ISSN NO: 2771-8840
April 2024

Medicinal Properties of Plantago Major L. Plant and Agrotechnology of Growing

Baxieva L.A., Erjanova Sh.
[1]*Candidate of biological sciences, associate professor of the department "Biology" Karakalpak State University. Berdaha Nukus, Republic of Uzbekistan*
[2] 70510100 - 2st year master's degree in biology (by subject).
Karakalpak State University Named after Berdakh, Nukus, Uzbekistan

Abstract. The researches were carried out at the experimental field of the "Shurtanboy" MFY grain and rice scientific production association, Nukus district of the Republic of Karakalpakstan. In this regard, experiments were carried out on different sowing methods and encapsulation of seeds of spring soft wheat resistant to drought and diseases, with high yield and high grain quality, in weak and medium salinity areas of the Republic of Karakalpakstan, especially in the island region.
Key words: soft wheat, No-till technology, seed encapsulation, grain, soils of the Archipelago region.

Plantaginaceae family, Plantago L. series, there are 242 species in the world, of which 6 species are in Uzbekistan, 6 species are in Karakalpakstan, short rhizome, perennial herb.

Great plantain (lat. Plantágo májor) is a herbaceous plant; species of the genus Plantago L. of the family Plantaginaceae. Great plantain is a perennial herbaceous plant. The plant has a short rhizome, planted with thin thread-like roots. The leaves are collected in a basal rosette, petiolate, and broadly oval in shape. The petioles are equal in length to the leaf blade, longer than it, or rarely shorter.

A perennial herbaceous plant up to 40 cm high. The rhizome is shortened, thick; Numerous roots extend from it. Leaves in a basal rosette, long petiolate. One or more flower shoots grow from the center of the leaf rosette, ending in a long, thick cylindrical spike. The flowers are small and inconspicuous. Calyx four-parted; sepals are oval, smooth, membranous along the edge. The corolla is light brownish, with a cylindrical tube and four broadly lanceolate lobes bent downward. There are four stamens, with dark purple anthers; pistil with a long column that remains attached to the fruit. The fruit is a two-locular, multi-seeded capsule. The seeds are irregularly wedge-shaped, grayish-brown. Blooms from May to autumn.

The medicinal raw material is the leaves (Folium Plantaginis majoris). They must be intact and undamaged. Dried leaves are broadly ovate or broadly elliptical, entire-edged or slightly toothed, with 5-9 arched, strongly prominent veins, glabrous, light green. The smell is herbaceous, the taste is bitter, slightly astringent. Moisture content no more than 14%; leaves that have lost their normal color, no more than 5%; flower shoots no more than 1%. Fresh leaves (Folium Plantaginis majoris recens) are used to obtain the drug “Plantain Juice”[1].

For medicinal purposes, the leaf of plantain is used, which can be used both in its natural form and to obtain juice and the drug “Plantaglucid”. The leaf contains the glycoside aucubin, bitter and tannin substances, carotene, vitamin C and K, a lot of potassium, mucus, organic acids, as well as substances that promote blood clotting, about 20 macro and microelements.

The medicinal properties of this plant in Chinese medicine were known 3000 years ago. Dioscorides spoke about its benefits. It was the most widely used plant among doctors of the Middle Ages. The leaf and preparations from it are used to treat chronic gastritis, gastric and duodenal ulcers; it is a good astringent, hemostatic and wound healing agent. The pulp from the fresh leaf is used for weeping eczema, swelling, trophic ulcers, snake bites, etc[2].

Great plantain seeds have enveloping, emollient and anti-inflammatory properties. Decoction of seeds: 10 g is poured into a glass of boiling water and heated in a water bath for 10 minutes. Cool for 10 minutes, filter and take 1 tablespoon 1 time per day on an empty stomach. Drink the same decoction 1 tablespoon 3 times a day for 1-2 months. for female infertility due to hormonal deficiency, for diabetes.

Decoction of plantain leaf: 2 tablespoons of the raw material are poured with a glass of boiling water and heated in a water bath for 30 minutes. Then cool the broth for 10 minutes, filter, add to 200 ml and take 1/3 cup 3 times a day 15 minutes before meals[3].

ISSN NO: 2771-8840
April 2024

A fresh plantain leaf is applied to boils and cuts. To treat trophic ulcers, a paste of fresh leaves is used. The dry sheet is pre-steamed. The prepared pulp in the form of a bandage is applied to the affected area.

In domestic traditional medicine, plantain has long been used internally for lung and stomach cancer. A mixture of finely ground leaves is mixed with an equal amount of granulated sugar and infused in a warm place for 2 weeks. Take 3-4 times a day, 1 tablespoon 20 minutes before meals.

For the treatment of chronic gastritis with increased secretion of gastric juice and peptic ulcer of the stomach and duodenum, an infusion of herbs is prepared: calamus root, birch leaf, viburnum leaf, plantain leaf, black currant leaf - 2 parts each; white willow bark - 1 part, St. John's wort herb, motherwort herb - 5 parts each; small centaury herb, peppermint leaf - 3 parts each; flax seed - 4 parts. Take 2-3 tablespoons of the mixture and pour 0.5 liters of boiling water into a thermos overnight. Take warm in 3 doses 20-30 minutes before meals.

Preparations made from plantain leaves have a multifaceted healing effect.

