

Cultivation and Agricultural Techniques of Raspberry in Light Gray Loam Soils of The Ferghana Region

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Abstract: The raspberry varieties Barnaulsky, Vislukha, Progress, Kimberg, Marlboro were planted - one of the berries grown in our country today, and their high productivity was established. The raspberry root system is perennial, and the stem is biennial. When raspberry seedlings are planted, it is rare to see them bear fruit the previous year. From one grown raspberry seedling you can get up to 2 kg of raspberry harvest.

Keywords: Raspberry, seedling, harvest, berry, variety, root, stem, planting, soil, fruit, bush, weather.

1. Introduction: There are many pebble soils in Uzbekistan. They are found mainly on alluvial fans, in places of old river beds. There is a layer of soil on top of the pebbles. If this layer is thick (1-2 m), then fruit trees grow well here, without special care techniques. But there are pebbles, poorly covered with soil (up to 10-25 cm); sometimes they even wedge out to the surface. On soils underlain by a pebble layer at a depth below 40-60 cm, after special pre-planting preparation of the land area, gardens can be planted; apricots grow and bear fruit here with success.

The negative properties of these soils include lack of structure, low moisture and poverty of nutrients, especially organic ones. Having good natural drainage, they dry quickly after precipitation and watering. Planting is done with developed seedlings. It is advisable to mulch the tree trunk circles for one to two years with a layer of straw or dry grass 10-15 cm thick. Fruit-bearing orchards are given 13 waterings during the growing season at a rate of up to 500 m³/ha. And where the soil layer under the pebbles does not exceed 30 cm, the number of waterings is increased to 18. The soil should have a moisture content of at least 11-13% of the dry mass.

Raspberries are rightfully considered one of the most popular berry crops among gardeners. Its aromatic fruits have an incredible taste, which is fully manifested both fresh and in various desserts.

So those who have their own garden or free space in the local area simply need to plant a berry bush. Every year you can collect delicious berries for fresh consumption, preparing various drinks and dishes, and even for sale.

2. Materials And Methods: About the wonderful healing properties of raspberries. Let's talk about how to start this crop on your property, talk about the intricacies of cultivation and the secrets of care. Raspberries, like currants, are one of the leading berry crops in our country. The main difference between raspberries and other berry bushes is the two-year cycle of growth and shoot development. In the first year the shoots grow intensively, and the next year they bear fruit. The shoots bloom, produce a harvest and die.

Growing raspberries is generally not a difficult task. The main medicinal plant for use. You need to understand some subtleties and nuances. In this article we will get acquainted with the features of planting berry bushes, the rules for caring for them, and also consider the most popular varieties of this crop.

Raspberry is a hardy shrub with a perennial root, and each shoot (on average 1.5-1.8 meters tall) lives only for two years. The flowers of the plant can be white or pink. They later develop into juicy red, purple, orange, amber or pale yellow and almost black berries. They are unusual - they are small hairy drupes, fused on the receptacle into a complex fruit. When picking raspberries, the core of the tender berry often remains on the bush, unlike blackberries.

Raspberries are grown all over the world, where growing season temperatures are around 13-21°C. Raspberries grow best in slightly acidic soil. However, very heavy, compacted soils, which can easily become waterlogged, are not suitable as the plants are sensitive to root diseases. Raspberry bushes should not be planted too close together to ensure adequate leaf ventilation, which helps reduce plant disease and makes it easier to pick ripe raspberries at harvest. It begins in the second year of plant growth, and raspberries can bear fruit for more than 15 years in favorable conditions. Cultivated varieties of raspberries include common or red raspberries (*R.idaeus*), rough hairy or American raspberries (*R.strigosus*), western or monkey raspberries (*R.occidentalis*) and other species. Today in our republic the demand for healthy and early ripening berries is increasing. In some areas of our republic, the raspberry plant is cultivated, widely distributed in Central Asia, Eastern Siberia, the Far East, the USA and European countries. High yields of raspberries of the varieties Barnaul, Vislukha, Progress, and Marlboro were

planted and obtained - one of the berry crops grown today in our country.

Raspberries, like many berry bushes, grow best in well-drained environments – and light loamy soils with sufficient humus content. Raspberries tolerate soil acidity quite well. However, in very acidic sites, moderate liming can improve nutrient mobilization and utilization by plants. Horticulture in Uzbekistan is of great importance in providing the population with fresh and dried fruits. Because the geographical area of our republic is very suitable for growing sweet fruits. For this reason, various varieties of fruits are grown, containing many healing elements necessary for the human body. This makes it possible to create a strong raw material base, as well as export sweet, sugary, colorful, aromatic, tasty fruits and grapes grown in Uzbekistan to different countries of the world.

3. Results: One of our main tasks today is to grow the raspberry plant from the berries, which is one of the medicinal plants needed by the population, and providing it to the population is one of the most necessary issues. Some experts have repeatedly drawn attention to the fact that Uzbekistan, despite large volumes of exports of fruits and vegetables, has completely missed the main trend of the world fruit market - the development of the cultivation and export of berry crops.

