

SEED BREEDING AND AGROTECHNICS OF THE MEDICINAL PLANT AMARANTH (AMARANTHUS)

Rasulov Ilkhom Makhmudovich

PhD on Agricultural Sciences

<https://doi.org/10.5281/zenodo.7974127>

Abstract. *In the article, on the basis of the Decree of the President of the Republic of Uzbekistan No. 4670 dated April 10, 2020 “On measures for the protection of medicinal plants growing in the wild, cultivated cultivation, processing and rational use of available resources” it is studied that one of the most urgent tasks is to satisfy the need for drugs with pharmacological efficiency, cheap and with few side effects.*

Keywords: *UN, FAO, Amaranth squalene, tocopherol, sterol, phospholipid, bronchitis, laryngitis, pleurisy, pneumonia, avitaminosis, obesity, diabetes, bone and vascular diseases (ostechondrosis, arthrosis, arthritis).*

Introduction. As a result of studies, the medicinal plant *Amaranthus* is water-saving, adaptable to different climatic conditions, popular in the world market, medicinal and gives high biomass. Today, based on the decisions and orders of our state, it is the demand of the time to study its cultivation and medicinal properties. *Amaranth* (*Amaranthus*) is a medicinal plant, due to its valuable chemical composition, nowadays it is of great importance in the world for its use as food and fodder crops and for obtaining biologically active substances. The United Nations Food and Agriculture Organization (FAO) experts have studied *amaranth* as the plant of the XXI century.

According to the research of US scientists, *amaranth* protein has 75 points on a 100-point evaluation system, wheat protein has 56.9 points, soybeans have 68.0 points, and cow's milk has 72.2 points. So, it can be seen that the *amaranth* medicinal plant is somewhat overestimated in the experiments.

Distribution of *Amaranth* (*Amaranthus*) medicinal plant. The *amaranth* plant was grown as fodder in the CIS countries in the 1930s and 1950s, mainly in Ukraine and the North Caucasus. These days, our government pays great attention to the breeding of medicinal plants and their use in medicine for the protection of human health, and *amaranth* plant can be included in this list. Recognized as a plant of the century, this herb is one of the unique healing plants in nature, it has healing and protective properties for the human body. *Amaranth* belongs to the *Amaranthus* family, which includes more than sixty species. In its native South America, it has been cultivated for its seeds for 8,000 years. *Amaranth* is widely distributed throughout the world from South America to North America, to India and from there to Asian countries. There are many varieties of *amaranth* in present-day India and China, which are the secondary homelands of *amaranth*. In these countries, the *amaranth* plant is widely used in local medicine, national cuisine and industry. The most valuable and medicinal part of *amaranth* is its seed. In the work of researchers in many literatures, it was found that *amaranth* grain contains protein amino acids, biologically active substances, and lipids.

In terms of quality and composition, it is superior to the main traditional food products. Extracting and using oil from *amaranth* grain is one of the urgent tasks in medicine today. The lipid composition of *amaranth* seeds differs from other traditional oil plants by the abundance of

balanced fatty acids, biologically active substances, squalene, tocopherol, sterol, phospholipids, which are rare in plants.

Production of flour based on waste-free technologies while fully preserving the amount of biologically active substances contained in amaranth grain plays an important role in enriching the raw material base of the bakery industry, increasing the range of pastries and confectionery, and increasing their biological value. In medicine, amaranth seeds are used in the following diseases to protect human health. For example: a). Respiratory diseases (bronchitis, laryngitis, pleurisy, pneumonia); b). In the treatment of endocrine glands (anemia, avitaminosis, obesity, diabetes, eob); c). Bone and vascular diseases (ostechondrosis, arthrosis, arthritis). Oncological diseases (it is used to increase breast milk in women with young children, to treat insomnia and other sexual diseases).

