

STRIKE USE TO MANAGE SOIL BORNE DISEASES THAT IMPACT POTATOES

Disease	Pathogen	Strike	Metam	Comments
1. Early die back	Verticillium dahliae	+++	++	Superior control over other fumigants used to manage vert. Lesion nematode increases the severity of infection. Nematode control is required. PED = V. Dahliae + nematodes. Strike 60 broadcast rate 200-250 kg/ha. Nematode control is critical.
2. Common Scab	Streptomyces	+++	-	The only fumigant to effectively manage common scab. Strike 60 250kg/ha.
3. Black Scurf	Rhizoctonia solani	+	-	Soil borne pathogen exasperated by wet damp conditions after planting.
4. Black Dot	Colletotrichum coccodes	+	-	Resembles Silver Scurf. Strike 60 200 - 250kg/ha.
5. Shell rot or leak	Pythium spp.	++	-	Soil borne infection at harvest through wounds. Transfers from tuber to tuber in storage.
6. Root Rot	Phytophthora spp.	+	-	Soil borne pathogen, wet conditions toward end of production cycle or over irrigation can increase incidence.
7. Powdery Scab	Spongospora subterranea	-	-	Reduces pathogen population in soil but not disease incidence. Plant resistant varieties of potatoes, 3 yr. + rotation.
8. Wire Worms	Coleoptera: Elateridae	++	-	Click beetles or wireworms move away from the smell of metam. Telone and Strike are effective when the wireworms are within the zone of treatment.

+ Effectiveness at managing target pathogen

- Little or no control

Nematodes*	Comments
1. Root Knot Meloidogyne javanica	Active at 5°C. Threshold counts for DNA tests 20-25 per gram of soil.
2. Root Knot Meloidogyne hapla	Active at 12°C soil temps. Threshold counts for DNA tests 20-25 per gram of soil.
3. Root Knot Meloidogyne incognita	Active at 12°C soil temps. Threshold counts for DNA tests 20-25 per gram of soil.
4. Root Lesion Pratylenchus spp.	P. penetrans will synergistically increase the effect of V. dahlia on potatoes and mint. Threshold counts of 100/250 cc. P. neglectus. Not as damaging as penetrans. Threshold counts 400-500.
6. Potato Cyst Nematodes Globodera spp.	Potato cyst nematode is a quarantine species (economically important).

* Metam is a good nematicide if it comes in contact with a nematode. Metam is not a fumigant, it is a biocide.

* Strike is effective against root lesion and is a true fumigant.

Beneficial Soil Organisms

	Strike	Metam	Comments
Trichoderma	+++	---	Several Trichoderma species to form mutualistic endophytic relationships with several plant species. Trichoderma has been reported to be a biocontrol agent against various pathogenic genera such as Rhizoctonia, Pythium, Phytophthora, Fusarium, and Sclerotinia. Trichoderma populations increase after Strike applications. Metam sodium is very harsh on Trichoderma suppressing populations for several years. This may be one reason why growers using metam are on 4 year + crop rotations.
Pseudomonas	++	-	The Pseudomonas fluorescens group is particularly well-known for its plant-beneficial properties including pathogen suppression. Research reported potato seed pieces treated with P. fluorescens and P. putida resulted in increase growth and yield. Pseudomonas spp. flourished in soil treated with Strike. In soil treated with metam, Pseudomonas spp. did not increase. Also reported was that some strains of this group also cause lethal infections in insect larvae.
Streptomyces	+	0	Streptomyces comprises filamentous Gram-positive bacteria that are widely recognized for their ability to produce bioactive compounds such as antimicrobial, antiparasitic and immune-suppressing compounds via secondary metabolism. These groups of organisms have beneficial associations with plants that have improved plant growth and protected against pathogens.
Bacillus	+	0	Bacillus spp. promotes Induced Systemic Resistance (ISR) and has been documented against leaf-spotting fungal and bacterial pathogens, systemic viruses, a crown-rotting fungal pathogen, root-knot nematodes, and a stem-blight fungal pathogen as well as damping-off, blue mold, and late blight diseases.
Burkholderia	+	0	Plant-beneficial Burkholderia species may also trigger disease resistance in the host plant by induced systemic resistance (ISR). Some species possessed plant growth-promoting traits while others were useful in phytoremediation and biocontrol.

+ population thrives after soil treatment

- population falls after soil treatment

0 no effect



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