During the time from planting to complete death, raspberries go through three age periods. The first period is two years of growth and initial fruiting after planting. It is characterized by the annual appearance of an ever-increasing number of root suckers and replacement shoots, from which bushes are formed. In the second year, raspberries already produce the first, but still significant, harvest of berries.

In the second year after planting, branches will appear that will bear fruit; in the southern regions of our country, berries may appear in the first year of planting. Nowadays, remontant raspberry varieties have been developed that can produce crops at lower temperatures. The second period - growth and full fruiting - usually lasts from three to eight years of age of the plant. During this period, a large number of replacement shoots and root shoots are formed, two-year shoots develop normally, and fruiting is stable under favorable growing conditions.

The third period is the attenuation of fruiting and drying out of plants. The period begins at 9-10 years of age and usually ends at 13-15 years. By this time, the plantation loses its economic importance. During the third period, raspberry rhizomes grow rapidly, and nutritional conditions for replacement shoots and root suckers deteriorate. Increasing nitrogen and phosphorus nutrition during this period of plant life can increase the life of the plantation. And this despite the fact that berries are the most expensive segment of the fruit and vegetable business, and for countries that are far from sales markets, it is best to focus on expensive segments.

4. Discussion: However, the berry segment for Uzbekistan remains niche and focused primarily on the domestic market. Raspberries began to become some exception in 2020-2022. Largely thanks to the creation of several large enterprises in the country for freezing fruits, berries and vegetables. Fergana region is one of the key regions for growing raspberries in the Fergana region of Uzbekistan. Several hundred hectares of raspberries are grown compactly here, and there is an enterprise for static freezing.

Growing raspberries mainly in the Fergana region of the Fergana region. Raspberries belong to the rose family. This is a shrub with erect shoots with small thorns. The color of the berries can vary from light pink to almost black (blackberry raspberries), and there are also yellow raspberries. Raspberries (*Rubus idaeus*) belong to the rose family (Rosaceae), along with apples, cherries, peaches, rowan berries, almonds and more than 4000 other plant species. The *Rubus* (raspberry) genus, to which raspberries belong, also includes cloudbberries and blackberries. These berries even look very similar.

The climate of the Fergana Valley is moderate, soil and climatic conditions are favorable for growing all fruit plants, and the medicinal plant raspberry is also cultivated. It is especially important to establish raspberry orchards, where gardening is most effective in mountainous and hilly areas.

In this regard, on the initiative of the President of the Republic of Uzbekistan, the districts of the Fergana region were allocated 300 hectares of land for a period of 10 years for the purpose of developing a raspberry plantation in the region with the aim of organizing a raspberry plantation. At the same time, a special freezing warehouse was created in the center of the district for processing and storing products.

Raspberries are propagated by rhizomes, roots and cuttings and harvested in the second year. After harvesting, one-year-old branches are left, and two-year-old branches are cut off. Raspberries grow well on nutrient- rich, fertile, well-drained soils with groundwater at a depth of at least 1.5-2 m. Raspberry seedlings are planted in early spring or late autumn at row spacing of 1.2 meters and between bushes of 30-40 cm.

Seedlings planted primarily in autumn take root well and begin to grow in early spring. The seedlings are planted in holes dug at a distance of 30-40 cm from each other, 40 cm deep and 40 cm wide. Since raspberry fruits are extremely tender, they must be collected quickly, avoiding overripening, otherwise the harvest of some local varieties may spill during the harvest period .

In the first days of ripening, the harvest is harvested after 2 days, and as the harvest ends, after 3-4 days. The harvest is collected in containers with a capacity of 1.5–2 kg of fruit. Because the quality of the fruit may deteriorate when collected in large containers. Raspberries should be picked in the morning or afternoon when the weather is cool.

The raspberry root system is perennial, and the stem is biennial. It is rare to see raspberry seedlings bear fruit within the allotted time. Every year in March, the plant (body or stem) emerging from the rhizome begins to bloom from the third ten days of August, the fruits are formed in September, and the raspberry fruits begin to ripen from the second ten days of September until late autumn (in some cases before frost) October-November, ripens up

to a month. Raspberry fruits can be obtained from this seedling again in early spring. From one cultivated raspberry plant you can get up to 2 kg of raspberry harvest. After the raspberry plant is harvested, the body darkens and is disposed of as waste in the summer. The height of the raspberry bush is 1-2 meters, the leaves are unusually feathery, complex, arranged in a row. Flowers are bisexual, self-pollinating.

After gartering, the raspberries should be fed. It is better not to use pure nitrogen fertilizers, because nitrogen promotes increased formation of shoots, but we also cannot underfeed with nitrogen, because we need to grow good, powerful replacement shoots for next year's harvest. It has everything necessary for a bountiful harvest this year and for the formation of young tall shoots that promise to thank us in the future. Apply the second feeding before flowering, the signal for it will be the dissolution of the first flowers. In this case, the nutrients will be used to increase the size of the berries and increase the sugar content, for which potassium is (among other things) responsible.

