

## SCIENTIFIC JUSTIFICATION OF THE NEED FOR BALANCED DEVELOPMENT OF MEDICINAL PLANT GROWING

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*Medicinal plant growth plays a significant role in the development of the national economy as a component of the processing industry, agriculture and forestry nowadays. Its resource base is a valuable natural resource, an indispensable functional part of the biosphere, and the basis for maintaining the potential of human health. An important aspect of balanced development is the preservation of medicinal plant resources in the natural conditions of their growth to preserve the species composition of commodity products and the biological diversity of the ecosystem. The global trend, including Ukrainian, testifies to the rapid increase in the importance of preserving the species diversity of the natural fauna and wild herbs in particular. There are two directions of medicinal plant cultivation: the use of natural plant resources (the collection of wild species) and the cultivation of medicinal plants. The specificity of the development of this industry directly depends on the way of its management for the production of medicinal plant material, about 160 species of wild plants and about 60 species of cultivated medicinal plants are currently used. That is, over 70% of medicinal plants are wildlife, and they constitute the fund of comprehensive renewable resources of the state that are harvested in Ukraine, and this, in turn, attaches great importance to this area of harvesting of medicinal plants, since it is predominant. The following research methods were used to perform the tasks set in the work: economic-statistical, abstract-logical, system-structural and comparative, graphic and design-constructive, and others like that. The current state of medicinal plant growing shows a significant gap in production processes, logistics, environmental management, certification, and other financial and organizational aspects. Solving of these issues will contribute to the development of the greening agriculture, the development of rural areas, the stabilization of the volume of cultivation of medicinal plants, and the regulation of market relations for the production of medicinal plants. Additional attention needs to be paid to the systematization of priorities, and search for ways to optimize the direction of development of medicinal plant growth in order to balance. In particular, taking into account the ecological, economic, and social features of the development of this industry involves solving the problems of preserving the natural resources of medicinal plants, the instability of the volumes of their harvesting and growing, the low weight of environmentally clean (from chemical and radiation pollution) quality of products that meet the quality requirements for its certification, as well as the low level of innovation implementation in the development of Ukrainian industry.*

**Keywords:** medicinal plant growing, balanced development, production, environmental safety, biological diversity, economic potential, environmental policy.

### INTRODUCTION

Currently, medicinal plant growing plays a significant role in the development of the national economy as a component of the processing industry and agriculture and forestry, and its resource base is a valuable natural resource, a charge as an indispensable functional component of the biosphere, as the basis for maintaining the potential of human health. The quality of medicinal plant

material depends on the peculiarities of ecological and economic characteristics of its production. Therefore, the cultivation of medicinal plants requires a special agrotechnological approach based on compliance with the principles of ecological safety. Certain specific problems are characteristic of each region of the development of medicinal plant growing due to natural, climatic, economic, trade, socio-cultural features that determine the

directions of economic specialization of the region in the production of commercial products of medicinal plant growing.

A most significant aspect of the balanced development of this type of economic activity is the preservation of medicinal plant resources in the natural conditions of their growth to preserve the species composition of commodity products and the biological diversity of the ecosystem. The global trend, including in Ukraine, indicates a rapid increase in the relevance of preserving the species diversity of the natural fauna and wild herbs separately. All this determines the uniqueness of the goals, tasks and means of their implementation, subject to the priorities of national importance, particularly from the provision of balanced development.

### **ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS**

The state of medicinal plant growing was researched by such scholars as Grünwald J., Büttel K., Groombridge B., Harvey A., Schippmann, U., Leaman D.J., Cunningham A.B. World trends in medicinal plant growing were investigated Bhat-tarai N., Karki M., Tandon V., Blanco E., Breaux J., Cunningham A., Burley J., Vantomme P., Cunningham M., Cunningham A., Schippmann U.

Ecological-economic and organizational aspects of the use of medicinal plants as a potential of non-wood forest products were investigated by Bajaj M., Bodeker G., Bhat K., Burley J., Vantomme J., Grow S., Schwartzman E., Shankar D., Majumdar B., Bodeker G., Bhat K.K.S., Burley J., Vantomme P.

