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BOTANICAL CHARACTERISTICS OF BETA VULGARIS L. V. CRASSA

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Abstract: This article provides information about the botanical characteristics of the beetroot plant (root, stem, leaf, flower) and the requirements of these plants for factors such as light, heat, moisture, and soil.

Key words: beetroot, annual, stem, root, leaf, flower, moisture, heat.

Fodder beet (**Beta vulgaris L.**) is a group of varieties of ordinary root beets; technical culture.

Fodder beet was developed in the 16th century in Germany, and already in the 18th century this crop quickly spread throughout Europe. The chemical composition of the used part of fodder beets differs little from other types of beets, but its root vegetables contain a large amount of fiber and fiber.

In the first year of feeding, sweet potato forms large (up to 10-14 kg) corms of various shapes (mesh, oval-conical, cylindrical, spherical) and colorful (bright, white, red, etc.) and a rosette of green leaves, used in hair korma (listya takje silosuyut), legko ubiraetsya blagodarya tomu, chto korneplody na dve treti nakhodyatsya na poverkhnosti.

Vozdelyvaetsya in many European countries, in America (USA, Canada, Brazil, etc.), in Australia, New Zealand, Algeria, Tunisia, etc. Ukhod za posevami is similar to ukhod za stolovoy svyokloy. Ubirayut kormovuyu svyoklu kartofelekopatelyami, kartofeleuborochnymi kobaynami, sveklopod'yomnikami. Xranyat v burtak ili xranilishchax. Urojay corneplodov dokhodit do 900-1100 centners per hectare.

Botanical description of fodder beet

Fodder beet (Beta vulgaris L. v. crassa) belongs to the same species as sugar beet, so these crops are very similar in morphological and biological characteristics.

The subcotyledon of fodder beets has a more varied color than that of sugar beets, and can be white-green, yellow, pink, carmine, orange and purple.

The epicotyl (head) and hypocotyl (neck) play a large part in the formation of the root crop of fodder beet; in different varieties they account for from 25 to 65%

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of the mass of the root crop; the root itself is relatively poorly developed. Root crops of fodder beet differ from sugar beet in a great variety in the shape and color of the head, neck and root itself, as well as in the degree of their immersion in the soil. The development of the aerial part (head, neck) and the degree of root immersion in the soil largely determine the drought resistance of the variety and the content of dry matter in the root crops. The more developed the above-ground part, the more moisture-loving the variety and contains less dry matter.

1.Pic.Vegetation phases of fodder beet

The color of root vegetables can be white, pink, crimson, red, yellow and orange.

There are also differences in the anatomical structure of sugar beet and fodder beet roots. Fodder beet has significantly fewer rings of vascular-fibrous bundles (5...8), between which are located larger parenchyma cells with less sugar content in them.

2.Pic.The leaves of fodder beet.

The leaves of fodder beet are heart-shaped, ovoid, smoother and more horizontal than those of sugar beet; their total number is 20...30% less. A characteristic feature of fodder beet seeds is the much lower shedding of its fruit beets compared to sugar beets.

Biological characteristics of fodder beet

In the first year of life, three main periods can be distinguished in the growth and development of fodder beet, as well as sugar beet. The growing season for fodder beets in the first year of life is 125...150 days, which is 25...30 days less than for sugar beets. Thanks to accelerated development during long daylight hours, the fodder beet crop has moved quite far to the north.

Fodder beet seeds are able to germinate at a temperature of 2...5° C. Viable seedlings appear at a temperature of 6...7 ^{0} C, more friendly ones - at 12...15 ^{0} C. The seedlings tolerate spring frosts well down to -4...-5 ^{0}C. The most favorable temperature for the growth of leaves and roots is 15...20 ^{0}C. The cessation of growth in autumn is observed when the average daily temperature drops to 6 ^{0}C.

The leaves of adult plants can withstand short-term morning frosts down to -6 ^{0}C, while roots dug out of the soil and uncovered are damaged already at a temperature of -2 ^{0}C, becoming unsuitable for winter storage.

For the normal formation of a harvest of fodder beet root crops, a sum of active temperatures of 1500...2400 ^{0}C is required during the growing season, depending on the characteristics of the variety.

Fodder beets require fertile soils with a deep topsoil.

Based on the shape of the root crops, fodder beet varieties are divided into four groups: those with bag-shaped (or cylindrical), elongated oval, conical and round shapes.

