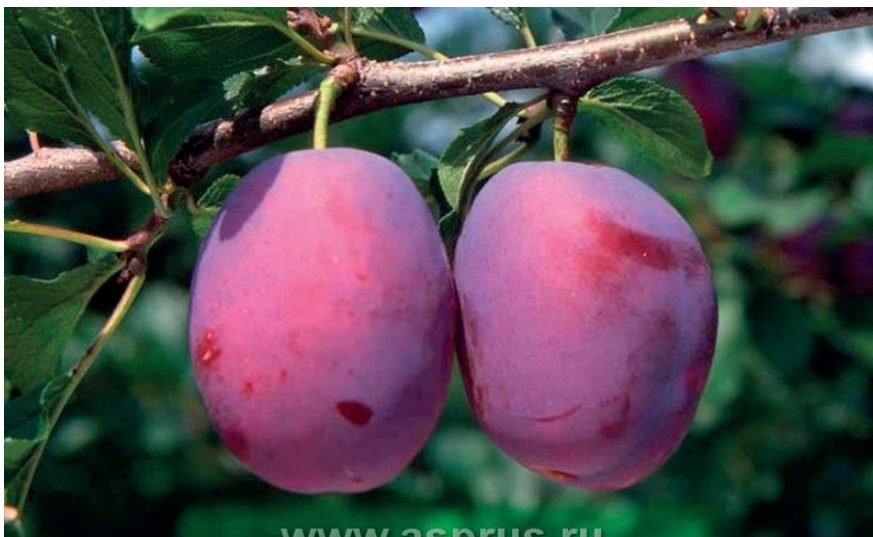
It is a variety of widely used. The request of the Articles of the soil and the food is high. Located in the areas close to the waters, and grows underground. Developing lack of water is also a good harvest and dry weather conditions. Tolerant, resistant to cold weather and the sun, light up the strong lachrymatory sector develops as a result (*Figure 45*).

**Galyng gabyk. (Thick shell)** The tree is very sprouting, the stems are expanding as they go up, and spread out the branches, and the thickness of the leaves is average. It blooms late and begins to bear fruit at the age of 5-6 years.

Fruits are large, elongated (40-65 grams), the top is round, the tip is elongated. The side dish, which divides the fruit into two uneven pieces, is a good sign. The fruits are dark red, purple in color, with a smoky surface. Peel a squash, grate it and squeeze the juice. The flesh

of the fruit is dark yellow or brown in color, not affected by air, delicate, delicate in fiber, high in sweetness, fragrant. The stone is large, 3.0-4.0 grams, and the fruit is easily removed from the meat.

The fruits ripen late, in late August and September 15-20. It yields high every year, with each tree producing 70-80 pounds of fruit. Fruits harvested for processing are stored for 30 days without damage. It is suitable for long distance transportation.



*Figure 46. Galyng gabyk variety of plum*

The fruit is eaten fresh, made in the winter, and processed (*Fig. 46*).

The Berton tree grows well in saline, fertile soils with deep groundwater. Frost-resistant, black fruit worms are the main pests.

**Benevshe (Plum purple).** Tributaries of the tree in the middle level, advanced-flung and dispersed, consisting of hard, round shape. Later blossoming, 4-5 years begin to produce fruit. 33-37 gram amounts of the fruit of medium size; it has an oval shape, bold purple color. Bark is thin, easy taken out bark. Its meat is greenish-yellow, dense, fruity, sweet taste, fragrance. The stone in average, 1,9-2,1 gram, warmongering round, difficult to remove the flesh of fruits (*47 pictures*).

By the middle of July, the crop is fully ripe. It yields consistently high yields (70-80 kilograms per tree). When over ripen, the fruit fall to the ground. The harvested fruits remain unchanged for 10-15 days. It is suitable for long distance transportation. In addition to eating the fruits in the sweat, they are made in winter.





*Figure 47. Benewshe variety*

**Gok sharlavuk (Blue waterfall).** The tree has strong growth and spreading branches. It blooms early and begins to bear fruit at the age of 4-5 years. The fruits are medium in size (25-30 grams), egg-shaped, with a protruding bottom, the color of the fruit is dark purple and the surface is smoky.

The surface of the fruit is covered with a thick, blue layer of protection. The flesh is yellowish green, delicate, juicy. It is medium in size (1.5-1.9 grams), long and narrow, easily removed from the flesh of the fruit (*Fig. 48*).



*Figure 48. Gok sharlawuk variety*



The fruits ripen in mid-August and early September and are kept from falling to the ground. It yields consistently high, yielding 70-80 kilograms of fruit per tree. The fruits can be stored for a long time after picking, they are good for transportation elsewhere, and they are used for making juices, marinades, jams and cakes in addition to eating fresh. It yields low in arid soils.

**Gok gabyk (Blue crust).** It is strongly growing tree. It has a large hemispherical shape. It blooms early until April 10th. The fruits are large, spherical, with deep grooves below the fruit stalk.

Fruits ripen on a tree are stored without spilling. The fruit bark is thin, soft, and hard to remove from the flesh, dark green. The surface of the fruit is thin with a protective layer. The flesh of the fruit is fragrant, green, and sweet, with a distinctive flavor. The meat is medium in size and easily removed from the meat (*Fig. 49*).

The fruits ripen from August 25 to September 10. It yields 85-95 kg of fruit from the tree in moist and fertile soil. Fruits can be stored for long periods of time after picking, and are good for a long-distance transportation. Fruits are eaten fresh.



*Figure 49. Gok gabyk variety of plum*

**Gara kishde (Black dried plum).** The tree is a strong-growing, upward-sloping shrub that begins to bear fruit in 3-4 years. The leaves are elliptical in shape.

It blooms on April 8-10. The variety does not self-pollinate. The fruits are large (40-43 grams), uniformly elongated round, dark blue. The flesh of the fruit is light dark in color, the sugar is moderate, and the taste is sour sweet. When the fruits are fully ripe, they are black in color and suitable for preparing dried plum. The fruits are kept long on the branches. The jaws are easily removed from the fruit flesh (*Fig. 50*).

The fruits are ripening in September 8-15. Each 8-10-year-old tree has about 95 kilogram harvest. After plucked the fruits can be stored for a long time, and it has the best adaptation of a long-range transportation. This sort is used fresh and for processing. It is resistant for frost and drought tolerant. It is resistant to diseases and pests.

