

Technical Bulletin #32:

Agrochemical General Information Sheet - Carbendazim

Carbendazim: Fungicides

Registered trade names in Cambodia: Carbenzim 500FL

Formulation types: Soluble Concentrate (SL), Suspension Concentrate (SC), Wet Powder (WP), Flowable (F or FL) and others

Chemical family: Benzimidazole

What is Carbendazim?

Carbendazim is a broad-spectrum systemic fungicide with protective and curative action. It is used for the control of a wide range of fungal diseases such as spot, powdery mildew, scorch, rot, blight, etc., on cucurbits, legumes, lettuce, sunflower, cereals (rice), fruits and vegetables. In addition, it can be used as a timber preservative and as a seed treatment.

How does it work?

After application, Carbendazim is quickly absorbed by the green plant tissue as well as by roots. When applied before infection, it kills the germination spores and thus prevents the outbreak of disease – this is called a preventive action. When applied after the infection has already started, it attacks the developing mycelium and arrests its spreading by suppression of sporulation - this is called a curative action.

Resistance:

Resistance is generally first noted when a fungicide ceases to effectively control a disease. It occurs when a fungus naturally develops a mutation that allows it to grow and reproduce in the presence of a fungicide. Once pathogenic fungi develop resistance, a disease can quickly get out of control in spite of the use of the fungicide, even with frequent applications at high concentrations.

A resistance management strategy should be developed to delay fungicides' resistance. Below is an example of resistance management strategy of cucurbits powdery mildew:

1. Start disease control early. Do not wait for powdery mildew to appear before spraying. It is okay to start spraying after the crop emerges from the ground.
2. Use protectant sprays in early crop growth. Apply protectant spray at the fruit set stage of the crop if the disease normally occurs during this period. If this schedule is interrupted (e.g. by rain) use a tank mix of protectant plus curative before recommencing the protectant program.
3. Rotate Carbendazim along with other fungicides belonging to different groups that can control the powdery mildew.

Human Hazards	Environmental Fate
Slightly toxic	Bird (quail): Low toxic
No eyes irritation	Fish (trout): Highly toxic
No skin irritation	Ground/surface water: moderately persistent in water
Possible human carcinogen	

First aid measures:

Inhalation: If inhaled, move to fresh air and keep at rest, breathing slowly. Obtain medical advice if irritation still persists.

Skin Contact: Carefully remove contaminated clothing. Wash affected areas with soap and water. Seek medical aid if irritation persists.

Eye Contact: Rise eyes immediately with clean water for at least 15 minutes and obtain medical aid if it is still persistent.

Ingestion: Wash out mouth with water. Keep patient at rest and seek medical advice immediately if it is still persistent.

Mitigation Measures:

- Applicator should wear protective clothing such as a long sleeved shirt and long pants, rubber gloves, boots, glasses etc.
- Wash hands with soap and water after use.
- Do not eat, drink or smoke while preparing or applying pesticides.
- Avoid allowing children, pets, or sensitive people in treatment areas to prevent accidental exposures during pesticide applications.
- Mixing tanks have to be cleaned in designated areas.
- Favorable application conditions (less wind).
- Triple or pressure rinse containers before disposal.
- Do not contaminate water, food, or feed by storage or disposal.
- Break, crush or puncture and bury empty containers in soil 50-150 centimeter deep and far away from all water sources.
- Not for use or storage in or around the home.
- Do not reuse containers for any purpose.
- Practice chemical rotation.
- Practice correct implementation of IPM practices.
- Do not use near open water sources and fish ponds.

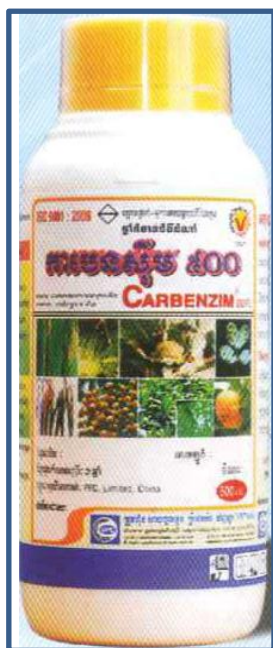
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Carbendazim

1. Registered product name: Carbenzim 500FL



2. Direction for use:

Crop	Disease	Recommendation Rate
Rice	Sheath blight, rice blast, orange leaf, brown spot	16-20ml/tank of 16 l, 3tanks /1,000m ² (Do not apply too much on leaf and fruit)
Beans	Leaf-knot, leaf scorch, powdery mildew, root blight	
Vegetable	Leaf-knot, necrosis, grey mildew, feet rot	
Tomato, Potato	White and grey mildew	
Cotton	Root blight, leaf-knot	
Tobacco	White mildew, leaf spot	30ml/tank of 16 l, 4-5 tanks /1,000m ²
Fruits	Fruit spot, leaf-knot, necrosis, grey mildew, fruit stink	
Coffee	Leaf-knot, drought stem and fruit scab	
Cashew	Necrosis (flower damping off, black spot)	

Note:

- Apply at first notice of disease. Apply twice per day for 10-14 days, depending on severity of the problem.
- Do not mix with high Bordeaux pesticides.
- Pre-harvest interval: 14 days



Scorch on yard long bean leaf



Feed rot



Powdery mildew