

Diversity of mites (Acari) on medicinal and aromatic plants in India*

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Abstract

Despite the diverse and frequent use of medicinal and aromatic plants throughout the world, they have received poor attention regarding the mites and insects that they harbor. Here we summarize the diversity of phytophagous and predatory mites recorded on medicinal and aromatic plants in India, including first-hand information obtained by the authors in regular observations of plants growing in different parts of India between 2002 and 2009 as well as information reported in previous works conducted in the country. In total, 267 mite species of 93 genera and 18 families were found or have been reported on these plants in India. Most of these species (208) belong to families constituted mostly by phytophages, but quite a large number of species (56) belong to families constituted predominantly by predators. Despite the wide array of phytophagous species, relatively few have behaved as major pests, which may be at least in part due to the effect of the predatory mites with which they have been found. We consider 17 species as major pests of medicinal and aromatic plants and 11 species as main predators. The search for prospective predatory mites and the study of the feasibility of their use for the control of mite pests on medicinal and aromatic plants is worthwhile, given that a considerable proportion of people interested on the use of medicinal plants are adverse to the ingestion of synthetic pesticides residues, which could be found on those plants if the pests were controlled with the use of those products.

Key words: Medicinal and aromatic plants, biodiversity, phytophagous mites, predatory mites.

Introduction

For a long time, man has made major use of medicinal and aromatic plants in different parts of the globe. A wide array of plants has been used for their presumed or known pharmaceutical and flavoring characteristics, either directly or as sources of products that contain those characteristics. According to the World Health Organization, 80% of the population of the developing world depends upon traditional and herbal medicines in their primary healthcare (Pramanik, 2004). The world transaction of medicinal and aromatic plants has exceeded 70 million US dollars and by 2050, could exceed 3 trillion US dollars (Pramanik, 2004; Gupta, 2005). Apart from being used as drugs, medicinal plants are also used for the production of different phytochemicals, toiletries, cosmetics, coloring and flavoring agents, nutraceuticals, food supplements, etc (Pramanik, 2004; Gupta, 2005). Considering the growing importance of these plants, the Indian government has provided incentives in cash and kinds for their intensive and extensive cultivation in the country.

Mites and insects are frequently found on medicinal and aromatic plants. Similarly to what has been observed on other plant groups, some of those arthropods are capable of producing serious damage, whereas others have the potential to protect the plants onto which they live by attacking the potentially harmful organisms.

With the increased cultivation of medicinal and aromatic plants, pest and disease problems are also increasing; some of the pests are mites of different groups (Gupta, 2005). Despite this, relatively little attention has been paid to the study of actual or potential pests and of the predatory mites associated with them, which could maintain them under adequate control. In India, some of