

**Pesticide Resistance in *Leptinotarsa decemlineata***

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The Colorado Potato Beetle (CPB), *Leptinotarsa decemlineata* Say (Coleoptera: Chrysomelidae), is a major pest across the United States, infesting commercial potato plants (*Solanum tuberosum* L.) from the east coast to the west. There are very few natural predators to CPB and insecticide application is highly suggested as one of the few effective means of control of this pest. Several studies confirmed CPB resistance biotypes in the eastern part of the US. In the western portion of the US there are few to no reports of resistance to the insecticides used to control the populations of CPB.

In Northeastern Oregon, the Colorado potato beetle can be found in most commercial potato fields and cause damage to the foliage of the potato plants. Potato plants are known to be tolerant to substantial defoliation when they are in a vegetative state, but are much more sensitive while the tubers are bulking, which takes place right after flowering.

My research was focused on if the pesticide resistance can be found in populations of CPB in Northeastern Oregon. To do this, I collected 350 to 400 overwintered adult beetles from each population will be used to determine the lethal concentration required to kill 50% of the test insects using dilutions of Technical imidacloprid in acetone. Specifically, 350 to 400 adult beetles were be divided into 8 groups (n=25) and treated with a 1 $\mu$ l solution of the treatment in acetone on the first abdominal sternite. Treatments ranged from 0 ppm- 1000 ppm. After 1h, 3h, 1, 3, and 5 days, the number of live beetles, incapacitated beetles and dead beetles were recorded, as measured by the pencil test where briefly, adult beetles will be presented with the opportunity to climb a pencil: if they could move a full body length they were considered alive, if they appeared alive, but cannot move a body length then they were considered incapacitated, and if they had no movement, even after pinching their back legs with tweezers, they were considered dead.

Based on our studies, the Colorado potato beetle may be developing chemical resistance to imidaclorprid. Further studies are needed to find more evidence for this claim.