An analysis of the current situation in the development of medicinal plant growing in Ukraine and its perspectives is highlighted in the works of I. Doroshkevich, O. Gubanov, V. Raka, Yu. Nikityuk. The work of A. Gudzenko, O. Turcan, T. Kovalchuk, N. Kutsenko, O. Ruban, I. Kovalevskaya is devoted to the study of problems and peculiarities of the development of the market of medicinal plant raw materials and optimization of its development.

Despite the extensive scientific progress, the issue of prioritization systematization, ranking of imperatives, and the search for ways of optimizing the directions of development of medicinal plant growing to ensure its balanced state is required. The relevance of the above aspects intensified by the need for implementation of the sustainable development strategy at the national level, the draft of which was prepared by 2030 with the support of the United Nations Development Program in Ukraine and the Global Environment Facility within the framework of the project "Integration of the provisions" of the Rio

Conventions into the national policy of Ukraine. In particular, taking into account the ecological, economic and social peculiarities of the development of this sphere involves solving the problems of preserving natural medicinal plant resources, unstable volumes of their harvesting and growing, low weight ecologically clean (from chemical and radiation contamination) quality products that meet the quality requirements for its certification, as well as the low level of implementation of innovations in the development of industry in Ukraine, etc.

### **MATERIALS AND RESEARCH METHODS**

The theoretical and methodological basis of work is the general theoretical methods of scientific knowledge, fundamental principles, and principles of the economy of nature use and environmental protection, the research of leading domestic and foreign scientists on the problems of organizational and economic regulation and improvement of the ecological and economical mechanism for ensuring balanced development of medicinal plant growing.

The following research methods were used to perform the tasks set in the work: economic-statistical, abstract-logical, system-structural and comparative, graphic and design-constructive, and others like that. The information basis of the study consists of domestic and international legislative and normative acts in the field of environmental economics, environmental protection, development of the agro-industrial complex, materials and reports of the State Statistics Service of Ukraine, Ministry of Agrarian Policy and Food of Ukraine, Ministry of Ecology and Natural Resources of Ukraine, Ministry of Economic development and trade of Ukraine, the State Agency of Forest Resources of Ukraine, domestic agricultural enterprises, and such same methodological recommendations of scientific institutions, other literary sources, information on the Internet resource, materials of their research on the development of medicinal plant growing.

### **RESULTS AND DISCUSSION**

According to the International Union for Conservation of Nature, [1], the World Health Organization [2], and the World Wildlife Fund [3], the cultivation of medicinal and aromatic plants is the best and most promising way to meet the growing demand for appropriate raw materials. In addition, there is a socio-economic project that supports the future collection of wild medicinal plants, since their use may be additional or even the only income of the rural materially unsecured population in some countries.

Medicinal and aromatic plants are of special significance for conservation activities because their resources will be harvested for industry and trade. Accordingly, it is necessary to ensure the balanced use of wild medicinal resources by developing and implementing appropriate general model management programs that should include trade monitoring and guidelines for sustainable collection. It requires coordinated work at the regional, national, or even global levels with the participation of environmentalists, academics, government agencies, producers, trading networks, and processing industries.

Such multifaceted functioning of medicinal plant growing indicates its importance in the development of the national economy, and the modern interdependence of the country's ecological and economic potential harmoniously justifies the balanced development of this branch. Increasing economic benefits and achieving the goals and priorities of balanced development is impossible without forming a set of various types of investment-attractive projects in the field of nature management, developing effective mechanisms for their preparation and implementation, comprehensive assessment of the consequences of their implementation, determination of economic, social and environmental results [4].

One of the first universally recognized acts that witnessed the development of medicinal plant growth was the adoption in 1978 of the World Health Organization Decree on the creation of scientific centers for the study of traditional medicine in different regions of the world. Taking into account the growing role of medicinal plants in society, in 1993 in the city of Geneva, nine international organizations decided to establish by the recommendation CBD (Convention on Biological Diversity) International Council for Medicinal and Aromatic Plants (ICMAP) to promote mutual understanding and cooperation in the use of medicinal and aromatic plants, to improve the exchange of information.

