

## Wasteland Management with Medicinal Plants

Nabanita Bhattacharyya\*

Department of Botany, Nowgong College, Nagaon, Assam- 782001, India

There are two burning problems in current scenario- one is depletion of agricultural fertile lands due to extending wastelands and another is the overexploitation of indigenous medicinal plants in wild.

According to the National Wastelands Development Board, (NWDB) India, "wasteland means degraded lands which can be brought in to vegetative cover with reasonable effort and which is currently lying as underutilized and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes". The various abiotic stresses encountered by the plants in wastelands are water stress (flood and draught), temperature stress (high and low temperature), nutrient stress, heavy metal contamination, salt stress etc. The consequences of land degradation in wastelands are soil erosion, depletion of natural resources, lower productivity, ground water depletion, shortage of drinking water, reduction in species diversity etc. Most of the potential productive lands have turned wastelands due to gross mismanagement and unsustainable exploitation of its biosphere. To tackle the problem of degradation of lands, restoration of ecology and to meet the growing demands of fuel wood, fodder and medicine, management of wastelands is the most practical solution. Major programmes can be implemented for improving the productivity of waste and degraded lands keeping in view the poverty, backwardness, gender and equity.

It is precise to restore the ecological imbalance by developing the degraded non forest wastelands. Each year, 80 million new faces have been added in world population. Need of food grains will be doubled by 2050. But total arable land is not increasing. Therefore wastelands have to be remediated and utilized to solve the problem of hunger and malnutrition in recent future. With the help of proper management techniques our wastelands can provide adequate support to the majority of our population, which still lives on a bare subsistence level. These lands are capable of producing enough fodder, forage, fuel, medicine, essential oil or at least some vegetation cover to prevent further soil degradation.

Medicinal and aromatic plants have a high market potential as the world demand for herbal products is growing at a rate of 7% per annum. Alone in European Union, herbal market has grown substantially in the post decades due to growing awareness and support from consumers keeping in view the fact that use of natural remedies based on plants is having no side effects compared to the preparations based on synthetic chemicals. 80% of the people in developing countries rely on traditional natural medicines.

Again, collection of medicinal plants involving destructive harvesting is posing a definite threat to the genetic stocks and diversity of medicinal plants in wild. Around 90% of the medicinal plants used by the Indian pharmaceutical industries today are collected from the wild. Over 70% of the plant collection involved destructive harvesting. Threat assessment exercises as per latest IUCN guidelines for Southern and Northern India has already listed around 200 species of medicinal plants that are rare, endangered and threatened. It is necessary to bear in mind that even if a particular variety of a plant is put under several million hectares of active cultivation, the species can still go extinct in the wild, if its wild populations with all their inherent intra specific diversity are not conserved. It is an established fact that the evolution of the species depends on diversity. So, the only way to restore human health by uninterrupted supply of essential medicinal plants to the pharmaceutical companies as well as to decrease

the pressure on forest is the large-scale cultivation of those medicinal plants in the wastelands. Because, agricultural lands cannot be utilized for this purpose due to ever-increasing demand of food grains, pulses and oil seeds, due to population explosion.

The potential of wastelands can be extracted well by cultivating some economically beneficial medicinal plants. Creating vegetation cover by the cultivation of adaptable aromatic and medicinal plants of considerable market value in the wastelands with proper treatment is a practical way to prevent further soil erosion and extension of wastelands. Some plants also have the capacity to remove the heavy metals and toxic chemical compounds from the soil (phytoremediation) which can be successfully utilized for the treatment of degraded soil for rehabilitation.

Detailed investigation is needed to undertake proper treatment of the soil environment for the cultivation of medicinal plants in the particular wasteland. Soil environment involves both inorganic and organic quality of the soil, for instance the soil texture, NPK level, pH level, soil microbial diversity etc. Soil environment of the wastelands can be possibly made favourable for the cultivation by treating the soil with inorganic or organic fertilizers, proper drainage mechanisms involving indigenous and inexpensive technologies, enriching the soil with agricultural waste, mushroom cultivation waste etc. Spent mushroom substrate (SMS) is a natural resource. Studies have confirmed various utilities of SMS which include its use as nutrient sources for nutritionally poor soils neutralizing acidic soils facilitation of plant growth in barren areas. The amendments such as organic materials play an important role in establishment of plants on wasteland and to reduce the metal toxicity to plant.

Recently, wastelands utilization for cultivation of economically important medicinal plants is a challenging programme worldwide for the benefit of the mankind and the environment. This also decreases the pressure on the agricultural lands available. In China, the restoration of the wasteland induced by mining has become an important and interesting issue, because the wastelands not only occupy the vast tillable lands but also cause serious environment pollution.

The selection of species for this special purpose is based on the urgency of the need, priorities and the condition of the soil. They should be hardy, stress tolerant and should be able to accumulate nutrients, change the structure of soil and toxicity. Such plants will provide a better vegetation cover on the wastelands to prevent further soil erosion and degradation. Again possibilities are bright for the considerable improvement of fertility status of wastelands due to accumulation of biomass, crop stubbles, leaf litter,

\*Corresponding author: Nabanita Bhattacharyya, Assistant Professor (Adv. Plant Physiology & Biochemistry), Department of Botany, Nowgong College, Nagaon, Assam-782001, India, Tel: 91-9435323220; E-mail: [msnbhattacharyya@yahoo.co.uk](mailto:msnbhattacharyya@yahoo.co.uk)

Received March 07, 2012; Accepted March 09, 2012; Published March 12, 2012

Citation: Bhattacharyya N (2012) Wasteland Management with Medicinal Plants. *Med Aromat Plants* 1:5. doi:10.4172/2167-0412.1000e122

Copyright: © 2012 Bhattacharyya N. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

rhizospheric microbes etc. from cultivated plants. Successful cultivation of market oriented medicinal plants (having considerable market value) may be a promising mean for the economic upliftment of the rural people. If the local communities, which depends on forest elements for their livelihood,

involve themselves in such cultivation they will be benefited economically. Then, they will conserve the forest better because high rate of population growth and high incidence poverty in rural areas are the important causes of deforestation and land degradation.