Acta Scientific AGRICULTURE (ISSN: 2581-365X)

Volume 8 Issue 5 May 2024

Review Article

Medicinal and Aromatic Plants Our Ancient Treasure

Toshana Sakhare*

M.Sc. Biotechnology, Fellow at Sharad Pawar Inspire Fellowship in Agriculture, Amity University Mumbai, India

***Corresponding Author:** Toshana Sakhare, M.Sc. Biotechnology, Fellow at Sharad Pawar Inspire Fellowship in Agriculture, Amity University Mumbai, India.

Received: April 02, 2024

Published: April 24, 2024

Abstract

The medicinal plants (MAPs) have been cultivated in field conditions worldwide, particularly in Asia, Africa, and Europe, due to the superior economic prospects they offer compared to regular field crops. The cultivation of MAPs exhibits significant economic potential; yet, it is hindered by various limitations that impede its adoption as arable crops. Moreover, the majority of individuals residing in rural regions are involved in agricultural activities, which significantly contributes to the advancement of rural areas. In order to achieve this objective, central or regional administrations must formulate appealing policies and implement social and cultural initiatives targeting rural regions. In addition, the provision of opportunities to individuals living within their respective regions will serve to mitigate the phenomenon of rural-to-urban migration.

Keywords: Medicinal Plants; Cultivation; Field Conditions; Economic Prospects; Arable Crops; Rural Regions; Agricultural Activities; Rural Areas; Policies; Social Initiatives; Cultural Initiatives; Rural-To-Urban Migration

Introduction

Plants have historically served as the primary means of treating, mitigating, and preventing a wide range of ailments since the inception of human civilization. The extensive botanical assemblage of medicinal plants is widely recognized for its therapeutic, cosmetic, and dietary applications. Aromatic plants possess fragrant volatile compounds that are present in various parts of the plant, such as the root, wood, bark, stem, leaf, flower, and fruit, in the form of essential oil, exudate gum, balsam, and oleoresin. The unusual smell is attributed to a multitude of intricate chemical components. The concept of essential oils is sometimes used interchangeably with perfumes, as these oily fragrances serve as a representation of the fundamental essence or active constituents of the plants [1]. At present, it's estimated that various MAPs are used by more than three quarters of the world's population. Sixty percent of today's commercial pharmaceuticals and medications contain active ingredients derived from plants. The utilization of synthetic chemicals is prevalent across all sectors of the global manufacturing chain.

Individuals are increasingly prioritizing their well-being and contemplating the use of natural, organic products into their everyday routines. India possesses robust traditional healthcare practices under its classical medicinal systems, namely Siddha and Ayurveda, which employ around 7,000 species of flowering plants. India has played a prominent role in the international commerce of MAPs. India's trade in raw herbs in 2017–2018 amounted to USD 330.18 million, representing a 14.22% increase compared to the previous year [2]. The medicinal plant market in the country exhibits a lack of organization as a result of many challenges. Medicinal plants obtained from the wild are consistently more cost-effective than those grown due to the availability of inexpensive labor.

Higher plants have a significant role in the production of numerous economically useful compounds, which are utilized in various applications such as pharmaceuticals, pesticides, perfumes, and more. Secondary metabolites are important for plant survival because they help plants interact with their environment in the right way, protect them from fungal, microbial, or animal attacks, and provide colour to flowers or attract insects for pollination. Plants possess a diverse array of intricate secondary metabolites that are synthesized in minute quantities as required, with their production being limited to specific taxonomic categories. The growing utilization of plant secondary metabolites for human well-being

has prompted the exploration of innovative methods to effectively harness the flora that produces these compounds. Biotechnology methods, like in vitro culture systems for plant cells, tissues, and organs, and gene technologies for plant and cell transformation, could be used together to make it easier to grow plants that make chemicals that people want.