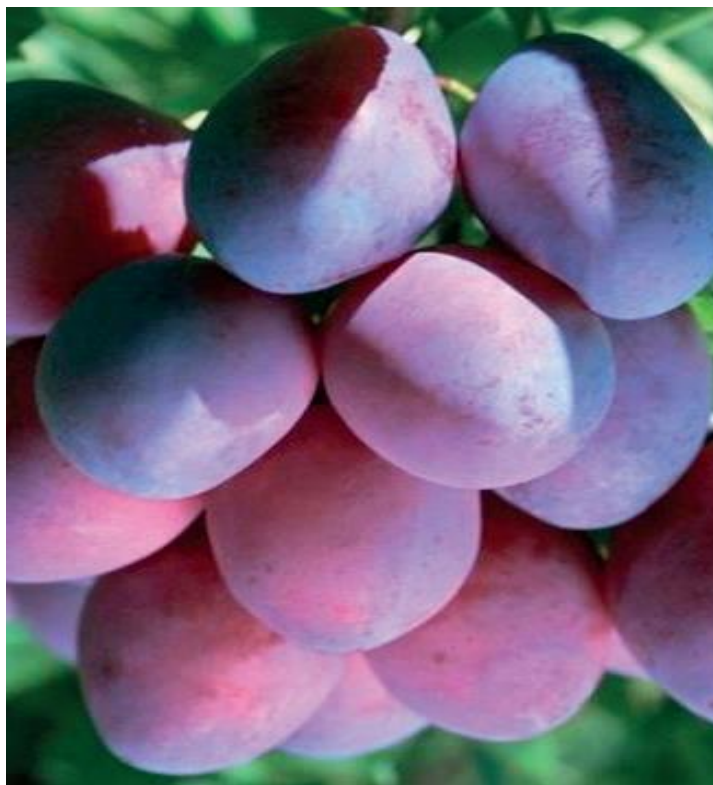


*Figure 50. Gara kishde variety of plum*

**Iri mive (Big fruit).** The tree grows strong, has branches with a sharp pointed top, and has a thick bud. The 4th year three after planting is harvested. The bark is dark gray, bumpy, the column and branches are longitudinal. Leaves are small and large in size (*Figure 51*).

The leaves are thick and rough. There are 2-4 large fruit buds on annual branches and fruit-bearing branches. It blooms on April 10-20.

Fruits are large (40-50 grams), the same size, bold red color, egg shaped, and protective layered shell. They fall down after the 5-6 days of ripening. Thick fruit, sliced, the meat is divided into light, the turquoise color. It is an average elongated fruit, located close to stone, and it has a sour tasty. The stone is big, the meat can be taken easy.



*Figure 51. Iri mive variety of plum*

The fruits ripen by the end of August. Each tree produces an average of 100 kilograms. The fruits are kept intact for 7-9 days after shipment, good for long-distance shipment. This variety is eaten in sweat and is used for winter preparation.

**Shapak garaly (Sunset plum).** The tree is tall and fruits are large (40-56 grams), round, slightly elongated with a pointed top. The bark is dark purple with a bluish tinge. The flesh of the fruit is yellow, the area close is pink, dense, juicy, fragrant, and the taste is very good. The stone is medium in weight (2-2.3 grams), with a strong adhesion to the flesh of the fruit.



*Figure 52 . Shapak garaly variety*

The fruits ripen in the third decade of June. It yields annually; a 7-year-old tree produces 50-70 kilograms of fruit. The fruit is well preserved after shipment and is suitable for long-distance shipment. The fruits are eaten sweet and processed (*Fig. 52*).

### **Characteristics of cherry-plum varieties**

**Tomus gozeli (Summer beauty).** Summer cherry-plum varieties were created at the Magtymguly Scientific and Production Experimental Center of the Turkmen Agricultural University named after S.A.Niyazov.

The tree is sprouting, the branches of the round bud are spreading, and the leaves are thick. It blooms early and begins to bear fruit at the age of 2-3.

The fruits are large (48-56 grams), the same in size, round, top and bottom protruding. The sideboard is weak. The fruits are beautiful red-violet in color, with a smoky surface. The shell is thick, dense, and easily removed.

The flesh of the fruit is yellow, juicy, of medium density, with delicate fibers. Mixing sugars and acids creates a pleasant taste. It is slightly fragrant. The stone is medium-sized, elongated, brown, hard to remove from the flesh of the fruit.

The fruits are large, i.e. in mid-June (*Fig. 53*). It bears good fruit every year, and each tree bears 60-65 kilograms of fruit. The fruit is



well preserved and suitable for long-distance shipment. It is very good variety for sweating and processing.



*Figure 53. Tomus gozeli variety*

**Gyzyl gabyk (Red bark).** Gyzyl gabyk variety of cherry-plum was created at the Magtymguly Scientific and Production Experimental Center of the Turkmen Agricultural University named after S.A.Niyazov.

The tree is sprouting, the branches are thick, and the leaves are thick, spread out. It blooms early and begins to bear fruit at the age of 2-3. Fruits come in a variety of sizes (28-43 grams), large and medium in size, round or oblong in shape. The bottom edge is sloping. The sideboard is weak. The fruits are purple or dark purple, with a hint of laughter. The shell is strong, dense, and easily removed.

The flesh of the fruit is dark yellow; the density is medium, delicate, and juicy. The stone is small (1.2-1.8 grams), elongated, does not remove the flesh from the fruit (*Fig. 54*).

The fruits begin to ripen in mid-July. High yield, each tree bears 70-80 kilograms of fruit. The fruits are well preserved and suitable for long-distance shipment. It is suitable for sweating and processing.



*Figure 54. Gyzyl gabyk variety*

**Yakymly alcha (Sweet cherry – plum).** The tree is sprouting, the branches of the pyramid-shaped top of the tree are spreading, the leaves are thick. It blooms early and begins to bear fruit at the age of 2-3.

The fruits are uniform, medium in size (32-38 grams), round, with an elongated bottom, pointed. The fruits are red or bluish-red in color. The bark is thick, dense, and easily removed from the fruit. The flesh of the fruit is yellow-brown in color and dense. When ripen well, it has a sweet, juicy, sweet sour taste. The fruit has a pleasant aroma.

The stones are medium in size (2.3-3.0 grams), brown in color, and the fruit is difficult to remove from the flesh.

The fruits ripen in early July. It produces high yields every year, with 80-90 kilograms of fruit per tree. It is used to store fruit after harvest, suitable for long-distance processing.

**Gok Sultan.** It is a deciduous tree with thick branches, thick leaves, and strong growing fruit. The fruits are large (20-30 grams), round in shape. The outer surface of the fruit is clear. The bark of the fruit is dark and light green. The flesh is very sweet, soft, fragrant, sour-sweet, light-yellow in color. The stone is large and does not separate from the fruit.

The fruits are ready for harvest in the first decade of June. Fully ripened fruits are chapping. It yields up to 100 kilograms of fruit per tree. The average storage capacity of fruits after harvesting is average. Low-ripening fruits are suitable for long -distance transportation and processing.

