Pesticide Use in Greenhouses and High Tunnels

Vegetable production in greenhouses and high tunnels has increased dramatically in the Midwest in the past few years. Although greenhouse or high tunnel environments may change the composition of the pest complex growers may face, using pesticides will often be necessary to maintain the adequate levels of control needed to produce a profitable and marketable crop.

The pesticide regulatory agencies in the Midwest states vary in their interpretation of whether a high tunnel is a type of greenhouse. For example, Indiana considers a high tunnel to be a form of greenhouse. That means the pesticides one selects for high tunnel use must be appropriate for greenhouse use.

Other states consider high tunnels to be the same as fields when it comes to pesticide use. Still other states, like Missouri, take an intermediate approach: they call a high tunnel a greenhouse when the sides are *closed,* but call it a field when the sides are *open*. It is important that you determine how your state views high tunnels.

When it comes to greenhouse pesticide applications, there are three kinds of labels.

First, pesticide labels can clearly state that the products may be used in greenhouses. These products may be used according to label directions. Pesticide labels that have different instructions for greenhouse use and in-field use also fall into this category. These products also may be used according to label instructions.

Second, pesticide labels may clearly prohibit greenhouse use. Obviously, these products cannot be used in a greenhouse under any circumstances.

Finally, there are many pesticide labels that don't specify whether the product can be used in a greenhouse or not. When labels don't expressly prohibit greenhouse use, most state regulatory agencies interpret that to mean that the product can be used in a greenhouse as long as the treated crop is on the label and the product is used according to label directions.

Table 4 classifies common insecticides according to these labels. Table 5 classifies common fungicides.

Table 4. Insecticide Labeling for Greenhouse Use[1].

Labeled for Greenhouse Use	Label Prohibits Greenhouse Use	Label Silent on Greenhouse Use
Admire®	Actara®	Acramite®
Agree®	Assail®	Agri-Mek®
Avaunt®[2]	Belt®	Ambush®/ Pounce®
Dibrom®[3]	Coragen®	Ammo®
DiPel®	Di-Syston®	Asana®
Endosulfan®[4]	Diazinon®	Baythroid®
Malathion®	Dimethoate®	Brigade®
M-Pede®	Guthion®	Brigadier®
Neemix®	Movento®	Confirm®
Sevin®	Oberon®[5]	Cryolite®
	Platinum®	Danitol®
	Proclaim®	Entrust®[6]
	Provado®	Fulfill®
	Radiant®	Hero®
	SpinTor®	Intrepid®[6]
	Trigard®	Knack®
	Voliam®	Kryocide®
		Lannate®
		Larvin®
		Lorsban®
		Monitor®
		Mustang MAX®
		Orthene®
		Penncap-M®
		Rimon®[7]
		Vydate®
		Warrior®

[1]For example, a tomato grower in the field can use any of the 17 products on pages 98-99 to treat hormworm in tomato. In a greenhouse, the same grower could not use Coragen®, Diazinon®, or SpinTor® (these product labels prohibit greenhouse use). In the greenhouse, the grower may use the other 14 insecticides because the label either specified that it could be used (*Bacillus thuringiensis* products, Avaunt®, Endosulfan®, or Sevin®) or the label did not mention use in greenhouses (the other 10 products).
[2]Not for use on brassicas.
[3]Additional restrictions for greenhouse use.
[4]Not for use on greenhouse tomatoes.
[5]Oberon 2SC® only.
[6]Not for use on transplants.
[7]Only for use on greenhouse tomatoes.

Table 5. Fungicide Labeling for Greenhouse Use[1].

Labeled for Greenhouse Use	Label Prohibits Greenhouse Use	Label Silent on Greenhouse Use
Botran®	Cabrio®	Acrobat®
Champ®	chlorothalonil[3]	Actigard®
Contans®	Endura®	Agri-Fos®
Cuprofix®	Flint®	Agri-mycin®
Dithane®	Forum®	Aliette®
Kocide 2000®	Presidio®	Curzate®
Kocide 3000®	Pristine	Gavel®
Previcur Flex®	Quadris®	Gem®
Procure 480SC®	Quadris Opti	Inspire Super®
Ranman®[2]	Quilt®	Kocide 20/20®
Scala®	Reason®	Manzate®
Terrachlor®[4]	Ridomil®	Monsoon®
	Vapam®	Omega®
		Penncozeb®
		Phostrol®
		Quintec®
		Rally®
		Revus®
		Revus Top
		Rovral®
		Serenade Max®
		Switch®
		Tanos®
		Toledo®
		Ziram®

[1]For example, a tomato grower in the field can use any of the products listed in the entries on pages 90-91 to treat early blight of tomato. In a greenhouse, the same grower could not use Cabrio®, any product with chlorothalonil, Endura®, Quadris®, Quadris Opti® (these product labels prohibit greenhouse use). In the greenhouse, the grower may use the other products because the label either specified that it could be used (mancozeb products, Dithane®, or Scala®), or the label did not mention use in the greenhouses (mancozeb products, Manzate®/Penncozeb®, or Gavel®, Inspire Super®, Revus Top®, Tanos®, Switch®, or Ziram).

[2]For use on tomato transplants only.

[3]All products with the active ingredient chlorothalonil are prohibited in the greenhouse including Bravo®, Echo®, and Equus®.

[4]Use only on bedding plants grown in containers.