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Botanical secondary metabolites as alternatives for pest management in Cuba

Metabolitos secundarios de origen botánico como alternativas para el manejo de plagas en Cuba

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Plants have historically been used in agricultural practices in Cuba; nevertheless, the Cuban flora has not yet been fully studied as a potential source of pesticides, partly due to its great diversity. At the National Centre for Animal and Plant Health (CENSA), systematic research on more than 100 plant species belonging to several families has been conducted in recent years. The protocol involves the establishment of bioassay conditions, the isolation and characterization of bioactive compounds, assessment of compatibility with other biological control agents, mode of action studies and the semi-synthesis of analogues using biotechnological techniques. Among the secondary metabolites studied, essential oils obtained from plants belonging to the families Piperaceae, Lamiaceae, Apiaceae, Rutaceae, and Myrtaceae stood out as a promising group due to their efficacy and spectrum of action under laboratory and semi-controlled conditions. As botanical pesticides, the main areas of use may include protected crops, nurseries, seed treatments in protected and field-grown crops, and in stored product pest management. The use of known botanicals and the identification of local candidates for developing phytosanitary products offer alternatives that may combine efficiency and safety for pest management in Cuban agriculture.