An International Standard for the Sustainable Harvesting of Wild Medicinal and Aromatic Plants was created (ISSC-MAP), the main idea of sustainable use is that biological resources should be gathered within their capabilities to ensure self-rehabilitation [5; 6] because most of the medicinal plants are wild plants, in 2008 under the auspices FairWild Foundation, BfN (German Federal Agency for Nature Conservation), WWF (World Wildlife Fund), IUCN (International Union for Conservation of Nature), SIPPO (The Swiss Import Promotion Programme is longstanding). The main objective of the ISSC-MAP is to stop the excessive exploitation, illegal collection, and trafficking of wild medicinal plants through the

establishment of an effective system to promote the non-exhaustive collection of raw materials in the wild, especially in developing countries.

The founders of the fund started to implement ISSC-MAP projects around the world through joint initiatives with the financial support of the German Federal Ministry of Economic Cooperation and Development. Currently, they operate in Brazil, Cambodia, India, Lesotho, Nepal, China, Bosnia, and Herzegovina. The main objectives of such projects are to identify the diversity of useful plants; assess measures for their conservation; promote sustainable use of knowledge; attract resource users to manage them, other social and economic research. Such initiatives are aimed at combining the rational use and preservation of medicinal plants (and other non-wood products) with the industrial development of these resources. The urgency of plant use is high in all countries of the world, regardless of the level of their economic development as a source of drugs, for food and cosmetic purposes, technical, airborne, and other. It uses at least 50–70 thousand types of plants in folk and modern medicine. About 15,000 species of medicinal plants are now under threat.

Such global trends indicate a careful attitude to medicinal plants, which play a role not an instrument for obtaining economic benefits, but a valuable natural resource, an irreplaceable functional component of the biosphere, the basis of maintaining the healthy potential of the organism of humans and animals. Therefore, the balanced approach will promote the development of medicinal plants growing at the socio-ecological and economic levels.

An important component of the balanced development of medicinal plant growing is environmental, it involves two aspects of consideration. First, it is ensuring the environmental friendliness of agricultural production, and second, solving the ecological problem of rural areas concerning their physical, chemical, and biological pollution. However, a balanced use of natural plant resources should be considered.

Currently, trade in plants is not controlled. Only partially the management of wildlife resources in low-income countries or in countries with large, non-privileged social groups, where plant gathering is often an additional or even single income, is partly managed. Examples are Nepal, Mexico, Turkey, Albania and Bulgaria. In general, these countries are a cheap source of supply of medicinal plants to the world market, which holds back the increase in the share of cultivated medicinal plants in trade, which is much more expensive [7]. The cost of these resources in certain categories of forests exceeds

the cost of wood. Unfortunately, until recently in Ukraine, there was no data on the reserves and territorial placement of most types of raw materials and fungi, since, when taxing the forest, they belong to the category of so-called by-products, and therefore do not have a detailed account. In our opinion, the main reasons why it is impossible to solve the problems of successful use of non-timber products are the depreciation of the use of forest resources, the absence of specific users of forest lands and approved forest harvesting rules at all levels, a small number of processing points on the ground and extremely outdated equipment using for the processing of raw materials. Subjects of entrepreneurial activity do not show interest in more profitable processing, which is explained, in particular, by the high capital intensity of the processing line and the lack of marketing research related to the promotion and sale of non-wood finished products. In particular, this also applies to medicinal plants. However, both studies confirm, owners and users of neglected non-wood production forest land [6; 7].

Medicinal plants of natural flora belong to renewable natural resources. They can remain a stable source of biologically active medicinal raw materials for many years with scientifically grounded use and ensuring timely recovery of natural resources. Ukraine feels a sharp shortage of raw medicinal plants, but the area under valuable medicinal plants remains very small. The basis of the use of medicinal plants is the definition of their resources in a certain area, and the study of the ecological characteristics of species at the level of populations for non-exhausting exploitation. The protection of medicinal plants should be comprehensive, consisting of many interconnected measures, and will be effective not only in the sound management of preparations but also in the introduction of medicinal plants into the culture and the use of environmentally safe technologies for their cultivation to obtain high yield crops of the corresponding medicinal raw material.