By the time the first berries ripen, all minerals will be processed and absorbed by the plant, and the berries will contain only substances useful to humans. To avoid nitrate accumulation, never feed berry plants before harvesting!

The fruits are red, black-red, sometimes yellow. In some areas of the Fergana region, leaf fall is observed in late March - early April. In the first ten days of April, a flower bud begins to form, and after 10-15 days, the flowers of the plant begin to open, and the fruits are formed in the third ten days of May, in some cases, depending on climatic conditions, they begin to ripen from the beginning of the first ten days of June.

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Notes. 1-planting shrubs, 2-processing shrubs, 3-watering raspberries, 4-harvesting raspberries

Remontant varieties (re-blooming and producing many times in one season), i.e. raspberry seedlings formed from growths formed in March, begin to bloom from the second ten days of August, in some cases the flowering process continues directly until October-November.

Depending on climatic conditions, raspberry fruits formed instead of flowers can ripen until November- December. In our conditions, in some years, due to the early onset of frost, it is observed that the raspberry fruits formed later do not ripen completely. Productivity is average, i.e. 80-120 c/ha. In Uzbekistan, the raspberry varieties grown are Barnaul, Vislukha, Kimberg, Progress, and Marlboro.

The fruits contain 5.7-11.5% sugar, 1-2% organic acids, 9.1-44% vitamin C and B vitamins, carotene, and aromatic substances. Raspberries are most often eaten fresh. By processing harvested raspberries in the canning industry, jam and juices are made from them. Dried fruits (infusion) are used in medicine for colds, antipyretics and diaphoretics, and their juice is used to improve the taste of liquid medicines.

In addition, in world medicine it has been noted that good results are obtained from the use of the raspberry plant by boiling its branches to prevent colds, and local residents use the raspberry branch as a decoction.

Mineral fertilizers are applied annually with the addition of 5-10 t/ha of humus. On such soils, denitrification of nitrogen occurs quickly; the loss of nitrogen during frequent watering is very large, so nitrogen fertilizers are applied in three or four doses. Fertilizer irrigation (sharvat) is very effective, as well as colmatage - growing the soil horizon by silting when watering a planting. The size of fruit trees on such soils is smaller than in ordinary gardens, so they should be planted somewhat denser - by 20-25%.

With a yield of 1 ton, raspberries tolerate up to 1.3 kg of N, 4 kg of P_2O_5 and 2.9 kg of K_2O , that is, they place increased demands on the level of phosphorus nutrition. In addition, the annual death of less than half of the entire above-ground mass of the bush increases the alienation of nutrients from the soil and puts raspberries in the group of demanding crops in terms of mineral nutrition.

Raspberries consume basic nutrients throughout the growing season. However, in the post-harvest period, the supply of potassium and phosphorus is very limited, while the absorption of nitrogen continues after the berries are harvested. Phosphorus, and especially potassium, are most intensively consumed during the flowering and berry setting period. This time is considered critical in relation to phosphorus and potassium nutrition.

Therefore, to obtain a bountiful harvest, it is necessary to apply 6-8 tons of organic fertilizers, 50-60 kg of superphosphate, 10 kg of potassium salt and 15-20 kg of ammonium nitrate per 0.1 hectare of mineral fertilizers. Manure, phosphorus and potassium fertilizers are applied in the fall when plowing the soil, and nitrogen fertilizers in the spring before loosening the soil.

The highest and most consistent raspberry yields are obtained on fertile, fertilized soils. Even with moderate doses of manure, plantation productivity increases when complete mineral fertilizer with a predominance of phosphorus and potassium is applied.

Raspberries are watered 12-15 times during the growing season. The first watering is carried out during the formation of buds, the second - before flowering, the third - before fruiting, the fourth-eighth – when the fruits ripen, the ninth-fifteenth - before harvesting. To make the plant stable, stop watering in September.

5. Conclusions: Our research has shown that in October-November, in order to ensure complete ripening of the harvest elements forming in raspberry seedlings, you can cover these seedlings or begin caring for raspberries in greenhouses.

6. Acknowledgements: To care for a raspberry plant, you need to constantly cultivate the soil. Control measures are carried out by timely implementation of agrotechnical measures, spraying with a 1% solution of colloidal sulfur during budding and after harvesting. Raspberries grow in one place for 10-12 or more years and produce a harvest every year; to do this, you need to remove old raspberry branches and renew them. Because as old fruiting branches age, the leaves become smaller, and at the same time the yield decreases and the fruits become smaller.

Raspberries grow well and bear fruit abundantly in humus-rich, well-structured and well-drained loamy and loamy soils. Not suitable for planting in heavy soils, marshy, gas-polluted lands. It is known that raspberries produce a large number of plant roots each year and absorb many nutrients from the soil.

Based on the above, in addition to selecting varieties and using agricultural technology to increase berry yields and obtain high-quality fruits, it is important to carry out timely measures to protect plants from diseases and pests.

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