

UMN SpudBug Highlights 2016: Colorado Potato Beetle in MN & ND

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It's shaping up to be a Colorado Potato Beetle (CPB) year in Central MN and in the Red River Valley. Seems even if an at-plant insecticide was applied, CPB are plentiful in some fields. There are a few possible reasons this is happening...

Our CPB overwinter as adults, generally in windbreaks, fence lines, wooded or protected areas outside the field. They emerge in the spring when they've accumulated enough heat units, enter adjacent potato fields (or find some solanaceous weed, like nightshade) and do a bit of feeding, mate and lay some eggs. Those yellow eggs



darken as they age to a dark red just before they hatch. The youngest larvae are quite small with a red body and black head and waste no time in starting to feed on the foliage of their host plant. As they feed, they grow, molt, and grow again through 4 distinct stages. After that 4th stage, they go to the ground, burrow into the soil and pupate, emerging as adults. These adults can do some serious defoliation and may mate and lay eggs but they're also the ones that will eventually leave the fields, move into neighboring areas to overwinter underground.

- Last winter was mildest on record (6th warmest on record in MN). This probably resulted in lower winter mortality for the beetles.
- Recent monitoring of insecticide resistance in MN and ND CPB indicates decreased sensitivity to neonicotinoid insecticides (the most common at-plant insecticide) in the both areas.
- There were very wet conditions in some locations after planting. The neonicotinoids are water soluble and wetter soils increase the potential for leaching, decreasing the amount of insecticide available to the plant, lowering the efficacy of the pesticide.
- Finally, the emergence of the overwintering CPB has stretched over a longer period than usual. In the RRV, this may be due to the cooler soil temps in May/June and both locations may be seeing behavioral resistance to at-plant insecticide applications.

Regardless of why, the issue is now management. Given how readily this insect develops resistance to insecticides, make certain to rotate insecticide mode of action in your management program. Don't use the same mode of action more than once in the season. Even if the name or active ingredient in insecticides are different, if they have

the same mode of action, it's still building resistance. So, if a neonicotinoid insecticide was applied at-plant, follow up with a foliar from a different mode of action.

Many insecticides have their mode of action indicated as a number on the label, making rotation easier. Insecticides containing a neonicotinoid as the active ingredient, like Actara for example, may be labeled "4A". So don't repeat the same



number twice in a season if possible. Be aware that some products have more than one active ingredient; if any of the products in the mix belongs to a group already used, I'd recommend against using that mix.

There are several insecticide modes of action groups that effective against both CPB larvae and adults, making them good choices for later-season foliar application. I didn't include insecticides having only Synthetic Pyrethroids (grp 3) because of suspected resistance in the affected areas. If you do suspect you are dealing with a resistant population of CPB to any of these mentioned, please contact us and I'll try to test the population. My contact information is on the front page..

Active Ingredient	Mode of Action Group	Example Products (not a complete list – other products with the same active ingredients may be available)
Avermectins / Abamectins	6	ABBA 0.15EC, Agri-Mek 0.15EC, Agri-Mek SC, Athena (mixed with Bifenthrin - grp 3) Epi-Mek 0.15EC, Nufarm Abamectin, 0.15EC, Reaper 0.15EC, Temprano, Timectin 0.15EC
Diamides	28	Coragen, Exirel, Besiege & Voliam Express (mixed with Lambda Cyhalothrin – grp 3), Voliam Flexi (mixed with Thiomethoxam – grp 4)
METI Insecticides	21	Tolfenpyrad: Torac
Neonicotinoids	4	Acetamiprid: Assail 30SG, Assail 70WP Clothianidin: Belay, Belay 50WDG, Dinotefuran: Scorpion 35SL, Venom 20SG, Venom Imidacloprid: ADAMA Alias 2F, ADAMA Alias 4F, Admire Pro, Advise 2FL, AmTide Brigadier (& Syraider & Swagger, mixed with Bifenthrin – grp 3), Imidacloprid 2F, Leverage 360 (mixed with Beta-Cyfluthrin – gr 3), Macho 2FL, Malice 2F, Montana 2F, Nuprid 2SC, Nuprid 4.6F Pro, Pasada 1.6F, Prey 1.6, Sherpa, Widow, Wrangler, Thiomethoxam: Actara, Cruiser 5FS, Cruiser Maxx Potato, Endigo ZC (mixed with Lambda-Cyhalothrin – grp 4), Platinum, Platinum 75SG, Voliam Flexi (mixed with Chlorantraniliprole – grp 28)
Spinosyns	5	Spinosad: Blackhawk, Entrust, Spintor 2SC, Success Spinetoram – Radiant SC