The need for raw medicinal plants growing, but natural resources are not limitless. Already there is a significant depletion of them. The reason for this is the excessive unsystematic exploitation of medicinal plants, non-compliance with harvest rules, increased recreational load on forests, and intensive economic activity. The depletion of natural resources causes a breach of trophic bonds in ecosystems and a depletion of biodiversity. Many valuable medicinal plants have become rare due to their excessive exploitation in some areas. Some species are endangered, and they are listed in the Red Book of Ukraine, namely an *Anacamptis palustris*, *Platanthéra bifolia*,

*Colchicum autumnale*, and *Gentiana lutea*. Under threat of extinction are also *Adonis vernalis* and *Atropa belladonna*. Specially created objects of nature conservation, endangered medicinal plants which are under some protection status for their preservation and subsequent recovery. The remnants of these plants need to be used to obtain seeds when introduced into culture, as well as for the study of biological, ecological, and other characteristics in natural conditions, without which their introduction and industrial culture are impossible.

Anthropogenic influence changes the vegetation of the territory. Natural phytocoenoses disappeared or reduced their area, creating agrophytocoenoses. Many lands in villages, near industrial facilities, have been transformed into the wilderness. Such territories are called anthropogenically transformed or transformed. Flora of these territories is changing, there are species of plants that are better adapted to new conditions, and species of natural, aboriginal flora disappear. Vegetation groups are almost completely changed. Man-made ecotopes penetrate more aggressive species of local flora, as well as species of plants from foreign flora-sanitary species. There are no industrial plantations for the cultivation of medicinal plants, and medicinal raw materials growing on the territories of state-owned forestry enterprises do not meet the requirements of the purchasers. The reason for the reduction of the procurement of medicinal raw materials is the lack of enterprises in its processing in the region and the unprofitableness of its implementation. Specialists of the State Administration of Environmental Protection carried out considerable work on the development and environmental protection, and limitation of environmental use. In the field of inspection control, work is carried out to identify areas of unregulated harvesting and sale of non-wood plant resources, measures were taken to prevent further such cases.

Particularly important for the development, functioning and reproduction of forest lands is the conservation of floristics and faunistic on them. Wild medicinal plants, together with forest fauna, are an integral part of the forest ecosystem. They create a favorable ecological system of the forest. Their use in tourism and recreation is a key area of exploitation of renewable resources that ensure the conservation of biodiversity. They legitimately claim the role of advanced technology of nature use, promising for the Carpathian macro-region. Thus, now there is a need for the following:

- the establishment of specific and objective fees for these resources, and thus adjust the volume of procurement;



- to create a special authority in the forestry sector that would issue permits for the use of products and exercise control, determine the place where their harvesting and volume should be carried out;
- it is necessary to introduce rational non-exhaustive use of non-timber products.

For comparison, in other countries, the control is conducted systematically for the use of medicinal plant resources, the peculiarities of the species and territorial variety of medicinal plants and, accordingly, the protection of their species size. In addition, auditing performed open drug crop production and maintaining statistical reports on the structure of cultivation and collection of medicinal plants, the volume of exports and imports. A prerequisite for such a development was the foundation in 1993 in Geneva of a non-governmental organization of the International Council for Medicinal and Aromatic Plants (ICMAP).

Therefore, very important for Ukraine is the experience of the EU, which formed the forestry sector with the full cycle of harvesting and processing of non-wood products that are competitive in economic activity, which serves as the basis for forming personal incomes and providing employment-population expansion.

World trends in the development of medicinal plants show its important role, in particular in the health system, and are applied not only in traditional medicine but also in allopathic, homeopathic, ayurvedic, Chinese and other treatment systems. Due to its specific useful properties, the field of use of medicinal plants extends to other industries. International experience shows that there are four different legal categories of medicinal plants:

- 1 — licensed (those who passed the certification of the quality of the medicinal product for international trade herbal medicinal products in the form of prescription or non-prescription drugs;
- 2 — plant preparations exempted from compulsory licensing;
- 3 — products of vegetable origin, sold as food additives;
- 4 — cosmetic herbal remedies.

In EU countries, herbal medicines are generally sold in pharmacies as over-the-counter and prescription drugs registered by the European Medicines Agency. According to EU Directive 65/65/EEC, all herbal medicines are considered medicines, but in the Netherlands and the United Kingdom, herbal products may also be classified as nutritional supplements [10].

