

Integrated Pest Management on Peppermint—IPMP3.0

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A new version of IPMP3.0 (Integrated Pest Management on Peppermint) has been developed that is accessible over the Internet (<http://mint.ippc.orst.edu>). This decision-support program is the culmination of over 30 years of research on pest management on peppermint. Many of the same insects that occur on peppermint also may be important pests in nursery crops, particularly root weevils.

The value of this program is that it brings together in one resource many of the important aspects needed by growers and field representatives to make informed decisions about pest management on peppermint. Even though IPMP3.0 was developed for IPM on peppermint, it may be useful for other commodities since many of the insects that occur on peppermint, such as root weevils, also occur on other crops. For example, IPMP3.0 includes information on *insect*

management, weed management, nematode management, and disease management. Each of the pest management modules contains colored pictures of the different life stages of the pests, their biology and life history, and methods to manage the pests. In some instances, information is available on day-degree models and sampling methods. Online versions of the Pacific Northwest Insect and Weed Control Handbooks are included as are links to the Pacific Northwest Disease Control Handbook. The publication, “A Guide to Nematode Biology and Management in Mint” prepared by Russell Ingham and Kathy Merrifield also is included in IPMP3.0. The capability to search for specific information is included as is a section for Frequently Asked Questions (FAQs) and an e-mail Request More Information form that can be returned to individual research and Extension specialists.

Insect Management

For the purposes of this workshop, information was presented on strawberry root weevil, including identification, biology and life cycle, a sequential sampling program, and day-degree model. Colored pictures of the different life stages of root weevils can be used to assist growers in identifying root weevils. The biology and life cycle can be used to assist growers in timing control measures and sampling programs. A sequential sampling program for strawberry root weevil can be used to provide more precise information for decisions about population density and action

thresholds. The sampling plan would need to be modified for nursery crops. The day-degree model for strawberry root weevil would permit growers to predict when damaging stages occur, but like the sampling plan, the day-degree model would need to be modified and validated for nursery crops. Other insects and mites that occur on peppermint, which also may be important in nursery crops, include several species of cutworms and loopers, and spider mites. Information on beneficial insects is included, which may also be of value for insect biological control programs in nursery crops.

Weed Management

The information available in the Weed Management module includes colored pictures of different life stages of the major broadleaf and grass weeds of economic importance on peppermint. The biology and life cycles of the weeds on peppermint also are

included to assist users in timing applications of herbicides. A link to the *Pacific Northwest Weed Management Handbook* is available for users to get the latest information on herbicides registered on peppermint.

Nematode Management

“A Guide to Nematode Biology and Management in Mint” is included in IPMP3.0. This guide, prepared by Russell Ingham and Kathy Merrifield, includes colored pictures of the major nematode species affecting peppermint production. Information also is available on the biology and life cycles, feeding

behavior and symptoms and effects on plant growth cause by nematodes. Information also is included on the population dynamics of the different nematode species as well as sampling programs and economic injury levels. A link to the *Pacific Northwest Plant Disease Management Handbook* is included.

Disease Management

The information available in the Disease Management module includes a link to the *Pacific Northwest Plant Disease Management Handbook*, which provides information on the biology and management of the major diseases affecting

peppermint. Information is available on verticillium wilt, rust, powdery mildew, and other diseases affecting peppermint. Information on nematode-verticillium wilt interactions also is included.