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Integrated pest disease management

Integrated pest management, or IPM, is a process one can use to solve pest problems while minimizing risks to people and the environment. IPM can be used to manage all kinds of pests anywhere—in urban, agricultural, or natural areas.

IPM programs

These IPM principles and practices are combined to create IPM programs. While each situation is different, five major components are common to all IPM programs:

1. Pest identification
2. Monitoring and assessing pest numbers and damage (inoculum).
3. Guidelines for when management action is needed.
4. Preventing pest problems (reducing initial inoculum, delay the onset of disease and slow the secondary cycles).
5. Using a combination of biological, cultural, physical/mechanical and chemical management tools.

What is a pest

Pests are organisms that damage or interfere with desirable plants in our fields and orchards. Pests may transmit disease or may be just a nuisance. A pest can be a plant (weed), vertebrate (bird, rodent, or other mammal), invertebrate (insect, tick, mite, or snail), nematode, pathogen (bacteria, virus, or fungus) that causes disease.

IPM focuses on long-term prevention of pests or their damage by managing the ecosystem

With IPM, one takes actions to keep pests from becoming a problem, such as by growing a healthy crop that can withstand pest attacks, using disease-resistant plants. Rather than simply eliminating the pests we can use IPM which means to look at environmental factors that affect the pest and its ability to thrive. Armed with this information, conditions can be created that are unfavourable for the pests.

Targeting specific pests

Insecticide, fungicide and herbicide are all crop protection products. Insecticides are used to control insect pests such as aphid or greenfly. Fungicide deal with the fungi or moulds that can affect seed, crop growth and the quality of the harvested produce. Weed-killer control plant pest such as chickweed cleavers and blackgrass that rob the crop plant of light, water and food.

While these three are the most common crop protection products, other types are used against specific pests.

Indiscriminate use of such products results in development of resistance in pests. The best approach to resistance management is the use of all available control method in an economic and sustainable manner.

IPM programs combine management approaches for greater effectiveness.

The most effective, long-term way to manage pests is by using a combination of methods that work better together than separately. Approaches for managing pests are often grouped in the following categories.

Biological control

Biological control is the use of natural enemies—predators, parasites, pathogens, and competitors—to control pests and their damage. Invertebrates, plant pathogens, nematodes, weeds, and vertebrates have many natural enemies.

Cultural controls

Cultural controls are practices that reduce pest establishment, reproduction, dispersal, and survival. For example, changing irrigation practices can reduce pest problems; crop rotation is a very useful method in minimizing the pest population.

Mechanical and physical controls

Mechanical and physical controls kill a pest directly or make the environment unsuitable for it. Traps for rodents are examples of mechanical control. Physical controls include uprooting the diseased plants and destroying them to prevent secondary disease cycles, steam sterilization of the soil for disease management, or barriers such as screens to keep birds or insects out.

Chemical control

Chemical control is the use of pesticides. In IPM, pesticides are used only when needed and in combination with other approaches for more effective, long-term control. Also, pesticides are selected and applied in a way that minimizes their possible harm to people and the environment. With IPM most selective pesticide are used that will do the job and be the safest for other organisms and for air, soil, and water quality. Warehouses should be fumigated before storage and tools should be disinfected before use.