In general, the demand for medicinal plants and herbal medicines is due to the following factors [11]:

- increase in health care costs;
- the interest of people, communities, and national governments in improving self-sufficiency in health care;
- the interest of communities and national governments in small and large industrial enterprises;
- development and protection of local/national levels of medicinal plant resources;
- adoption of legislative acts that will promote the development of medicinal plant growing;
- scientific development of innovative medicinal herbal preparations.

Medicinal plants are an extremely valuable resource for the production of modern medicines. About 1300 species of medicinal plants are used in Europe, of which 90% are wild. In the United States, about 118 of the top 150 prescription drugs are made from natural raw materials. In addition, in developing countries, more than 80% of the population consumes drugs of therapeutic and prophylactic purposes only of plant origin, of which 25% are made from wild plant species [12]. According to various estimates, the loss of species of plants exceeds the expected natural rate of their extinction by 100 to 1000 times [13], besides, the Earth loses at least one potential species every 2 years. According to the International Union for the Conservation of Nature and the World Wildlife Fund, there are around 50,000 to 80,000 species of flowering plants used for therapeutic purposes. Among them, about 15,000 species are threatened with extinction from excessive collection and destruction of habitats [14] of which almost 20% of wildlife resources have already been exhausted due to an increase in the number of human beings and their use of plants [15]. Although this threat has been known for decades, the accelerated decline in the number of species and the destruction of their habitats throughout the world has increased the risk of extinction of medicinal plants, especially in China [16], India [16], Kenya [19], Nepal [20], Tanzania [21] and Uganda [22].

Medicinal plant production requires the adoption of priority environmental measures, since constant production, of course, continues to play an important role in the relevant field: sustainable production of plant resources can become a financial instrument for the protection of nature. Changing the paradigm of the health care system towards natural therapeutic agents opens up new perspectives for medicinal plants. More than 25% of prescribed medicines in developed countries are derived from wild plant species. Demand for wild medicine over the past decade has increased by 8–15% over 1 year in Europe, North America, and Asia.

Since excessive use of medicinal plant resources can now be traced, this can lead to a decline in genetic diversity, which in turn causes problems of genetic erosion. Consequently, the Concepts of the Conservation and Management of Medicinal Herbs should be in line with the principles of ensuring the future of the generation and provisions for the conservation of plant species. Appropriate local, regional, national or international action programs on resource management, growth, conservation, and transfer of recycling from consumers to source countries, restrictions, or even trade barriers must be implemented.

Thus, analyzing the current state of drug crops in Ukraine and abroad, it should be noted that the problem of balanced development of medicinal plant cultivation is common, environmental preconditions, preservation of species, natural flora, and t. N., Throughout the developed world is given importance at the national level, unlike our state. Therefore, we will analyze the factors that influence the balanced development of medicinal plants growing in Ukraine in *Table 1*.

In particular, we have identified sociocultural, organizational, economic and environmental

Table 1

### Factors influencing the balanced development of medicinal plant growing

Factors of influence		
Socio-cultural	Organizational-Economic	Ecological
<i>Positive character of influence</i>		
<ul style="list-style-type: none"> <li>• social responsibility;</li> <li>• GMP technology, GACP;</li> <li>• technologies of organic production;</li> <li>• informing the population about the features of medicinal plant growing;</li> <li>• rationing and limiting the collection of medicinal plants;</li> <li>• protection of endangered species;</li> <li>• introduction into the culture of wild species of medicinal plants;</li> <li>• selection of medicinal plants.</li> </ul>	<ul style="list-style-type: none"> <li>• environmental management, audit;</li> <li>• availability of tenders, investors;</li> <li>• cooperation of enterprises;</li> <li>• exchange of experience;</li> <li>• exchange of information on the needs for volumes and types of medicinal plants;</li> <li>• standardization of quality;</li> <li>• certification.</li> </ul>	<ul style="list-style-type: none"> <li>• availability of special raw material zones;</li> <li>• availability of natural plantings;</li> <li>• favorable natural and climatic conditions.</li> </ul>
<i>Negative factors of influence</i>		
<ul style="list-style-type: none"> <li>• uncontrolled collection of wild medicinal plants;</li> <li>• culture of obtaining the fastest profit (neglecting ecological approaches);</li> <li>• non-compliance with ecologically safe technologies for the cultivation of medicinal plants;</li> <li>• growing disregard safety zone (gathering) of medicinal plants;</li> <li>• pollution of agrochemicals.</li> </ul>	<ul style="list-style-type: none"> <li>• lack of monitoring of medicinal plants;</li> <li>• absence of economic stimulation of industry development in the state;</li> <li>• difficult access to obtaining loans for the cultivation of medicinal plants;</li> <li>• lack of stable sales markets;</li> <li>• unstable price policy;</li> <li>• “floating” demand;</li> <li>• poorly developed information infrastructure between actors.</li> </ul>	<ul style="list-style-type: none"> <li>• contamination of the territory of cultivation/collection of medicinal plants (radionuclides, agrochemicals, heavy metals);</li> <li>• abnormal natural phenomena;</li> <li>• climate change;</li> <li>• degraded land;</li> <li>• reduction of medicinal plant species (due to changes in natural ecosystems artificially);</li> <li>• cattle grazing (trampling, deterioration of the quality of biologically active substances);</li> <li>• trampling of plants in places of rest of people;</li> <li>• landfill garbage in forest belts, on the banks of rivers, as a result of which — the extinction of plants;</li> <li>• impact of climate change on biodiversity;</li> <li>• bacterial fungal viral infection of plants.</li> </ul>

