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Time to Utilize the Underutilized!

AJIT ARUN WAMAN

Division of Horticulture and Forestry, ICAR-Central Island Agricultural Research Institute,
Port Blair- 744105, Andaman and Nicobar Islands, India.



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The process of domestication has been a part and parcel of human civilization. This process has been responsible for present day's development of agricultural and allied sectors (such as herbal medicines), which are directly or indirectly dependent on plant resources. Apart from commercial crops (domesticated species), many species have been identified for variety of purposes such as food, medicine, fuel, natural colorants, sources of genes, artifacts, shelter etc. Many a times, these species have restricted distribution in a geographical area and they have been identified on the basis of indigenous technical knowledge of the local communities. Such species have been termed as underutilized/ lesser known/ underexploited species, suggesting their potential for further utilization. One must be wondering that these terminologies have commonly been discussed in different forums; however, only rarely such species could reach the stage of domestication and hence, they have retained their status as underutilized!

Documentation of the existing information on the species including their usage patterns by aboriginal/ native tribes, old generation people and consultation with ancient literature is considered as the first step in identifying potential species for specific purposes. Considerable volume of such documentation has been taken up in a large number of species distributed in different ecosystems of India and other countries as well. For example, ethno-botanical documentation on the species used by all accessible tribes of remotely located Andaman and Nicobar Islands is in public domain now. Though several parts of the world are yet to be explored systematically, desired efforts to utilize the available knowledge have not picked up the pace at which they should have been and there is tremendous scope for attempting the same.

CONTACT Ajit Arun Waman ✉ ajit.hort595@gmail.com 📍 Division of Horticulture and Forestry, ICAR-Central Island Agricultural Research Institute, Port Blair- 744105, Andaman and Nicobar Islands, India.



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Present day agriculture is facing multiple challenges including surge of deadly pests/ diseases, uncertainty of climate and unprecedented natural vagaries such as cyclones, tsunami, rapid desertification etc. Dependence of a whole region on a few crops in the absence of diversification worsens the situation resulting in huge losses to the farmers. Identification of locally adapted species having one or more commercializable uses could give impetus for conservation of the native diversity of a region apart from providing alternate sources of income to the local farmers.¹ For example, wild endemic nutmegs from Andaman islands have been identified as sources of butter which could be used for industrial purposes. Also, *Haematocarpus validus*, a fast disappearing woody liana, was identified as a novel source of natural colourant from the islands.² Such utilization would facilitate deliberate cultivation of species facing conservation issues.

A large number of underutilized fruits, vegetables and medicinal plants have been traditionally used by the local masses and the same has been documented by various researchers. Systematic studies on nutritional/ phytochemical analysis have been attempted in few of these species for knowing their utility as nutrient/ drug sources. Such works need to be further strengthened to come up with nutritional charts of various species utilized in a region for creating awareness and developing markets for the produce. Efforts are required to critically carry out phenological studies which could be helpful for improving the understanding about the species for further utilization in crop improvement programmes. Documentation of harvesting season and preparation of harvest calendars for each region could help in developing marketing and processing strategies of the produce. These steps will also help in prioritizing the species for extensive research work.

Development of improved varieties could be time taking in perennial tree species, while it could be done in a short time in annual species such as vegetables and some medicinal plants. Wherever possible, trait specific improvement could be undertaken, while in other species, identification of plus trees could serve the purpose. Bael (*Aegle marmelos*) is one such species that has been prioritized for research and commercial cultivation by National Medicinal Plants Board, New Delhi owing to its medicinal properties. Though it was considered as an underexploited genetic resource, several improved varieties have now been developed for commercialization. Identification of high yielding genotypes/ chemotypes/ ecotypes using advanced techniques including biotechnological approaches could be a key step in facilitating optimum utilization of the species.

Propagation techniques including seed germination, vegetative propagation and micropropagation need to be standardized for the prioritized species. For potential species having limited distribution as in case of *Haematocarpus validus*, seed germination could help in generating diversity which could be tapped in the years to come.³ Some underutilized species are wild relatives of cultivated crops, which could be screened for their potential as source of gene/ rootstock for cultivated types. *Garcinia cowa*, a common species in the Northeastern region and the Bay islands, is a potential species as backyard crop as well as rootstock for Mangosteen (*Garcinia mangostana*). Suitable agro-techniques could be developed which would help in obtaining uniform quality produce suitable for industrial purposes as seen in *Curcuma mangga*.⁴

Value addition of the produce is a crucial step for marketing purposes. A number of underutilized species are known to have limited shelf life. Sometimes the produce is available in remotely located parts of the country. Value addition in such cases could improve marketing prospects to a great extent. Standardization of simple procedures/ recipes could help the resource poor farmers in getting better opportunities for marketing. Products involving complex procedures could be licensed to commercial firms who can serve the larger masses. Best example for this is that of the much talked about – *Garcinia indica*, for which a wide range of products for both home scale as well as commercial scale have been developed.

After reading this article, most of the readers might have visualized some of the underutilized species of their regions and could have wondered that some of the above mentioned strategies have already been developed for those species! However, implementation of all the points in systematic manner would be a

key for utilizing the underutilized. These points could open up multifaceted avenues for researchers, farmers, processors and policymakers to intervene and offer the unoffered range of products to the consumers apart from addressing some long standing issues of agriculture.

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