

## Plum Cultivation in the Conditions of Navoi Region

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**Annotation:** The article presents observational data aimed at determining the advantages of cultivating the plum variety “Yuzhnaya Krasavitsa” under the conditions of the Navoi region, as well as the impact of the region's soil and climatic conditions on yield.

**Keywords:** plum, “Yuzhnaya Krasavitsa” variety, soil and climatic conditions, yield, planting scheme, agrotechnical measures.

Currently, more than 12 million tons of plums are produced annually worldwide. Over half of this volume — approximately 6,5 million tons — is produced in China. Other major plum-producing countries include Romania (760 000 tons), Serbia (580 000 tons), Chile (420 000 tons), Iran (380 000 tons), and Turkey (330 000 tons).

In 2024, Uzbekistan exported 33 thousand tons of plum products to foreign countries, which is an 18,5% increase compared to 2023. Russia became the main importer of Uzbek plums, receiving 20,7 thousand tons.

In addition, exporters supplied significant volumes of plums to Kazakhstan and Kyrgyzstan — 10,6 thousand and 1,4 thousand tons, respectively. Nearly 177 tons were purchased by buyers in Belarus.

Plums are composed of 87% water, 11% carbohydrates, approximately 1% protein, and about 1% lipids. They also contain a large number of essential trace elements, biologically active substances,

dietary fiber, vitamins, pectins, and many other valuable nutritional components. Just 100 grams of plums provide 12% of the recommended daily intake of vitamin C, highlighting the importance of including this high-quality, natural product in the human diet to support health and strengthen the immune system.

For this reason, it is important to conduct research on cultivating plum varieties suitable for processing, using proper agrotechnical practices.

Plum trees are among the fruit crops that adapt well to almost all regions of Uzbekistan. Their cultivation is relatively simple. Rootstocks resistant to various soil conditions are used for plums. Their relatively late flowering helps protect against spring frosts and also reduces issues with various pests.

Plums grown in Uzbekistan contain between 14% and 21% sugar, 0,15% to 1,35% various acids, 0,15% to 1,5% soluble solids, as well as vitamin C. Plums are consumed both fresh and processed. They are used to make compote, jam, fruit butter, fruit leather, marmalade, juice, and other products. Fresh plums and plum pomace are also used in medicine as a remedy for scurvy.

To obtain a high-quality and abundant harvest, it is essential to choose planting sites that are well exposed to sunlight and protected from strong winds. Seedlings are planted in pre-dug pits, with the root collar placed 3–5 cm below the soil surface. Care for the seedlings includes watering (especially during dry periods and after harvest), soil loosening, mulching around the base, crown formation, as well as disease and pest control, and fertilization.

Plums bear fruit on last year's one-year-old shoots and on newly grown branches. The ends of the branches terminate in a vegetative bud, while the lateral buds are floral.

If a growing shoot lacks a vegetative bud at its tip, it will die off after the growing season ends. Older perennial branches branch out to form fruit-bearing shoots.

Most fruit tree varieties are not self-pollinating — they require cross-pollination with other varieties to set fruit. Even self-pollinating varieties tend to produce higher yields and better-quality fruit when cross-pollination occurs.

For effective flower pollination, one or two rows of pollinator varieties are planted after every 10–12 main rows. Plum is a fruit crop that requires mandatory pollination. If an orchard is being established with species known to have pollination issues, it must contain at least two or more pollinator varieties.

Fertilization of plum trees also affects fruit quality: the average fruit weight can increase by up to 15%, and fruit coloration improves. The tree uses most of the nutrients it absorbs from the soil for fruit development, followed by leaf formation and the growth of current-year shoots. The older the tree, the more nutrients it extracts from the soil.

During the year, plants absorb the greatest amount of nutrients in the first half of the growing season — mainly in spring, during the phase of intensive growth and fruit set. The second important phase is the latter half of the growing season, when branches thicken and fruits increase in size.

In bearing plum orchards, manure is applied once every 2–3 years at a rate of 20–40 tons per hectare, while mineral fertilizers are applied annually: 120 kg of pure nitrogen, 90 kg of phosphorus, and 70 kg of potassium per hectare. In the absence of manure, fertilizer rates are increased by 30–40%. Once every three years, phosphorus-potassium fertilizers are applied at doses of 180 kg P/ha and 90 kg K/ha (pure form), followed by deep plowing of the soil to a depth of 40–45 cm.

Phosphorus and potassium fertilizers, as well as manure, are applied before autumn plowing, while nitrogen fertilizers are applied 2–3 weeks before tree flowering at a rate of 120 kg/ha (pure form), to a depth of 20–25 cm. On gravelly soils, fertilizer doses are increased by 50%, and

nitrogen is applied in three stages — in spring, June, and July.

The Navoi Scientific-Experimental Station of the Research Institute of Horticulture, Viticulture, and Winemaking named after Academician M. Mirzaev is located in the Karmana district of the Navoi region. The soil type is typical sierozem. The groundwater level is at a depth of 2,5–3,0 meters and may vary throughout the season.

According to the soil analysis of the experimental plot, the following was found: in the 0–30 cm layer: humus — 1,25%, total nitrogen — 0,19%, total phosphorus — 0,28%, nitrate nitrogen — 12,7 mg/kg, available phosphorus — 18,7 mg/kg, exchangeable potassium — 177 mg/kg; in the 30–50 cm layer: humus — 0,74%, total nitrogen — 0,03%, total phosphorus — 0,12%, nitrate nitrogen — 7,1 mg/kg, available phosphorus — 12,9 mg/kg, exchangeable potassium — 156 mg/kg.

At the experimental station, the plum variety “*Yuzhnaya Krasavitsa*” was planted on a 3,5-hectare plot, where trees were spaced 6 × 3 meters in 2011. Currently, the average height of the trees is about 4 meters.

In the current year, 2025, thanks to timely and high-quality implementation of all necessary agrotechnical measures, including crown shaping, an average plum yield of 40 tons per hectare was obtained from this plot at the Navoi Experimental Station. Yield per tree averaged 73,5 kg.

Despite some unfavorable soil and climatic conditions in the Navoi region, the results showed that the region is quite suitable for plum cultivation.

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