Source: formed by the authors.

Table 2

**Influence of medicinal plant growing on the environment and socio-economic sphere**

Functioning of medicinal plant growing		
Impact on the environment		Impact on the socio-economic sphere
Positive	Negative	Influence on socio-economic sphere
<ul style="list-style-type: none"> <li>• humus formation (use of medicinal plants as green fertilizer);</li> <li>• development of species diversity;</li> <li>• protection of natural fauna;</li> <li>• hanging chemicals (the use of medicinal plants as pesticides);</li> <li>• acid-forming function (photosynthesis, to a greater extent, woody medicinal plants);</li> <li>• education of agro-chemicals (due to the use of medicinal plants in crop rotation);</li> <li>• release production.</li> </ul>	<ul style="list-style-type: none"> <li>• impoverishment of natural species of flora (uncontrolled collection of medicinal plants);</li> <li>• pollution of soils, groundwater, atmospheric air (use of mineral fertilizers, fuel contamination, heavy metals and soil compaction by agricultural machinery);</li> <li>• involvement in the formation of acid rain, which in turn negatively affects plants, soils, water (pollution of atmospheric air by industrial enterprises and motor transport);</li> <li>• the introduction of adventitious medicinal plant species, which may damage the local ecosystem, violate the biological and ecological balance of the region;</li> <li>• poisonous / toxic effects of some types of medicinal plants.</li> </ul>	<ul style="list-style-type: none"> <li>• wild medicinal plants — this is a common nationwide wealth;</li> <li>• improvement of the population;</li> <li>• establishment of joint market promotion of products (for growing in small volumes);</li> <li>• direct benefits for local communities (in the context of a large organization in terms of plant cultivation) due to the possibilities of stable earnings, profitable employment and capital reinvestment;</li> <li>• promotion of development of beekeeping, green tourism;</li> <li>• development of integrated forest management.</li> </ul>

Source: formed by the authors.

factors influencing the balanced development of medicinal plant growing in Ukraine.

The analysis of the influence of medicinal plants growing on the environment and the socio-economic sphere is presented in Table 2. The influence of medicinal plant cultivation on the environment depends on the way of conducting economic activity, the ecological consciousness of citizens, and the responsibility of business entities.

### CONCLUSIONS

Medicinal and aromatic plants play an important role for environmental protection measures, since their indigenous resources will definitely be withdrawn for the needs of industry and trade. The balanced use of wildlife resources should be ensured through the development and implementation of appropriate common management model programs that should include trade monitoring and guidelines for sustainable collection. This requires coherent conservative work at regional, national, or even global levels with environmentalists, researchers, government agencies, manufacturers, retailers, and the business processing industry.

Considering the approaches of balanced development, namely: control and preservation of species diversity, natural places of growth, ecological approaches, and adherence to the rules of cultivation and processing of medicinal plants, there is a positive impact on the natural environment. Conversely, the destructive environmental impact is responsible for the irresponsible economic activity in which pesticides and other agro-chemicals are used, the excess use of agricultural machinery, the non-consideration of ecologically safe growing zones, unregulated collection of medicinal plants, the lack of monitoring and sanitary control of natural growing zones.

