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Review Article

BOTANICAL PESTICIDES: AN INNOVATIVE AND ECO FRIENDLY APPROACH FOR INSECT PEST MANAGEMENT

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ABSTRACT: Botanical pesticides are pest management agents in agriculture which are based on plant extracts. It has long been touted as attractive alternatives to synthetic chemical insecticides for pest management because botanicals reputedly pose little threat to the environment or to human health. Pyrethrum and neem are well established commercially, pesticides based on plant essential oils have recently entered the market place and the use of rotenone appears to be waning. A number of plant substances have been considered for use as insect toxicant, deterrence, antifeedants, repellents and insect growth regulatory (IGR) substances. In the context of agricultural pest management, botanical insecticides are best suited for use in organic food production. In this review paper, many of the recent developments in botanical pesticide discover and use along with some common botanical pesticides in market is discussed. There is a need of further research and development in the field of botanical pesticides to provide an alternative of synthetic pesticides.

Keywords: *Azadiractin, botanical pesticides, essential oil, organic farming, pyrethrum, safety*

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INTRODUCTION

Increasing awareness about the deleterious effects of insecticides paved the way for integrated and eco-friendly pest management. One such method is the use of botanical pesticides, which are safe and eco-friendly, can overcome many problems associated with chemical insecticides especially in the vegetables. The extent to which various plant species are utilized for pest control depends, not only on their effectiveness against target pests, but also on socio-economic, environmental and policy considerations. Botanical insecticides were the earliest recorded insecticides used in agriculture. The efficacy of all neem products was observed by several workers.

In nature more than 1800 plant species are reported to have biopesticidal properties (Grainge *et al.,* 1984). Most promising botanical pesticides are present in substances derived from species of families Meliaceae, Rutaceae, Asteraceae, Annonaceae, Labiatae and Canellaceae. Several scientists worked on biopesticidal properties of different alkaloids *viz.,* azadirachtin, rotenone, sabadilla, ryanodine, nicotine, pyrethrum, limonene, linalool, anonine, vinblastine, butrin, precocenes, diallylsulfide, plumbagin, karanjin, asarone, meliantriol, melianone, parthenin, piperine, pinitol etc. In this review articles we are presenting concise summary of botanicals screened against insect pests and their action.

OVERVIEW OF IDENTIFIED BOTANICAL INSECTICIDES

A large number plant species containing natural insecticidal material have also been examined for their pesticidal properties. There are approximately 2000 plant species all over the world which have been found to exhibit biocidal activity (Grainge and Ahmed, 1988) and some of them have been recommended for the control of pest and diseases of various agricultural, horticultural, forestry and other economical crops and plant species (Table 1).