

# Category E: Seed Treatment Pest Control

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## Seed Treatment Pest Control Learning Objectives

THIS CATEGORY IS AVAILABLE TO ONLY NON-PRIVATE APPLICATORS BY TAKING A SEPARATE CATEGORY EXAM.

After studying this section, you should be able to:

- ✓ Describe the pest control management principles that are used in seed treatment.
- ✓ Describe the labeling requirements for treated seed.
- ✓ Describe the most common methods of applying pesticides to seed.
- ✓ Describe the most common seed insect pests in Nevada.
- ✓ Describe the most common seed diseases in Nevada.

## Category E, Seed Treatment Pest Control

Seed treatment pest control includes the application of pesticide to the seed surface to reduce, control or repel a pest. The pests that most commonly affect seeds are disease-causing pathogens and insects. These pests may attack both seeds and seedlings.

Pest management in seed treatment relies on two of the six pest control management principles: protection and eradication.

**Protection** consists of applying a chemical barrier to the seed that protects the seed or young seedling from disease or insects.

**Eradication** includes methods used to eliminate, inactivate, repel or destroy insects and pathogens from the seed or seedling. The methods can be divided into three categories:

**Category E, Seed Treatment Pest Control, includes the application of a pesticide to a seed surface to reduce, control or repel a pest.**

**Pesticide-treated seed should be handled in the same manner as a pesticide.**

**Dispose of any unused treated seed as you would a chemical pesticide.**

**Chemical formulations change all the time. Consult your local dealer for recommendations for your particular pest and seed.**

- **Disinfestation** is the application of a chemical that kills or inactivates organisms present on the surface of the seed.
- **Disinfection** is the application of a chemical that kills or inactivates a pathogen that has infected a seed (it frees the seed from infection).
- **Systemic pesticides** are those that penetrate the seed and extend into the plant as it grows. These chemicals repel or inactivate diseases and insects, eliminating or reducing damage from these pests to the seeds and plants.

Seed treatment generally controls insect pests and fungal diseases. Most seed treatments do not control bacterial pathogens, and none control seed-borne viruses.

Pesticide-treated seed should be handled in the same manner as a pesticide. Read, understand and follow label directions. Wear the proper protective equipment, and use caution around children, pets, livestock, wildlife and water bodies. Dispose of any unused treated seed as you would a chemical pesticide. Dispose of empty pesticide containers according to label directions. Never reuse pesticide containers.

Combinations of some fungicidal and insecticidal seed treatments can be toxic to the seed, rendering the seed inactive and unable to germinate. Read the label carefully before mixing insecticides and fungicides.

Treated seed must have a statement on the seed container that indicates the following:

- That the seed has been treated.
- The name of the pesticide used for the seed treatment.
- A precautionary statement indicating that the treated seed **cannot** be used for food, feed or oil under any circumstances.
- Seed treated with highly toxic substances requires a skull and crossbones label and the word POISON within the precautionary statement. Most of these types of pesticides are no longer available to treat seed.

There are a number of methods for applying pesticides to seed. Good coverage is essential for adequate results. Follow pesticide label and equipment manufacturer instructions.

- **Dust** is a dry powder formulation of pesticide that is applied to the seed in the planter box.
- **Dip slurry** is a suspension of pesticide in water that the seed is dipped into or mixed with.
- **Mist** is a pesticide that is sprayed or misted onto the seed, usually resulting in good coverage.

- **Pelleted** pesticide is a two-step process. The seed is misted with a pesticide, and then the treated seed is coated with a fine layer of clay or calcium material. This is the most effective method of pesticide seed treatment because the pesticide is contained and protected by the pellet coating.

Seed treatment should be done in a well-ventilated area. Those treating the seed or nearby the seed treatment area should follow label directions regarding personal protective equipment (PPE). Avoid skin contact or breathing in dusts.

Seed should only be treated with a pesticide once, either commercially or by the grower. If the application rate is too high or if the pesticide is applied more than once, it may result in reduced or complete lack of germination due to chemical toxicity. It is important to use high-quality certified seed for seed treatment. Damaged seed or seed of poor quality would be a poor investment.

## Seed Insect Pests

There are two major soil insects that require seed pesticide treatment: wireworms and the seed corn maggot.

**Wireworm** is a name applied to several species of click beetle larvae. These pests are found in both irrigated and dryland soils. No crop is immune to attack by wireworms, but they are most severe on beans, corn, potatoes and small grains.

**Seed corn maggot adults** look like small houseflies. They lay eggs on organic matter. The larvae (maggots) feed on young seedlings or sprouting seeds and may bore into plant stems below ground. They are serious pests on corn, beans, cucumbers, onions and garlic.

## Seed Diseases

Seed treatment is only useful in the control of fungal diseases. It has limited usefulness in the control of bacterial diseases and does not provide any control of seed-borne viral diseases. Below is a list of common crops and the diseases that can be controlled through seed treatment. A description of many of the diseases can be found in the Category A: Agricultural Plant Pest Control chapter of this manual.

- **Potatoes:** Seed treatment is primarily for protection against “black leg” and potato seed piece decay. Black leg is caused by a bacterial pathogen.
- **Small grains, aka cereal grains (wheat, barley):** Seed treatment is for

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**Seed treatment generally controls insect pests and fungal diseases. Most seed treatments do not control bacterial pathogens, and none control seed-borne viruses.**

**Read, understand and follow label directions. Dispose of any unused treated seed as you would a chemical pesticide.**

control of smuts, rots and damping off. Smut diseases are readily spread by infected seed.

- **Alfalfa:** Seed treatment reduces loss due to damping off and reduces the spread of verticillium wilt.
- **Onions and garlic:** Seed treatment is for control of onion smut, white rot, seed decay or seedling blights.
- **Vegetables:** Seed treatment is for control of seed decay, seedling blight and damping off.

## Conclusion

Seed treatment for pest control includes application of a pesticide to the seed surface to reduce, control or repel a pest. Once seeds have received an application of pesticide, they should be handled with the same safety concerns as any pesticide. Read, understand and follow label directions. Wear the proper protective equipment and use caution around children, pets, livestock, wildlife and water bodies. Dispose of any unused treated seed as you would a chemical pesticide.

Originally published in 1987 as Category 4, Seed Treatment, Nevada Pesticide Applicator's Certification Workbook, SP-87-07, by W. Johnson, J. Knight, C. Moses, J. Carpenter, and R. Wilson. Updated in 2013 by M. Hefner and S. Donaldson, University of Nevada Cooperative Extension, and J. Carpenter, Nevada Department of Agriculture. Updated in 2023 by M. Hefner, University of Nevada, Reno Extension and B. Allen, Nevada Department of Agriculture.