The utilization of in vitro culture techniques presents numerous benefits in the context of secondary metabolite production. The main benefits include: providing compounds in a controlled and optimal way; being free from weather, soil, disease, and political issues; growing species that grow very slowly or are in danger of going extinct; creating new compounds, enzymes, and bio-transformation systems; cultures that support a genetic enhancement program more quickly than the traditional system; and being better able to adapt to changes in the market. In a broader sense, in vitro culture systems help us learn more about the biochemistry and physiology of plant secondary metabolites, as well as basic aspects of how plants differentiate.

India is a medicinal plant biodiversity hotspot. India, with only 2% of the world's area, has 11% of the world's known flora and is in the top 12 nations in terms of mega-diversity. A comprehensive examination of the behavioural patterns exhibited by enrolled medicinal plants reveals a balanced distribution of these plants in terms of their habits. Herbs, grasses, and climbers make up the remaining 33% of the land, while trees and shrubs make up about 33% of it as well. Only a minute fraction of therapeutic plants consist of lower plants, such as lichens, ferns, algae, and so on. High-flowering plants constitute the majority of therapeutic herbs. Indian medicinal plants encompass around 158 plant groups. The Fabaceae, Euphorbiaceae, Asteraceae, Poaceae, Rubiaceae, Cucurbitaceae, Apiaceae, Convolvulaceae, Malvaceae, and Solanaceae are the primary botanical groups in which medicinal plants are found [3].

Agriculture has key importance in India. It has been noted that historically, urban centers have garnered the interest of individuals residing in rural regions. These individuals progressively relocated to urban areas for many motives. The unregulated nature of this movement has resulted in various challenges for urban areas. The primary issue in urban areas was the relinquishment of fertile agricultural land in favor of industrialization and urbanization due to the unregulated growth of cities.

Medicinal and aromatic plants plays a vital role in contribution to GDP. The MAPs play a crucial role in not only providing essential preventive and curative healthcare to civilizations worldwide, but also in ensuring the long-term viability of civilizations, generating cash, and facilitating trade. Medicinal plants, despite their natural habitats, have been cultivated in field conditions worldwide, particularly in Asia, Africa, and Europe, due to the superior economic prospects they offer compared to regular field crops.

The cultivation of MAPs exhibits significant economic potential; yet, it is hindered by various limitations that impede its adoption as arable crops. These limits include reduced pricing, limited access to transit markets, advancements in cultivation technology, and inadequate supply of cultivation resources and genetic materials, among others.

The majority of individuals residing in rural regions are involved in agricultural activities, which significantly contribute to the advancement of rural areas. Hence, the coordination of crop planning, marketing, and sales is of utmost significance. When creating plans, it is important to take into account the area priorities and climatic data and to suggest alternative agricultural products. Furthermore, it is imperative to enhance agricultural productivity and quality, as well as the living conditions of individuals residing in rural regions, through the implementation of innovative agricultural production methodologies. Agricultural groups, universities, and non-governmental organizations should be responsible for determining rural development initiatives. The integration of MAPs into a plant production program is recommended. Emphasis should be placed on MAPs that possess a substantial capability for both exporting and importing. It is necessary to examine the processing techniques used for MAPs, and instead of using raw materials, it is preferable to offer valuable products such as essential oils and active substances like alkaloids and glycosides. Furthermore, it is imperative that central or local entities provide support for the construction of reference laboratories in order to facilitate the production of products that cater to the international market. In conclusion, the provision of opportunities to individuals residing within their respective regions will serve to mitigate the phenomenon of rural-to-urban migration. In order to achieve this objective, it is imperative for central or regional administrations to formulate appealing policies and implement social and cultural initiatives targeting rural regions. When engaging in project activities, it is necessary to enhance the diversification of agricultural output and production.

Conclusion

The cultivation of medicinal plants in field conditions offers superior economic prospects compared to regular field crops, but it faces limitations that hinder its adoption. To promote rural devel-

opment and mitigate rural-to-urban migration, central or regional administrations should formulate policies and implement social and cultural initiatives targeting rural regions, while also providing opportunities for individuals within their respective regions.

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