To solve problems with the rational and integrated use of wild medicinal plants, it is necessary to study their resource potential, develop a regional normative base for their collection on specific forest lands, to develop modern technologies for their processing and storage. It is necessary to fundamentally rebuild forest legislation on the use of forest food and medical products. Their use is more social than commercial. These resources help to maintain the traditional way of life in rural areas by employing the poorest people.

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**НАУКОВЕ ОБҐРУНТУВАННЯ ЗБАЛАНСОВАНОГО РОЗВИТКУ  
ЛІКАРСЬКОГО РОСЛИННИЦТВА**

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Значну роль у розвитку народного господарства сьогодні відіграє лікарське рослинництво. Його ресурсна база є цінним природним ресурсом, незамінною функціональною частиною біосфери, основою збереження потенціалу здоров'я людини. Важливим аспектом збалансованого розвитку є збереження ресурсів лікарських рослин у природних умовах їх зростання з метою збереження видового складу товарної продукції та біологічного різноманіття екосистеми. Світова тенденція, в тому числі й українська, свідчить про стрімке зростання важливості збереження видового різноманіття природної фауни та дикорослих трав зокрема. Розрізняють два напрями вирощування лікарських рослин: використання природних рослинних ресурсів (збір дикорослих видів) і вирощування лікарських рослин. Специфіка розвитку цієї галузі безпосередньо залежить від способу її ведення, для вирощування лікарської рослинної сировини сьогодні використовується близько 160 видів дикорослих рослин і близько 60 видів культурних лікарських рослин. Тобто понад 70% лікарських рослин складають фонд комплексних відновлюваних ресурсів держави, які заготовляються в Україні. Для виконання поставлених у роботі завдань використовувалися такі методи дослідження: економіко-статистичний, абстрактно-логічний, системно-структурно-порівняльний, графічний та проектно-конструктивний та ін. Сучасний стан лікарського рослинництва свідчить про значну прогалуну у виробничих процесах, логістиці, екологічному менеджменті, сертифікації та інших фінансових та організаційних аспектах. Вирішення цих питань сприятиме розвитку екологізації сільського господарства, розвитку сільських територій, стабілізації обсягів вирощування лікарських рослин та регулюванню ринкових відносин з виробництва лікарських рослин. Додаткової уваги потребує систематизація пріоритетів та пошук шляхів оптимізації напрямів розвитку лікарського рослинництва з метою збалансованості. Зокрема, врахування еколого-економічних та соціальних особливостей розвитку цієї сфери передбачає вирішення проблем збереження природних ресурсів лікарських рослин, нестабільності обсягів їх заготівлі та вирощування, низької ваги екологічної чистоти (від хімічного та радіаційного забруднення) якості продукції, яка відповідає вимогам якості для її сертифікації, а також низький рівень впровадження інновацій у розвиток промисловості України.

**Ключові слова:** лікарське рослинництво, збалансований розвиток, виробництво, екологічна безпека, біологічне різноманіття, економічний потенціал, екологічна політика.

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### ВІДОМОСТІ ПРО АВТОРІВ

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## Новини

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**НАТО** розглядає кліматичні зміни як серйозний виклик у сфері безпеки та має намір скоротити до «нуля» викиди CO<sub>2</sub> від військової діяльності до 2050 року. Про це заявив генеральний секретар НАТО Єнс Столтенберг, виступаючи в рамках першого діалогу з кліматичних змін, що відбувся у форматі Громадського форуму під час Мадридського саміту Альянсу. Столтенберг нагадав, що війна в Україні продемонструвала, наскільки небезпечною є залежність від певних товарів, що походять від тоталітарних режимів. Він підкреслив, що Стратегічна концепція НАТО, яка буде прийнята на саміті Альянсу в Мадриді, визначає кліматичні зміни як один із визначних викликів для безпеки у тривалій перспективі. Саме тому НАТО та країни-союзниці докладатимуть зусиль для усвідомлення та оцінки цієї загрози, для адаптації до неї військ та інфраструктури, а також для підвищення власної стійкості.