

## CURRENT PROBLEMS OF MODERN PHARMACY IN THE CONTEXT OF MEDICINAL PLANT CULTIVATION

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**Abstract:** the article describes the cultivation of medicinal plants, progress in the field of agronomy and biotechnology, and current problems of modern pharmacy in the context of medicinal plant cultivation.

**Keywords:** pharmaceuticals, phytopreparations, cultivation, raw materials, industry, cell, plant, biotechnology, economics.

## АКТУАЛЬНЫЕ ПРОБЛЕМЫ СОВРЕМЕННОЙ ФАРМАЦИИ В КОНТЕКСТЕ КУЛЬТИВИРОВАНИЯ ЛЕКАРСТВЕННЫХ РАСТЕНИЙ

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**Аннотация:** в статье описывается выращивание лекарственных растений, прогресс в области агрономии и биотехнологии, актуальные проблемы современной фармации в контексте культивирования лекарственных растений.

**Ключевые слова:** фармацевтика, фитопрепараты, культивирование, сырьё, отрасль, клетка, растение, биотехнология, экономика.

Modern pharmaceuticals is facing a number of challenges related to the cultivation of medicinal plants, which are the most important sources of active substances for the production of phytopreparations and natural medicines. With the development of technology and scientific knowledge, special attention is being paid not only to the collection of wild plants, but also to their mass cultivation in order to ensure stable quality and availability of raw materials for the pharmaceutical industry. However, despite significant progress in the field of agronomy and biotechnology, there are many challenges that hinder the effective and sustainable development of this industry.

One of the key problems is the lack of generally accepted standards for the cultivation of medicinal plants. Each species requires specific conditions for successful

cultivation, and the lack of clear regulations can lead to instability in the composition and quality of raw materials. This makes it difficult to produce drugs with guaranteed efficacy and safety.

Environmental pollution, climate change and the use of chemical fertilizers can have a negative impact on the quality of medicinal raw materials. Medicinal plants, like other agricultural crops, can accumulate toxins and heavy metals, which reduces their safety for consumers. Technological methods such as organic farming and biotechnology can help avoid such problems, but their implementation requires additional efforts and investments.

The massive collection of wild medicinal plants has led to their depletion in natural ecosystems. This threatens not only biodiversity, but also the availability of certain types of raw materials for the pharmaceutical industry. Cultivating these plants can be a solution, but it requires careful attention and adherence to the principles of sustainable agriculture.

Biotechnologies can significantly improve the processes of growing and processing medicinal plants, but in practice many farmers and pharmaceutical companies face problems adapting new technologies. This includes difficulties in implementing modern methods such as genetic modification or growing plants in bioreactors, which slows down the development of the industry.

Mass production of medicinal plants requires significant investments in land, water, fertilizers, and technology. For many small producers, this may not be economically feasible. In addition, pharmaceutical companies focused on the mass production of synthetic drugs often do not see the advantage of using natural raw materials, which makes it difficult to commercialize and develop the market for phytopreparations.

To solve the problem of standardization, it is necessary to develop common industry standards and certification procedures for cultivated medicinal plants. This will ensure stable product quality and increase consumer confidence in herbal medicines.

The implementation of the principles of sustainable agriculture and organic farming can minimize the negative impact on the environment and improve the quality of medicinal plants. The use of biologically safe fertilizers and plant protection methods will improve the safety and ecological purity of products.

Modern biotechnologies such as cell cultures and genetic engineering can significantly improve the efficiency of growing medicinal plants. For example, it is possible to develop varieties that are resistant to diseases and pests, as well as increasing the content of active substances.

Government support measures are needed to support producers of medicinal plants, including subsidies and tax incentives for farmers working in this field. It is also

important to increase funding for scientific research aimed at improving plant cultivation and processing methods.

The cultivation of medicinal plants is an important aspect of modern pharmaceuticals. However, in order for this direction to become more sustainable and profitable, it is necessary to overcome a number of environmental, economic and technical problems. The introduction of innovative technologies, the development of quality standards and sustainable agriculture can become the basis for the successful development of the pharmaceutical industry based on plant raw materials.

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