The fruits of this variety are suitable for eating and processing the sweat. It is moderate to cold, and to strong winds. It grows well in irrigated soils and produces high yields.

**Gyzyl may (Red May).** The tree is medium-sized (3-4 meters), the leaves are intermediate in density, with a broad set of branches. It blooms in March. The young plants bear fruit at the age of 2-3. The fruits are small, 10-12 grams, round in shape, dark red.

The flesh of the fruit is dark black, the sweetness is medium, and the sourness is sweet. The stone is round in shape, weighs 0.5 grams, is yellow, and is difficult to remove from the flesh of the fruit.



*Figure 55. Gyzyl may variety of cherry-plum*

The fruits are large; it ripens on May 25-28. A tree bears 80-100 kg of fruit. Fruit is good for storage after harvesting. Low-ripening fruits are suitable for long -distance transportation and processing. The fruits are eaten fresh and processed (*Fig. 55*).

**Altyn salkym.** The tree grows strong, has dense foliage, and sprouts. The garden begins to bear fruit in its second year. It blooms in March (*Figure 56*).



Fruits are normal in size, weighing 28-30 grams, have a rounded elongated shape, dark orange-yellow. The surface of the fruit bark is covered with a protective layer. The flesh of the fruit is dark red, dense, fragrant, sour sweet, with good taste.

The elbow is elongated, small, weighing 0.8-1.1 grams, purple, with difficulty removing the flesh from the fruit.



*Figure 56. Sweet cherry variety*

The fruits ripen on July 10-15, with a very high yield of 100-120 kilograms. Fruits are suitable for long-distance transportation, high-quality, sweet and processed. It is resistant to pests and diseases.

**Saraly.** Variety created by the Turkmen People's Selection. The growth of the tree is good, the branches of the rounded top are moderately thick, the leaves are not very thick, and they start to bear fruit at the age of 4-5 years.

The fruits are medium in size 25-32 grams, slightly elongated in shape, rounded on the underside. When the fruit is well ripe, it is yellow, not darkened by air, and has fine fibers. Density, liquidity, sugar are moderate, no fragrance. The taste is medium quality.



The color of the cheeks is brown, the tip is elongated, large, 3.8-4.5 grams, and the flesh of the fruit is difficult to remove.

It yields consistently high yields (60-70 kilograms per tree). This variety is used in confectionery production in addition to eating sweets.

### **Characteristics of the varieties of cherry**

**Garrygala.** The Garrygala variety of cherry was created in Magtymguly district of Balkan province.

The tree is propagated by tall, protruding rods. The stems are distinguished by thin, dense foliage, and a wide, rounded blade.

It begins to bear fruit in 2-3 years of growing cherry trees, increasing its yield year after year and withstanding the cold weather of the winter months. The flowers are bisexual, self-pollinating, the fruits are small, weighing an average of 2 grams. The fruit bark is dark green when the fruit is fully ripe. The taste of the fruit is sour sweet. The fruit juice is bluish yellow.

The fruits ripen on July 10-15 and are ready for harvest. A total of 8-10 kilograms of fruit can be obtained (*Figure 57*). Fruit is good for storage after harvesting. Fruits are suitable for long -distance transportation, high quality, used for sweating and processing.



*Figure 57. Garrygala variety of cherry*

**Sayavan cherry (Umbrella cherry).** It is being tested in our country and cultivated in our provinces.

It grows in the form of shrubs and large fruit orchards. Wild saplings are propagated by cultivating seedlings by sowing cultural shoots. The shrub reaches a height of 2-2.5 meters and a large tree reaches 3-4 meters. The bark of the branches is gray; the branches are thin, hanging downwards. Seedlings bear fruit on annual shoots 3-4 years later, resistant to cold (*Fig. 58*).



*Figure 58. Sayavan variety*

The fruit is round, weighing an average of 3.8 grams. The bark of the fruit is dark red, weighs 0.5 grams, and is easily removed from the meat.

It blooms in April and ripens on July 18-24. 6-10 kilograms of fruit are harvested from the fruit tree. It is best to keep the fruit intact after harvesting. It is suitable for long-distance transportation of fruits.

**Pordere.** It is found in our country in the form of large and shrubby orchards. The branches have a wide-spreading, dense-leaved branch, hanging downwards. The orchard is 3-3.5 meters tall and the flowers are bisexual (*Fig. 59*).

The fruits are large, weighing up to 5 grams, rounded. The fruit bark is dark red. The flesh of the fruit is sour sweet. It is cold-resistant in winter months of 17-18 °C.

The fruits ripen from May 30 to June 10. The yield of a fruiting tree is up to 12-14 kg.



*Figure 59. Pordere variety*

Fruit is good for storage after harvesting. It is suitable for long - distance shipment of fruits.

**Irki Dayna (Early Dayna).** Seedlings of this variety are bred and cultivated in the wild. It bears good fruit in the mountains of our country and has been growing for many years. It is drought-resistant, heat-resistant, and cold-resistant. Seedlings grow vigorously and begin to bear fruit in 3-4 years.



*Figure 60. Irki Dayna variety*



The leaves are large, thick; the fruits are large, round, with an average weight of 7.4 grams. The fruit bark is yellowish-red in color. The flesh of the fruit is sweet-tasting; the jaws are large, pale in color, and easily removed from the fruit flesh.

The fruits ripen from May 15 to June 2. The total yield is 12-14 kilograms of fruit. The fruit is well preserved and is well tolerated (*Fig. 60*). The fruits are eaten sweat and processed.

### **Characteristics of cherry varieties**

**Gyzyl nohur (Red Nohur).** It is strong growing tree, rare, large, and dispersed. Age is inserted into the 5-year harvest fruit trees. It has the largest bud, blooms on April 15-18.

The fruits are large (4.7 g), yellowish-orange in color. The fruits are dense and the taste is very sweet. The fruit juice is colorless, the fruit bark is thick, light red. It has small rounded spines and is easily removed from the meat (*Fig. 61*).

It ripens in late May to early June. The total yield of the variety is 145-160 kg. The fruits are well preserved and are suitable for long-distance transportation.

The fruits of this variety are used for sweating and processing. In well-drained fertile soil, it holds good roots and produces high yields.



*Figure 61. Gyzyl nohur variety*



**Gara gozel (Black beauty).** It has a strong growing tree, dense, sprawling. It yields 3-4 years after planting young orchards.

The fruits are large (4.0-4.3 grams), dark reddish-brown. The taste of the fruits is very sweet. The fruit juice is colorless, the fruit bark is thick, light red.