In folk medicine, an infusion of leaves is recommended for hay fever (allergies), fever, diarrhea, hemorrhoids, inflammation of the bladder, stomach and lung cancer. Fresh leaves are applied to wounds, abrasions, cuts, ulcers and boils. Ointment with dried plantain powder is an effective remedy for the treatment of pustular skin diseases.

Used for bronchitis, tuberculosis, whooping cough, bronchial asthma as an expectorant, diseases of the gastrointestinal tract, including peptic ulcers of the stomach and duodenum, and inflammation of the kidneys. Juice from fresh grass is effective for anacid and chronic gastritis. The ethanolic extract of the leaves lowers blood pressure. The expectorant effect of plantain is used in breast preparations. From the aqueous extract of plantain, the drug “Plantaglucid” is obtained, which has an antispasmodic and anti-inflammatory effect and is used for gastric and duodenal ulcers[4].

Agrotechnics of *plantago major* L. cultivation. It is possible to plant large *plantago major* L. plant in all soil and climatic conditions of the Republic of Uzbekistan. For its good growth and development, it is necessary to select lands with average mechanical structure of the bush, near streams and cleared of weeds.

The weight of 1000 seeds is 1-1.3 g. According to the requirements of the state pharmacopoeia, the leaves of the dried plant should be ovoid, elliptic, flat-edged, with 5-9 rootlets, 12 cm long, 8 cm wide, short stalked leaves, moisture 14%, the amount of yellowed and blackened leaves 5%, flower ash 1%, organic and mineral additives 1%, total ash content should not exceed 20%. The humidity of the new leaves of the plant must not be less than 70%.

When we planted the plant and conducted an experiment, we started the planting time from 15.03.2023, after 10 days of germination, it sprouted and produced 2-3 leaves, the surface of the leaf was 5-6.5 cm. The total plant ripening time was 180 days (Table 1).

Table 1

Plantago major L. planting and Germination Times (2023)

Planting time	Germination (day)	Number of leaves per bush,	Size of leaves,	Flowering of the plant, day.	Ripening of the plant, day	Length of the flower
15.03.23	11 day	3	5-6,5 cm	35	180	9 cm
25.03.23	8 day	2	4-5 cm	28	150	8 cm
04.04.23	9 day	3	3-4 cm	31	140	5 cm

Fields planted with large-leaved sorghum are plowed to a depth of 22-25 cm, with 20-25 tons of manure and 50 kg of superphosphate per hectare, before plowing. Since the plant is perennial, it can be planted in autumn and early spring.

If the large zubturum plant is planted in autumn, the land is plowed 25-30 days before planting. Cultivation and fertilization are carried out as soon as weeds appear. In autumn, the seeds are sown in wide rows dry without starchification. In this case, the seeding depth should not exceed 0.5-1.5 cm.

The sowing depth of the seeds sown in autumn and spring should be 0.5-1.5 cm, the sowing rate should be 5-6 kg per hectare, and the seed germination rate should not be less than 70-80%. Planting thickness should be 8-10 bushes per 1 meter. When the seeds are sown in early spring, in order to accelerate their germination (in

ISSN NO: 2771-8840
April 2024

wet sand at a temperature of +18-20°C for 1-2 days, if they are sown in the fall, the seeds are not stratified. In the climatic conditions of Uzbekistan, if the large *plantago major* L. plant is planted in the fall, less labor is required. it is possible to create reliable and complete seedlings.

Seeds sown in autumn germinate in early spring and those sown in spring after 10-12 days. The duration of use of fields planted with plants is 3-4 years. Caring for the big zubturum plant After the formation of leaves on the plant, the soil is softened by careful cultivation so that they do not get mixed with the soil. It is cleaned of weeds and made uniform.

During the growing season, taking into account the development of the plant, it is fed with an average of 90 kg of nitrogen, 40 kg of phosphorus and 40 kg of potassium fertilizer per hectare twice. In the second and subsequent years, it is fed with mineral fertilizers twice with the help of cultivators during the period of pruning and after harvesting the leaves. Feeding is done before watering. During the season, it is irrigated 10-12 times, taking into account humidity and humidity, and cultivation is carried out 4-5 times to soften the soil and eliminate weeds.

1.5-2 t per hectare, if high-quality agrotechnical measures are carried out in areas planted with large zubturum. dry leaves can be harvested.

Used literature

1. Gorin A.G. Chemical study of polysaccharides from the leaves of Plantago major L. 1. Analysis of the monosaccharide composition of the polysaccharide complex // Chemistry of natural compounds.1965. №5. C. 297–302
2. Olennikov D.N., Tankhaeva L.M. Development of technology for obtaining dry plantain extract // Chemistry of plant raw materials.2006. №1. C. 47–52.
3. Murai M., Tanaka Y., Nishibe S. Iridoids from Plantago major // Natural Medicine. 1996. V. 50. P. 306
4. Mambetullaeva, S. M., Utemuratova, G. N., & Yeshchanova, S. S. (2021). Ecological transformations in the southern aral sea region as a factor of population dynamics (on the example of rhombomys opimus and ondatra zibethica). *Annals of the Romanian Society for Cell Biology*, 13428-13436.
5. Skari K.P., Malterud K.E., Haugli T. Radical Scavengers and Ingibitors of Enzymatic Lipids Peroxydation from Plantago major, a Medicinal Plant. In: Proceeding of the 2nd International Conference on Natural Antioxidants and Anticarcinogens in Nutrition, Health and Disease. Cambridge, 1999. P. 200–202