

# The Importance of Medicinal and Aromatic Plant Cultivation in Sustainable Development of the Agricultural Landscape

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## Introduction

The landscape, its healthy soil, water and the genetic resources of medicinal plants are key inputs into the pharmaceutical, cosmetics and food industries, and their growing scarcity in our countries requires their sustainable use and management.

The number of medicinal plant species, their sources, and knowledge of their use must be recorded, as these herbs can be a renewable source of new products and medicines. As a result, all scientific programs for the discovery of natural drug substances must be a concept of sustainability (Pešić, 2015).

Sustainable harvesting of wild plants can provide an incentive to maintain the habitats for the benefits of other species, supporting whole ecosystems. Sustainable collection practices of wild botanicals impact entire ecosystems, far beyond an herb itself. On the other hand, it is very important that the cultivation of these special crops be introduced into small-scale and large-scale cultivation (Chen et al., 2016).

## The importance of medicinal & aromatic plants

Medicinal & aromatic plants in regard to the sustainable development of agricultural country have additive functions: ecological, decorative and sanitary-hygienic and positive influence on water system, soil conservation and plant pasture for bees. The cultivation of medicinal & aromatic plants belongs to the special crop cultivation. It is only one way of supply the contracted volume and quality of these crops. This cultivation is of great importance from several points of view in the specialized agricultural farms: \* rational (offering

appropriate occasion for unemployed people), \* production (better exploitation of problematic land resources /salty soil, lower quality soils in sub-mountainous or mountainous areas/ ) and \* economic (from the viewpoint of market value the medicinal and aromatic plants belong to the most effective agricultural crops) (Salamon et al., 2021).

## Background in Slovak Republic

Slovakian herb cultivation, essential oils and plant extracts industries are diverse in nature, often quite small and typically fragmented. The commercially most significant enterprises are based in the Eastern Slovakia. The plant extracts and essential oils industry ranging from medical herbal extracts for over-the-counter use, though the growing of poppies for the pharmaceuticals to the production of clear natural substances.

At this point of commercial interest in the chemical products from the other special crops and new breeding varieties is still rather marginal or else in an early stage of development. As such these special crops do not yet warrant major R&D expenditure (Salamon et al., 2018).

Boosting yields on existing agricultural lands, including restoration of degraded lands, through sustainable agricultural practices would also relieve pressure to collect herbal plants in the wild, protected areas and national parks for agricultural production (Shekhar et al., 2000).

Finally, future leads for new agricultural and industrial opportunities likely to come from intensified activity in screening plant material for pharmacologically active substances with the antiviral, antibacterial, antitumor, .... activities (Cordell, 2011).

## Vision and mission statements

The Slovak special crop cultivation, essential oil and plant extract industry that has established international leadership in production, value quality adding and marketing. The obtain efficiency in production by: - increasing productivity (through breeding, agronomy and crop protection by organically methods); - improving harvesting and post-harvest technologies and innovations; - improving extraction, distillation and value adding; - establishing a stable grower base; - implementing quality assurance and control programs to guarantee of high quality.

## Key challenges for all industries

SWOT analysis of the Slovakian herb cultivation, essential oils and extract industry recognized that the industry has the following strengths, weaknesses and opportunities and faces the following threats:

*Strengths:* - clean and green, natural products, - product consistency and quality assurance capability and image, - good technology and R&D base to support innovation, - a great diversity genetic resources supporting the development of new and unique, - offering appropriate job opportunities for unemployed people.

*Weaknesses:* - lack of collaboration within the industry and disaggregation of government and organizational resources, - market information (projections particularly world trends) largely lacking and generic planning poor, - domestic and export market controlled by a few European and North American interests.

*Opportunities:* - value adding – particularly for niche markets, - applying improved technology in production and in post-harvest processing, - creating markets for new products, - better utilization of marginal land resources.

*Threats:* - low cost overseas competitors, - actually declining government support for the rural sector, including R&D that is driven by short time horizons, - loss of control over genetic resources, low activity of the Slovak Gene Bank.

## Specific objectives for special crop groups

Several hundred plant species are used as medicinal, aromatic and spice herbs. The key commercial species in Slovakia are currently chamomile, milk thistle, plantain, yarrow, but a larger areas and wider range of species could be grown. Great opportunities exist for the production and processing of a wide range of herbs in Slovakia for both domestic and export markets.

## Conclusion

*Strategy:* - in liaison with the industry, to determine which herbs offer the best commercial opportunity for Slovakian growers, - to gain access to and to evaluate high yielding and good quality lines of herbs, - to research and establish improved nutrition and irrigation practices, - derive and introduce more effective disease and weed control methods by bio pesticides, - provide cost-effective, mechanized production, harvest and post-harvest systems, - to devise and establish improved processing procedures, - to meet the needs of medicinal and registration authorities for quality and safety.

*Target:* - to increase proportion of medicinal, aromatic and spice herbs grown locally, - to provide cost-effective production systems for a range of key and new special crops, - to provide information packages for growers.

*Performance indicators:* - levels of local production/impact substitutions, - areas under key herbs and introduction of new special crops, - availability of information and support for grower use, - yield levels per ha (the breeding of new plant varieties, optimization of agrotechnic's methods, and number of key bio-pesticides (pesticides) registered.

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