



Биологические пестициды – растения для защиты растений

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Biological Pesticides – Plants for Plant Protection

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Textbook presents the results of research and educational institutions and experts involved in the international network **AgroBioNet** oriented for the realization of international research, education and development program entitled "Agrobiodiversity for improving nutrition, health, and life quality" which solves the problems of preservation, assessment and use of traditional, less known, less-used and forgotten kinds of plants.

In this textbook are also presented results from the solution of research projects that are supported by the Operational Programme Research and Development of the European Regional Development Fund:

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RESUME

Raisa Ivanova, Dina Elisovetcaia **Biological Pesticides – Plants for Plant Protection**

In the frame of transition to ecological agriculture the biological pesticides are the important alternatives to minimize or replace the use of synthetic pesticides. Biological pesticides derived from plants are certain types of natural materials such as powder of dried plant, essential oils and extracts from different plant parts based on water, alcohol or other solvents. The main advantages of biological pesticides application are: a) inherently less toxic than conventional pesticides; b) often effective in small quantities and lower exposures; c) generally affect only the target pest and closely related organisms; d) avoid the pollution problem due to rapidly decomposition; e) properly used biological pesticides increase crop yields.

Many plants well known as ornamental, food and medicinal plants accumulate such secondary metabolites which could be used as biopesticides against common agricultural pests. There are continued the screening of local flora and selection from the plants with insecticidal, acaricidal, ovicidal, antifeedant, repellent and deterrent properties for crop protection from pests; with antimicrobial and fungicide effects for protection from phytopatogens; with allelopathic, herbicides and phytotoxic capacities for protection crops from weeds, as well as with antioxidant and growth regulating properties for maintaining the plant resistance for biotic and abiotic stress factors.

All above of listed properties of biological pesticides are described in the monograph for 32 plant species, namely: *Ailanthus altissima* (Mill.) Swingle; *Allium narcissiflorum* Vill.; *Allium ramosum* L.; *Allium rotundum* L.; *Allium siculum* Ucria; *Allium subhirsutum* L.; *Buxus sempervirens* L.; *Carthamus tinctorius* L.; *Consolida regalis* C. F. Grey; *Delphinium dictyocarpum* DC; *Delphinium elatum* L.; *Echinacea purpurea* L.; *Foeniculum vulgare* Mill.; *Galega officinalis* L.; *Galega orientalis* Lam.; *Gleditsia triacanthos* L.; *Heracleum mantegazzianum* Sommier & Levier; *Heracleum sosnowskyi* Manden.; *Juglans regia* L.; *Juniperus sabina* Linn.; *Monarda fistulosa* L.; *Polygonum sachalinense* (F.Schmidt) Nakai; *Pyrethrum cinerariifolium* Trev.; *Robinia pseudoacacia* L.; *Satureja hortensis* L.; *Senecio vernalis* Waldst. & Kit.; *Symphytum officinale* L.; *Trigonella foenum-graecum*; *Veratrum lobelianum* Bernh; *Verbascum thapsus*; *Vinca minor* L.; *Vitis vinifera* L.

The purpose of this monograph is to provide recommendation to farmers for complex utilization of described plants, namely for cultivation as food, ornamental and medicinal plants and enlargement of biodiversity; harvesting of useful plant products and the use of innovative plant protection resources to improve of organic farming procedures.

Plant's origin and species distribution, bio-morphological and biochemical characteristics of the basic parts of plants, mode of plant reproduction and yield of each species are presented. Based on the author's experimental results and published data, the biopesticidal properties, antioxidant activity and toxicity of described plants are reported. Many species have tested pronounceable medicinal effects. The antioxidant activity of listed plants is evaluated by various methods against oxygen and nitrogen reactive species as well as DPPH free radicals. Biopesticidal properties are given on the example of coleopterans (*Leptinotarsa decemlineata* Say, Chrysomelida, *Sitophilus granarius* L., Dryophthoridae), lepidopterans (*Galleria mellonella* L., Pyralidae, *Helicoverpa armigera* Hbn., Noctuidae, *Hyphantria cunea* Drury, Arctiidae, *Loxostege sticticalis* L., Crambidae, *Mamestra brassicae* L., Noctuidae, *Pieris brassicae* L., Pieridae), hemipterans (*Acyrtosiphon pisum* Harris, Aphidiinae) and acariformes pests (*Tetranychus viennensis* Zacher. и *Tetranychus urticae* Koch., Tetranychidae).

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