It ripens in the third decade of May. The total yield of the variety is 55-60 kg. Fruit-free storage is good and suitable for long -distance transportation.

The fruits of this variety are used for sweating and processing.

## AGRO TECHNOLOGY OF ORCHARD CULTIVATION

When the agro-technical measures are carried out properly, the orchards are harvested in a timely manner and are able to yield a high harvest. It is important that high-quality agro-technical measures are taken to ensure that the young trees are well rooted and that they can be harvested in a timely manner. Full rooting of young seedlings planted root system restoration, good growth of shoots, and timely soil tillage, timely watering, timely pruning, pruning of branches, as well as their growth during the last 2-3 years. It is necessary to protect against harmful insects and diseases.

**Selecting a field to plant of orchards.** Fruit orchards should be well-cultivated, with groundwater depths of 3-4 meters, non-saline, intermediate and light mechanical farming.

**Fertilizer before plowing.** In order for the seedlings in the newly planted garden to take root and grow well, organic and mineral fertilizers must be applied to the area before plowing. It is recommended that 30-40 tons per hectare, 400 kilograms of superphosphate, 100 kilograms of chlorine potassium and 100 kilograms of urea be applied per hectare. The deadline for conducting this work is from October 25 to November 10 in the southern districts of the country, and from November 1 to December 10 in the northern districts.

**Weed weeding and plowing.** Before planting, the areas where the trees will be planted are cleared of stones, debris from other plants, and weeds. One of the herbicides, such as Sprut, Entoglifos, and Sonraund, should be sprayed with 6-8 l / ha of normal herbicides, such as reeds and tar. 15-20 days after spraying the herbicide should be plowed at a depth of 50-60 cm with two-layer reductions. The deadline for conducting this work is the period from November 1 to 15 in the southern districts of the country, and in the northern districts of Dashoguz province and the northern districts of Lebap province from November 1 to December 10.

**Field leveling and soil preparation.** Proper leveling of the fields is an important agro-technical measure that ensures the proper irrigation of the trees and, as a result, their regular rooting and timely harvesting. Garden landscapes should be leveled with a straightener after plowing. Once the land is leveled, pits are dug along the lines proposed for planting orchards. The pits should be 50-60 cm deep and

60-70 cm wide. The deadline for this work is from November 5 to November 20 in the southern districts of the country, and from February 25 to April 5 in the northern districts.

**Selection of types of orchards.** The main task is to choose the types and varieties of orchards at the base of the gardens. Recommended varieties for growing orchards depending on local soil and climatic conditions:

1. Apples, pears, apricots, plums, peaches, cherry-plums, cherries, pomegranates, figs, dates, pistachios, nuts and almonds in the southern districts of Ahal, Mary and Lebap provinces.

2. In Magtymguly, Etrek districts of Balkan province: pomegranate, fig, date, olive, endap, apricots, walnut, almond, apple, pear and peach.

3. In Serdar, Bereket districts of Balkan province: apples, pears, quince, apricots, plums, cherry-plums and peaches.

4. In Dashoguz province and in the northern districts of Lebap province: apples, pears, quince, apricot, peaches, cherry-plums and plum.

### **Varieties recommended for growing orchards:**

*Apples* – Gyzyly Yangak, Sovgat (June Renet), Altynsow ajayyp (golden wonderful), Novayi, Altyn guyma, Sary gabyk, Gyzyly mengiz (Late saffron), k altyn (White rosemary), Shapak (Sunset), Altyn chigit (Golden seed), Chulining gok almasy (Simirenko's Renet), Gyzyly gabyk (Starkrimson), Hasylyly (Harvest), Ak guyma (White cast), Gok alma (Blue apple), Menekli gyzyly (Spotted red), Irki gyzyly (Early purple) and etc.

*Pear* – Gyzyly sapak, Merdem, Sahra gozeli (Forest beauty) , Sary sayavan (Michuri's berry), Altynsow (golden), Altyn gabyk, Turkmen gozeli (Turkmen beauty), Sary armyt (Yellow pear), Kopetdagh , etc.

*Quince* – Iri miveli, Hasylyly (Harvested), Sary yygyrtly, Sary togalak (vellow round), Anew, Yengiji (Winner) and, etc.

*Apricot* - Ternav, Garrygala - 1305, Irki Summar, Altyn shohle, Gyzyly yangak (Red cheek), Gulgune erik (pink apricot), Gichki nohur (Late Nohur), Yashlyk (Youth), Gichki hurmayy, Sayavan (Umbrella), Novayynyng shanlysy (Nowayi's Glory), Ak shekerek (White Sugar), Sary suwhan, Gyzyly hurmayy (Red Date), etc.

*Peach – Ak Farap* (White Farap), Altynsov shanly (Golden Glorious), Gulshan, Jeyhun, Aydere, Elwan, Injir shetdaly (Fig Peach), Gyrmzy shetdaly (Red Peach) and etc.

*Plum Buyra*, Gyzylja, Gyrmzy, Chendir, Galyng gabyk (thick shell), Benewshe (purple plum), Gok sharlavuk (the blue ravine), Gok gabyk (the blue shell), Gara kishde, Iri mive, Shapak and etc.

*Cherry- plum – Tomus gozeli* (summer beauty), Gyzyk gabyk (Red bark), Yakymly (Sweet), Gok Sultan, Gyzyk may (red may), Altyn salkym (golden bud), Saraly and etc.

*Cherry - Garrygala, Saywan, Pordere, Irki Dayna*, etc.

*Cherry –Gyzyk nohur* (Red Nohur), Gara gozel (Black beauty), etc.

**Planting orchards** . When orchards are planting, the time of flowering and ripening of the main and pollinating varieties should be equal. If the main variety ripens in the early spring, the pollinator must also be ripening at that time. Depending on the species, garden seedlings should be arranged according to the type. Rows of planted trees should be suitable for technical maintenance. Depending on the type of garden planted, it is recommended to plant their seedlings on the following lines:

Apples: 3x1m, 3x2m, 4x1m, 4x2m (low), 5x3 m, 5x4 m 6x3 m, 6x4 m (medium height) and 7x5 m, 8x6 m (tall growth);

Pear: 4x2m, 4x3m (low), 5x3m, 5x4m (medium) and 6x5m, 7x5m (tall growth);

Apricot: 8x6 m, 6x5 m;

Quince, peach, pomegranate: 5x3, 5x4 m;

Plum, cherry-plum: 5x4 m, 6x5 m, 6x4 m.

Cherries: 6x5 m, 6x4 m.