Varieties with a bag-shaped (or cylindrical) root shape have a highly developed neck and are immersed in the soil for 1/4... 1/5 of the length of the root crop, which facilitates manual harvesting. They cannot withstand a lack of moisture due to an underdeveloped root system, are poorly leafy (18...20%), contain little dry matter (10...13%). Varieties of this group are widely used in

2.Pic. Fodder beet varieties

production. The zoned varieties and hybrids of this group include Timiryazevskaya single-seeded, Ursus Poly, Eckendorfskaya yellow.

Technology for cultivating fodder beets

Fodder beets produce the greatest yields of root crops when placed in near-farm crop rotation, where increased rates of organic fertilizers are used, and the cost of transporting the crop is minimized. High yields are obtained in vegetable crop rotations on floodplain lands. When growing fodder beets in field crop rotations, the best predecessors are fertilized winter grains, annual grasses, and perennial grasses, mainly when used annually.

The removal of nutrients from 1 ton of root crops and the corresponding amount of leaves is, kg: N - 2.5...3.0, P_2O_5 - 0.9...1.0, K_2O - 4.5...5.0. Therefore, it is a potassium-loving crop. If the content of exchangeable potassium in the soil is low, it is necessary to apply potassium fertilizers at higher rates.

Average rates of nitrogen fertilizers contribute to the formation of a larger leaf surface and a larger mass of root crops on soils of all types. Excessive standards cause the accumulation of nitrates above the maximum permissible concentration (0.5%) and thereby deteriorate the quality of the feed.

On soils with a low supply of mobile forms of the main elements of mineral nutrition, root fertilizing is carried out: the first - after bouquet, the second - before

closing the rows. The species composition and norms of fertilizers in fertilizing are determined based on the level of content of a given nutrient in the soil and the level of the planned harvest.

The system of basic and pre-sowing tillage for fodder beets is the same as for sugar beets. In areas with a long and warm summer-autumn period, after harvesting winter crops, the soil is peeled two to three times as weeds emerge.

In the spring, as the soil reaches physical ripeness, the field is harrowed to lock in moisture. Pre-sowing treatment should ensure loosening of the top layer of soil, leveling and compacting.

Beet seeds are calibrated into two fractions: 3.5...4.5 and 4.5...5.5 mm for sowing with precision seeders. Treat with the same preparations as sugar beet seeds.

Sowing is carried out simultaneously with the sowing of sugar beets using beet precision seeders or vegetable seeders with row spacing of 45, 60 or 70 cm. The seeding rate is determined in such a way that by harvesting there are 4...5 plants left per 1 m row (65...80 thousand plants per 1 ha).

The techniques for caring for fodder beet crops are the same as for sugar crops. In areas with insufficient moisture supply, during the second period of beet growth and development, irrigation is carried out with an irrigation rate of 600...700 m3/ha.

Beetroot is most often harvested by hand late in the fall when the lower leaves turn yellow. A set of machines has also been developed for mechanized cleaning. The leaves are mowed and used to prepare food, while the heads of some root crops are cut off, and for some, leaf petioles 5-8 cm long remain.

To dig up and harvest root crops, a potato digger is used, as well as a converted potato harvester. When using a potato digger, root crops are harvested manually, and with a potato harvester, root crops are selected and loaded into vehicles. Root crops delivered to the harvesting site are sorted and cut and broken ones are removed. Only healthy, not mechanically damaged and not withered root crops are placed in piles for storage. It is unacceptable to store frozen root vegetables for long-term storage, as they quickly deteriorate.

In the absence of permanent storage facilities, beet roots are stored in piles. The recommended size of the piles, m: height - 2, width - 3, length - no more than 30. Root crops are better preserved when lower (in the form of a longitudinal groove) and upper ventilation are installed. The piles are covered with a layer of earth along

the ridge 10...30 cm, and at the base 20...50, then with a layer of straw 20...50 cm. When frost sets in, the piles are finally covered with a layer of earth along the ridge 10...15 cm and at the base 10...20 cm. If the piles are immediately covered with straw, then due to the absorption of evaporating moisture by it, the layer of root crops adjacent to it is moistened and they quickly rot. The thickness of the layer of earth and straw is calculated based on the winter freezing of the soil. The time from the moment of storing freshly harvested root crops in piles to their covering with earth should be no more than 2 days.

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