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Can I Use Dish Soap to Kill Insects?

AGRI-VIEWS

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It never ceases to amaze me at the number of ills and woes in the yard and garden that can allegedly be cured by spraying with a dilute solution of dish soap. Over the years the number of cures I've seen ascribed to this simple item in all of our homes is beyond my comprehension: soil compaction, slow percolating soils, weed control, disease control, insect control, the list goes on and on. While dish soap can have some activity on some of these "pests", understand that the effectiveness of soap has limits and you need to understand what it will and won't do!

Soaps, as we find them on the grocery store shelf are going to have a whole host of different compounds in them that are all the effect of an alkali, generally sodium or potassium hydroxide, on a fat. In essence, soap is a salt of fatty acid. Which is way more organic chemistry than I want to remember or you want to learn about.

You can go into a garden center and find products labeled as "insecticidal soap." If you read the label you'll see that these products are potassium salts of fatty acids. These products are fairly effective on soft bodied insect and mite pests. By soft bodied insects we are talking about aphids, scales, mealybugs, thrips, whiteflies and twospotted spider mites. To be effective against them the spray has to go directly on them. The dried residues on plant surfaces have minimal or no insect or mite activity mainly due to degradation by sunlight (ultraviolet light specifically.)

So how do soaps control these pests? We really don't know. There are three possible modes of action. The fatty acids in the soap may penetrate the insect's outer covering and dissolve or disrupt cell membranes. Cells leak fluid, collapse and there's a cascading failure similar to mammals bleeding to death internally. Secondly, soaps may act as insect growth regulators interfering with cell metabolism. Thirdly, soaps may simply cover the insect blocking the breathing pores (spiracles) effectively suffocating them. It may be all of the above or any one of the above depending on the species.

Okay, now the downside of all of this. Like other pesticides it isn't going to differentiate between harmful and beneficial insects or mites. We have many predatory insects and mites that help keep harmful ones under control that may be killed by an application. Additionally, one soap won't fit all. Soaps that can control insects are usually long chain fatty acids. Soaps with short chain fatty acids have herbicidal properties. Use the wrong soap and the target pest survives but your desired plant may be damaged or killed!

There have been a whole host of different studies on common household dish washing soaps finding that various ones at anything from 1 to 4% solutions have differing abilities to control different pests including even German cockroaches (but not other cockroaches.) While I have a list available of which soap controlled which insect, it can be hit and mess with success because of things like temperature at the time of treatment, hardness (or softness) of the water, even host plant that they are on.

Then there's one last thing to keep in mind. Any product that is advertised or promoted to kill, literally anything, must be tested, approved and labeled by the Environmental Protection Agency. Companies that make dish soap do not intend to have their products used as a pesticide so they don't go through that labeling process. I do not encourage using any household chemicals for anything other than their intended use. There are plenty of insecticides labeled for insect control and I would encourage homeowners to use these.

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