In Ahal, Balkan, Mary provinces and southern districts of Lebap province, orchards are available in two periods: autumn - from November 10 to December 5 and spring - from February 25 to March 30, in Dashoguz province and in the north of Lebap province only in spring - It is planted from March 5 to April 5. When sown in the fall, its roots should be buried 3-4 cm above the root neck and 2-3 cm above the root when planted in the spring. When planting fruit orchards, the planted area should not be buried in the ground, i.e. 5-6 cm above the ground. Likewise, the bent side should not be tilted towards the strong wind direction. Also, the stems are not less than 50-60 cm high, and the seedlings are tied with rope so that the young



garden can grow directly. Doing this is also necessary for the normal rooting of the seedling. The supply of 600-800 m<sup>3</sup> of water per hectare within 1-2 days after planting the seedlings and 7-8 days later the development water supply ensures their good rooting.

**Watering of seedlings.** In autumn after the planting the seedlings, then they are watered from the 10<sup>th</sup> of November till the 5<sup>th</sup> of December and in spring from the 25<sup>th</sup> of February till 30<sup>th</sup> of March in 500-600 m<sup>3</sup> per hectare.

**Moisture retention.** Moisture watering is done twice a year during the winter months. The first is carried out on January 30 until January 10 hectares to 1500 m<sup>3</sup>, and the second on February 10 until February 28 2000 m<sup>3</sup> of water consumption. In areas with high groundwater levels, water is not available in winter.

The first moisture to the harvesting gardens is given on January 30 until January 10 hectares 1500m<sup>3</sup>, and the second on February 10 until February 28 hectares, 2000 m<sup>3</sup>.

**Feed the gardens with fertilizer.** In order for young gardens to grow normally and begin to bear fruit, it is necessary to feed them with fertilizers and nitrogen fertilizers. The burnt skin of the cattle is also given in the "syrup" method by mixing it with water so that the orchards can be fed normally.

Young gardens twice during the growing season: 100-150 kilograms of ammonium nitrate per hectare for the first time (01-20.05 in the southern districts, 05-25.05 in the northern districts), 150-200 kilograms in the second time (10-25.06 in the southern districts, 10-25.06 in the northern districts). 15-30.06) is normally fed.

Harvesting orchards are feed 2 times: 1st time ammonium nitrate 180-200 kg per hectare (01-20.05 in the southern districts, 05-25.05 in the northern districts), 180-200 kg in the second time (10-25.06 in the southern districts, 15-25 in the northern districts). 30.06) should also be fed normally.

It is important to fertilize them in the fall and winter to get a high yield from the orchards. During this period, 30-40 tons per hectare every 3-4 years, 600 kg of superphosphate per year (400 kg / ha in the fall, 200 kg / ha in the spring under the herd), 100 kg of chlorine potassium (under the spring herd) and 125 kg urea should be given. The best time to fertilize is in the autumn for Ahal, Balkan, Mary provinces and the southern districts of Lebap province from November 5 to December 10, in the spring from March 1 to March 30,

in the autumn for Dashoguz province and Northern districts of Lebap province from November 5 to December 5, and in the spring from March 15 to April 10.

**Growing water catchments.** In the year of planting, young orchards are recommended to catch water 8-10 times per hectare at a rate of 600-800 m<sup>3</sup> per hectare, and in fruit-bearing orchards 5-6 times at a rate of 800-1000 m<sup>3</sup>. Watering terms and number: 1 in April, May, June, July, August, every month, 2 months and 1 times irrigated in September. The gardens are not flooded after the second decade of September.

In intensive horticulture, when growing short (dwarf) fruit trees, watering is carried out 10-12 times during the growing season, 500-600 m<sup>3</sup> per hectare every 15 days depending on soil and climatic conditions.

**Treatment of rows of gardens.** Gardening is carried out 4 times a year with the help of chisel 4 times a year, in March, April, May, and June, to clean the rows of young gardens from weeds and to regulate soil moisture and water retention.

In the fall and spring of each year, the rows of orchards are plowed to a depth of 30-35 cm. The deadline for submissions is November 10 to December 15, and in March.

**Cutting and decorating orchards.** Annual pruning and pruning is carried out in young orchards and orchards to ensure that the orchards are harvested quickly. During the operation, the diseased branches are first cut off, broken, disrupting the operation of the equipment. Then the other branches are cut off and the orchards are trimmed. Cutting and finishing of orchards is carried out during the winter months. This work is done when the climate temperatures 0 °C is from the December 15 until February 20, the country in areas of northern February 20 until March 20, is recommended to the pursuit of the period. First and foremost, you need to cut and prune almonds, cereals, peaches, plums, and flowers that bloom in the early spring. Fruit orchards are cut in 2 ways, i.e., a superficial and thoroughly transplanted section is used. In the superficial section, the dried, damaged, diseased annual and perennial branches are cut off, and 3/2 of the annual branches are shortened. In the main section, all annual and perennial branches of the garden are cut and shortened. The size of the orchards must meet the following requirements:

- In order for air and light to freely penetrate the branches of the tree, the branches of the same straight column must be accustomed to the columns and around the tree.

- must be firmly joined to the main pillar of the tree so that it can bear the bountiful harvest formed on the branches of the tree without love.

**Removal of rooted shoots from gardens.** Many types of gardens produce shoots from their roots. If they are not removed in time, they will lead to a decrease in yield. Therefore, the sprouts and roots of the orchards should be regularly removed from May 1 to September 15.

**Protect orchards from cold in early spring.** The orchards that bear fruit, the almond orchard, bloom in late February, and the peach and apricot orchards in March. Over the period the air  $-1,5-3,0^{\circ}\text{C}$  until a failed rainy great damage to flowers. However, the onset of the spring climate  $-4^{\circ}\text{C}$  down fruit, flowers, heavily affected fetuses. In such cases, it is advisable to water the gardens and burn the straw mixed with the course mixture, which creates smoke among them.

**Preserving the fruit of the orchard.** To protect the fruit of the orchard, the fruitful branches are supported to protect the fruit-bearing branches from breakage and cracking. When planting orchards, varieties that bloom equally and ripen fruits at the same time should be planted. After 8-10 rows of main varieties, 2 rows of pollinating varieties should be planted.

It is recommended to put a family of 5 hectares for good orchard and pollination. When the rows of orchards are placed from east to west, the sun is equally accustomed.