Amaranth (*Amaranthus*) medicinal plant oil. Amaranth medicinal plant seed oil contains up to 10% squalene, which has a highly therapeutic, bactericidal effect on various tumors. Squalene's function is to balance various cellular processes, based not only on its internal concentration in the cell, but also on its effect on the activity of enzymes and catalysis of the synthesis of sugar molecules and the biogenesis of the common precursors of all active isopenoids. In addition, squalene participates in the biosynthesis of several hormones in the human and animal body. At the beginning of our century, the presence of biologically active squalene, which belongs to the stearin group, in large quantities in amaranth oil was a scientific discovery, when, starting from 1916, it was obtained in industrial conditions only from whale and shark liver oil. Amaranth oil is a renewable alternative source of this valuable substance. The field of application of amaranth oil covers not only the food industry, but also the perfumery-cosmetics, pharmaceutical industry, and various fields of medicine.

Amaranth oil is used to treat stomach and intestinal ulcers, skin diseases, to accelerate the healing of cut wounds, and to treat patients suffering from radiation sickness.

The most valuable and healing part of Amaranth (*Amaranthus*) medicinal plant is its seed. 100 grams of amaranth seeds, equal to 370 calories, this plant contains 7 g of lipids, 4 mg of sodium, 508 mg of potassium, 65 mg of carbohydrates, 1.7 mg of sugar, 14 mg of protein, 159 mg of calcium, 4.2 mg of vitamin C, 7, 6 mg of iron, 248 mg of magnesium, 0.6 mg of vitamin V6 and many other vitamins are found. The staff of the scientific-research institute of plant genetic resources, the selection, seeding and agrotechnics department of medicinal plants, cultivated amaranth seeds in the collection nursery, the main goal of which was to study the growth and development, the organization of seed production and the study of agrotechnics and evaluation of its quality were carried out.

Research results. Taking into account that medicinal properties of Amaranth (*Amaranthus*) seeds are important, the quality indicator of seeds is one of the important issues. Seed quality parameters include 1000 seed weight, seed weight, seed purity, germination energy and germination rate.

When determining the weight of 1000 seeds of the amaranth medicinal plant in the laboratory of Ugriti, plant physiology and immunity, it was 0.65 grams. It was found that the germination of seeds was 98% at (+240 C and +260 C).

In order to determine the seed yield of the medicinal Amaranth (*Amaranthus*) plant, it is related to the cultivation of seedlings in order to determine the economic efficiency of the agrotechnics of growth and development: land preparation, plowing, mineral and organic

fertilizers, it is necessary to carry out care, irrigation and agrotechnics when planting mainly from seeds. It is advisable to carry out biochemical analyzes based on the determination of the accumulation of biologically active substances in the plant. It is required to have qualified employees with high knowledge in their place. At this point, the preservation of medicinal plants, the formation of their collections, their enrichment, comprehensive study and effective and rational use of them, serving the development of our nation, ensuring the sustainable development of this field, is the demand of the present day.

REFERENCES

1. Resolution of the President of the Republic of Uzbekistan PR-4670 dated April 10, 2020 "On measures for the protection, cultivation, processing and rational use of available resources of medicinal plants growing in the wild".
2. Тўхтаев Б.Ё., Маҳкамов Т.Х., Тўлаганов А.А., Маматкаримов А.В., Махмудов А.В., Алляров М.Ў. Доривор ва озуқабоп ўсимликлар плантацияларини ташкил этиш ва хом ашёсини тайёрлаш бўйича Йўриқнома, Тошкент, 2015.
3. Олимжонов.Ш.С. Маҳаллийлаштирилган амарант ўсимлиги уруғларини қайта ишлаш маҳсулотларининг кимёвий таркиби ва улар асосида биологик фаол қўшимчалар яратиш. Кимё фанлари бўйича фалсафа доктори (PhD) диссертацияси автореферати, Тошкент 2021.
4. Кардошников. С.И. Фармокологические свойства амаранта. Аграрная Россия. 2001-№ 6 С. 42.
5. Пазилбекова З.Т, Эрийгитов С. Амарант (Amaranthus) ўсимлиги уруғларининг унувчанлиги ва дориворлик хусусиятлари. Тошкент 2021. Ўзбекистон аграр хабарномаси №2(86/2) 159 -161 б