## THE MAIN DISEASES AND PESTS FOUND IN ORCHARDS

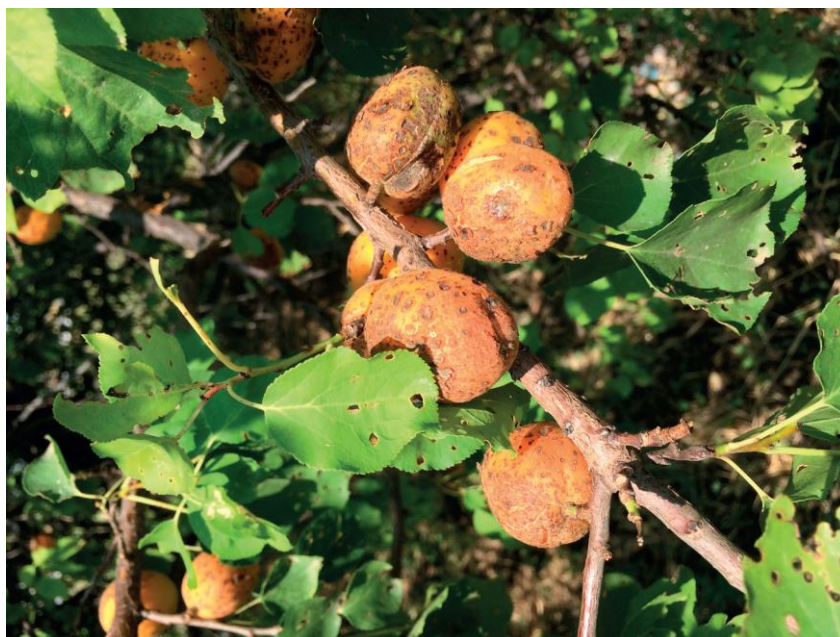
### Diseases encountered in orchards and control measures.

When fruit trees are grown, a variety of diseases and pests occur, leading to reduced yields, poor quality, and drying of trees. These diseases are mainly due to the dusty, rusty diseases of the seedlings, the clustering of clover (clusterosporiosis) and the infectious disease (cytosporiosis), and others.

**Klyasterosporioz** (the hole in the spotted leaves, and spotted fruits) disease is created by the *Clasterosporium Aderh earpophilum* mushroom. Klyasterosporioz diseases all types of fruit trees, stone fruit, apricot, peach, plum, cherry, plum, and almond cherry. Klyasterosporioz dangerous disease, and not fruit trees, mainly in honey tree, leaf, bud, blossoms and fruits is remarkable. Miseliy mushrooms diseases are in form of konidiý and hlamidospora (mushrooms development of young people) and the Sahara wintering branches. Spores can be found in venues, in the branches, in the stems, buds, in the leaves. The spores lay on the bark of stem, under the barks and can keep its activity during many years. Early in the spring months the heat of air 18-22 C<sup>0</sup> reach, mushrooms spores precipitation begins and spread of the environment.

Appear of disease begins during periods of heavy rainfall and rainy, wet days. As a result of the influence of rain and moisture on the diseased areas of the tree, i.e. from the wounds formed, the swelling, the bumps, the spores of the fungus come out all around, forming a sticky substance to stick to the outside of the spores, and the young leaves, twigs, flowers. The presence of cracks and mechanical disturbances in the tree trunks further exacerbates the disease. In our experiments, the first symptoms of the disease occurred in 40-50 days when the disease was artificially transmitted in the date palm variety. This proves that anti-clusterosporiosis measures should be taken early, that is, before the trees begin to sprout. Infectious spores are spread around the area mainly by wind, insects (sucking pests) (*Figure 62*) .





*Figure 62 . Clusterosporiosis of orchards*

Healthy trees can be infected with clusterosporiosis throughout the season, especially with low care, and carpeted trees are more susceptible to the disease. For example, in the spring of 2019, due to the constant rainfall and inclement weather, clusterosporiosis in fruit trees planted especially in the Ahal province, especially in the apricot, caused mass loss and huge crop losses.

The external symptoms of the disease may vary depending on the type of test being performed. In clusterosporiosis, light brown spots appear on the leaves, which are initially surrounded by brown spots on the cachexia, and then dry out in the middle. For this reason, the disease is also known as perforation of other leaves.

The rate of this disease in chickens is even higher, even if they are already infected in the fall, and by the spring, the infected chickens are turning brown and dry. The fruits are reddish-brown, orange spots up to 2-3 mm in size, which become irregular in shape, rot and dry. Wounds, tumors, and cracks form on the branches and stems, from which secretions form.

***Monilioz or gray colored fruits rotten*** illness is created by the mushrooms *Monilia laxa* Her. The disease is caused by apricot, cherry-plum, cherries, peaches, almonds, apples and pears. The disease mainly affects shoots, twigs, flowers, branches and causes the tree to dry out completely. In diseased fruits, gray, irregularly shaped, 0.5-1 mm-sized mushroom bumps appear, the fruits are rotten,

unsuitable for eating and processing (*Fig. 63*). On the flowers and leaves, streaks of yellow, brownish-brown oaks form. Therefore, the disease is also called moniliosis. Dry areas (necrosis) occur on diseased branches and branches.



*Figure 63. Fruit rot disease of fruit orchards* (Left-apple, right-plum)

The disease-causing *Monilia laxa* overwinters on the diseased branches, or fallen fruit of the tree at the age of mycelium. The first signs of a diseased tree appear when it begins to bloom. The fungus infects the flower through its fertilized beak, from where it falls into the bark fibers and spreads to the branches and branches, causing the disease to develop as a result of its nutrition. Massive moniliosis is positively affected by the constant cool and humid weather (rainfall, fog) during the flowering period of trees. Spores grow better when the air temperature is 20-21 degrees Celsius and spread rapidly around.

***Ak dushme (Leukemia) in Podosphaera leueotrieia Salm*** causes fungus and mainly infects apple and pear orchards. The disease affects all parts of the tree's surface. Flowers that bloom in the early spring are prone to fungus (fungal spores). Fruit flowers do not form; they often dry out and fall to the ground. From there, the spores of the fungus spread to the leaves and stems, making them sick. The diseased leaves also appear to be white, and over time they become attached, completely covering the leaf, and the leaves twist and dry. Disease inhibits the development of young shoots, turning brown and drying out. Diseased young fruits fall to the ground in large numbers. Young shoots, especially young ones, are more and more strongly infected with leprosy. 20-50% of the seedlings grown are no longer

suitable for cultivation, and their cold resistance is reduced. The yield of fruit-bearing trees is reduced by up to 80%.

**Control measures.** Tom and operates the transmission and proper care, increased resilience of trees diseases. Autumn sick branches, branches of 3-5 cm and place them into a healthy place with the cut off herbs. Injuries that occur in the interpretation are nearly 15% of swelling and cracks cuprous embroidered with silver, and anointed with special oils processing. There must be carried out control measures against the harmful insects emerging in the garden, and against weeds. In autumn when leaves began to fall from the trees Bordeaux nearly 3% water, and in spring before the bud bursting and after 15-20 days of blooming nearly 1% Bordeaux Baute Sprinkle the third time.

**Method of preparation of Bordeaux solution.** To prepare 1% Bordeaux solution per 100 liters of water, 1 kg of copper foam and 1 kg of unbleached lime or 2 kg of extinguished lime are required. The liquid (solution) is prepared in wooden containers. In a bucket, 1 kg of lime is first quenched and 50 liters of water is added to it, filtered and lime milk is extracted. In another bucket, 1 kg of copper is dissolved in 50 liters of hot water. Then add the dissolved water of the copper cup to the poorly watered solution and add it to the lime water (not the opposite!). Bordos solution should be prepared before use. The finished solution should be sky-blue (bluish) and fluffy. If the lime is low, the color will turn green and the trees may burn. So you have to add extra lime to it.

In today's world, fungicides containing the active ingredient siprodinil (Horus 0.35 kg / ha), Tiram (Granuflo, 3.0 kg / ha) and silver chloride (Abiga-pik, 10 l / ha), which contain the active ingredient in the world, have been shown to be effective against orchards used. Trees grow healthy and contribute to high yields when agro-technical measures in orchards are carried out in a timely manner and integrated pest control activities are carried out throughout the year.

**Pests found in orchards and control measures.** The main pests found in orchards are zebrafish, shell-eaters, apple worms, juices, lice, moths, and carrots. To Fighting against them in a timely manner creates favorable conditions for young trees to grow well and grow quickly. Among them are the following pests, which are more common in the soil and climatic conditions of our country.

***Harmful worms of orchards (Ch.ariosa Pall.).*** Imagosy is (mother and father) as a beetle, 22-40 cm in size, black, with white spots on the back. The larva is bare-footed, pale yellow in color, up to 50-60 mm long, with an enlarged head. The beetles fly in May-June, when the soil is hot at 20 ° C, and drop a whitish milk-colored egg up to 1.5 mm in size 100 to the base of the tree, to the root neck (*Fig. 64*).

The larvae that hatch from the eggs hatch under the bark of the tree, feeding, making way, and wintering. In the spring (April) the pupae become, and from the small pupae the beetle (imago) is formed. It gives a generation in the 2nd year.



*Figure 64. Harmful worms of orchards*

***Fruit Gardens bark rodent (stem) (короед плодовых, Xyleborus peak F.).*** Imagosy (mother and father) is as a beetle, male 2 mm, and female 3.5 mm. The larvae are bright red, yellow or brown in color. It is distinguished by roundness of the body and elongation of the head. Fruits are nuts, shrubs (grains, melts), orchards, grapes, etc. It hibernates under the bark of the tree and mates there in the spring.



The female then goes out, flies for a short time, and goes under the bark again, eats the inside of the branches, branches, and lays eggs there. The larvae of the egg live on the path their parents made, feeding on the sap of the tree. Pests, twigs, and rodents that have been affected by the pest 1 allows the generation of a year, but then never renounced Galerucinae eggs throw a second time.

**Large peach aphid (*Uly shetdaly shirejesi*) (*Pteroechloroides persiae* Chhol.).** It touches the branches, twigs of trees. The pest is 4-5 mm long and looks good. Its body is gray in color, with black flakes and spots on the back. In many of them, there are white-sugar extracts under the bark of the tree. There are favorable conditions for the growth and reproduction of fungi.

**Apple aphid (*Rhopalosiphum insertum* Walk.).** The body of the apple aphid is green and the head is green with a yellowish tinge. The suction hose is black, cylindrical, and the tip is shrinking. The tail is black and contains small dusts. The tops of the leaves and shoots, which have been touched by the aphid it growl, twitch, and twirl.

**Pear louse (*Armyt biti*) (*Taeniothrips inconsequens* Usel.).** It can be mainly found on twigs and twigs. The beetles are 8-jointed, the body is brown or dark, the wings are dark in color, and the pest has light spots on the abdomen. The length of the body is 1.3-1.4 mm. The female lays about 100 eggs in 20-25 days. In 3-5 days, the larvae hatch and suck the juices of plants, such as adults. They eat the leaves of young plants; the plant stays away from growth, takes on an abnormal shape and dries up. As a result of the ingestion of the leftover vegetative growth, it produces a number of unproductive branches, resembling a shrub, and becomes sedentary.

**Apple worm (*Laspeyresia pomonella* L.).** In addition to apples, it affects the fruits of pears, nuts, brains and melons. At the age of a worm, it hibernates under the bark of a tree, in the cocoon that it has formed in the soil. The gardens turn into puppets before they bloom, and during the flowering period they fly like butterflies. Butterflies fly at night, and begin to lay their eggs during flowering (up to the size of a prey) during flowering. A mother butterfly lays an average of more than 50 eggs (one for each fruit) on the fruit. The worms that hatch from the egg eat the bark of the fruit, the fleshy tissues, go inside, and go to the seed (sage). Eat one fruit and move on to the next, destroying an average of 2-4 fruits. When the damaged fruit falls to the ground, a

worm comes out of it, climbs the tree and re-enters the healthy fruit. It gives 2 generations in 1 year.

**Garden crabs** (*Schizotetranychus pruni* Oud.). Apples, quince, plum, cherry-plum and grapes are the main causes of damage. Its body is elongated, bluish-yellow in summer, and reddish-yellow in winter. In winter, under the bark of trees, they winter in groups. They start feeding on shoots in early March. The larvae are located on the underside of the leaf and suck the juice, resulting in the leaves turning yellow and drying out. The leaf-falling plant stays in growth and dries up over time. An egg can lay an average of 50-100 eggs per egg. It reproduces 8-10 times a year. Dry, hot weather contributes to the mass reproduction of garden linden and pear lice.

**Control measures.** The above measures should be taken to prevent the occurrence of pests. Proper use of Bordeaux solution helps to reduce and eliminate diseases, including pests. Once the pests begin to appear, the recommended insecticide-acaricides should be used according to their rules and regulations, depending on their species.

## **HARVESTING**

The harvest time is determined by the type of orchards, the ripening period, and the use of fresh fruit. For example, fruits intended for wintering, sweating, or processing are harvested in full ripening from May 25 to October 5, and in the northern regions of the country from June 1 to October 5. Fruits intended for long-distance transportation are harvested before they are fully ripening, so that they do not lose their quality. The summer ripening varieties of apples and pears are harvested 5-7 days before the autumn ripening 5-10 days before ripening? When harvesting, it must be done by hand so that it does not fall to the ground and spoil. The fruits should not be damaged when harvested, but should be carefully collected and wrapped in buckets.

The fruits of the melon and peach should be harvested in the cool weather in the morning. Fruits that are harvested in the heat of the day are very hot and spoil quickly. The harvested fruits are sorted, shaded, and shipped to their intended destination.

The rules and terms of agro technical measures to be taken when caring for young and fruitful orchards are given in Tables 1-2.

*Table 1*

**Rules and deadlines for agro-technical measures to be taken in the cultivation of young orchards**

<b>N0</b>	<b>Agrochemical measures</b>	<b>Rules</b>	<b>Deadlines</b>	
			<b>Akhal, Balkan, Mary and Lebap regions</b>	<b>Northern parts of Dashoguz and Lebap regions</b>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
1	Giving fertilizers before sowing plants	Course-30-40kg/ha Superphosphate-400kg/ha Urea-100kg/ha Potassium chloride-100kg/ha	25.10-10.11	01.11-05.11
2	Controlling measures of weeds	One of the herbicides such as sprout, entoglyphos, sonraund, against perennial weeds is 6-8I/ha	01-15.11	01.11-10.12
3	Drainage	50-60 cm	01-15.11	01.11-10.12
4	Preparation of soil for gardening, leveling05	Cross-sectional	05-20.11	25.02-15.03



*Continue of table 1*

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
5	Digging pits to sit orchards	According to the drawing, the depth is 50-60 cm and the width is 60-70 cm	05-20.11; 25.02-30.03	25.02-05.04
6	Drawing of garden food according to the drawing	Apples: 3×1m, 3×2m, 4×1m, 4×2m (low height), 5×3m, 5×4m, 6×3m, 6×4m (medium height), 7×5m, 8×6m(advanced height); Pear: 4×2m, 4×3m(low), 5×3m, 5×4m(medium), 6×5m, 7×5m(advanced); Plum: 8×6m, 6×5m; Brain, peach, pomegranate: 5×3m, 5×4m; Blackberry, cherry:	10.11-05.12 25.02-30.03	05.03-05.04

*Continue of table 1*

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
7	Irrigation of planted seedlings	Time of installation 500-600 m <sup>3</sup> /ha	10.11-05.12 25.02-30.03	05.03-05.04
8	1st wet water supply	1500 m <sup>3</sup> /ha	10-30.01	10.01-10.02
9	2nd wet water supply	2000 m <sup>3</sup> /ha	10-28.02	20.02-05.03
10	Cutting and finishing gardens	Dry, broken, sick cutting off branches	15.12-20.02	20.02-20.03
11	Driving between rows	30-35 cm	10.11-15.12 01.03-30.03	01.11-30.11 15.03-10.04
12	1st time with nitrogen fertilizer Feeding	Ammonium nitrate- 100-150 kg/ha	01-20.05	05-25.05
13	2nd time with nitrogen fertilizer feeding	Ammonium nitrate-150-200 kg/ha	10-25.06	15-30.06
14	Insects and diseases conduct countermeasures	Recommended insect- acarisdler and fungicides are normal according to	Pests and diseases occur when it comes out or to prevent	

*Continue of table 1*

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
15	Irrigating young plants in growth period	8-10 times, 500-600 m <sup>3</sup> / ha	01.04-02.09	01.05-01.09
	1 <sup>st</sup> time irrigating	500 m <sup>3</sup> /ha	01.04	01.05
	2 <sup>nd</sup> time irrigating	500 m <sup>3</sup> /ha	10.05	10.05
	3 <sup>rd</sup> time irrigating	500 m <sup>3</sup> /ha	20.05	20.05
	4 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	10.06	10.06
	5 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	22.06	22.06
	6 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	10.07	10.07
	7 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	22.07	22.07
	8 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	08.08	08.08
	9 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	22.08	22.08
	10 <sup>th</sup> time irrigating	500 m <sup>3</sup> /ha	02.09	01.09
16	Arrange the rows	4 times, 18-20 cm	May, June, July, August	May, June, July, August
17	Originally from the gardens removal of shoots	At the time of emergence must be completely removed	01.05-15.09	01.05-15.09

Table 2

**Rules and deadlines for agro-technical measures to be taken in the cultivation of orchards**

N	Agro technical measures	Norm	Date	
			Ahal, Balkan, Mary and Lebap provinces	Northern parts of Dashoguz and Lebap provinces
1	2	3	4	5
1	Fertilizer before plowing	course - 30-40 t / ha, Her Superphosphate per year 600 kg / ha (400 kg / ha) - in the fall, 200 kg / ha - Drive in the spring down), Urea - 125 kg / ha; chlorine Potassium - 100 kg / ha (spring herd down)	05.11-10.12 01.03-30.03	01.11-05.12 15.03-10.04
2	Driving between rows	30-35 cm deep, 2 times in the spring and in the fall	10.11-15.12 01.03-30.03	01.11-30.11 15.03-10.04



*Continue of table 2*

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
3	Weed weeding	Perennial weeds herb sprout, entoglifos, sonraund such as herbicides use one 6-8 l / ha	01-15.11	01.11-10.12
4	Gardening and finishing	To the condition of the trees depending on the light and a substantial cut to transfer	15.12-20.02	20.02-20.03
5	1st wet water supply	1500 kg/ha	10-30.01	10.01-10.02
6	2nd wet water supply	2000 kg/ha	10-28.02	20.02-05.03
7	Soil softening	18-20 cm deep	April-July	May-July
8	1st time with nitrogen fertilizer feeding	Ammonium nitrate- 180-200 kg / ha	01-20.05	05-25.05
9	2nd time with nitrogen fertilizer feeding	Ammonium nitrate- 180-200 kg / ha	10-25.06	15-30.06
10	Insects and diseases countermeasures to transfer	Recommended insect-acarisidler and fungicides are normal conformity		

*Continue of table 2*

<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
11	Growth in orchards catching water during	5-6 times, 800-900 m <sup>3</sup> / ha	05.05-30.08	25.05-30.08
	1 <sup>st</sup> time irrigating	900 m <sup>3</sup> / ha	05.05	25.05
	2 <sup>nd</sup> time irrigating	900 m <sup>3</sup> / ha	05.06	25.06
	3 <sup>rd</sup> time irrigating	900 m <sup>3</sup> / ha	01.07	15.07
	4 <sup>th</sup> time irrigating	900 m <sup>3</sup> / ha	20.07	25.07
	5 <sup>th</sup> time irrigating	900 m <sup>3</sup> / ha	15.08	15.08
	6 <sup>th</sup> time irrigating	900 m <sup>3</sup> / ha	30.08	30.08
12	Arrange the rows	4 times, 18-20 cm	25.05-10.09	01.06-01.09
13	Originally from the gardens removal of shoots	At the time of emergence must be completely removed	01.05-15.09	01.05-15.09
14	Harvesting		25.05-05.10	01.06-05.10

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**MANUAL FOR GROWING ORCHARDS**