

# Control Strategies for Late Blight in the Alaska Potato Crop

Late blight is a devastating disease of both tomatoes and potatoes that is occasionally found in Alaska. There is no “cure” for the disease and there are very few resistant varieties of potatoes, so disease management strategies are designed to prevent the disease spores from gaining access to susceptible tissues while the environment is conducive for infection. The biology of the causal organism (*Phytophthora infestans*) along with disease symptoms is covered in the *Late Blight in Alaska* (PMC-00338). This document focuses on prevention of the disease through avoidance and on chemical control options if the disease occurs.

## Cultural control of late blight

There is no evidence that the disease overwintered in Alaska after the outbreaks in 1995, 1998, 2005 and 2011. It is probable that these outbreaks resulted from separate introductions of diseased material into the state. The focus of a late blight management strategy is avoidance and preventive measures. Once infection has occurred, all infected tissue must be destroyed or the fungus will continue to shed infective spores into the environment.

## Prevention

- Use high quality, certified seed.
- Don't allow any “unexpected” and unmonitored potato plants in the area.
  - Bury all cull potatoes. No open cull piles are allowed during the growing season.
  - Monitor previous potato fields and rock piles for volunteer potato plants.
  - Destroy all volunteer potato plants.
- Encourage nurseries that sell tomato starts to check for late blight symptoms on materials before they sell to local gardeners.
- Use good sanitation practices on all equipment.
- Schedule irrigation to allow foliage to dry. Consider watering early in the morning so foliage can dry during the day.
- Build the potato hills high to divert water away from the tubers.

## Control

- Monitor low spots in field and along wooded borders where the foliage dries slowly.
- If the disease is seen as a patch in the field, destroy the affected plants and all other potatoes within 100 feet of the patch. It takes about seven days to show symptoms, so these plants are probably already infected. The following can be used to destroy infected regions of the field:
  - Herbicides to chemically burn the crop
  - Flame weeders to physically burn the crop
  - Disking to turn crop under (be sure to power wash tractor and equipment)
- Call your local Cooperative Extension Service office and your potato growing neighbors to give warning.
- Immediately apply appropriate protective fungicides on all potatoes in the vicinity.
- Allow soil to dry as much as possible for harvesting.

**Organic Growers:** Copper has shown some effect in preventing late blight establishment, but it is not nearly as effective as conventional fungicides. It is also ineffective as the sole preventative once the disease begins to develop. Other fungicides listed by the Organic Materials Review Institute (OMRI) for late blight include Sporatec, Sonata, Serenade Max, Oxidate and Companion.

**Conventional Growers:** Late blight management depends on protectant fungicides. Because these fungicides prevent the spores from germinating and infecting the plant, they must be applied to the surface of the plant prior to spore fall. Destruction of infected plants will help slow the epidemic.

### Tomato late blight symptoms

- Brownish-black lesions that are not limited by the leaf veins appear on stems and/or leaves.
- Under humid conditions, grayish-white growth can often be seen on the edges of the lesions on the underside of the leaf.

- **Sprayer Considerations:** To achieve the complete coverage necessary for effective use of protectant fungicides, apply it using a small droplet size and higher pressure to drive the fungicide into the foliage canopy. Usually different nozzles are used for fungicides than for herbicides, and it is important that all of the sprayer components can handle the corresponding higher pressures. The frequency of spray application depends on the disease pressure, the rate of crop growth (new growth must be protected) and the weather.
- **Fungicide Products:** Late blight is a worldwide disease and must be treated with many different products because resistance to various fungicides is a serious concern. A season-long spray plan should include products from several fungicide mode-

of-action groups recommended by the Fungicide Resistance Action Committee (FRAC). Some of the newer products give a slight “kick back” action in that they may be able to slow down the development of an existing infection. Most of these products must be used with a protectant (either tank-mixed or incorporated in the formulation). Fortunately, Alaska doesn’t experience the disease every year, so late blight fungicide trials have not been done to evaluate the various fungicide efficacies under Alaska conditions. Consequently, we must depend on the label and on the recommendations of other states. See websites below.

***All products must be registered for use in Alaska. Verify registration on the Department of Environmental Conservation website!***

### Examples of fungicides registered for use in Alaska as of October 2019

Fungicide Group	Product Name
Chlorothalonil	Initiat 720 Flowable Bravo (Gold, Ultrex and Weather Stik)
Copper-based	C-O-C-S WDG Dupont Kocide 2000 Dupont Kocide 3000 Champion ++
Mefenoxam + Chlorothalonil	Ridomil Gold Bravo
Organotin-based	Super Tin 80 WP
EBDC	Dupont Manex Polyram 80DF Dithane 75 DF Rainshield Manzate
Fluazinam	Omega 500F
Strobilurin	Quadris Flowable Tanos Reason 500SC
Cymoxanil	Curzate 60DF
Propcamocarb hydrochloride	Previcur Flex
Fluopicolide	Presidio
Phosphorus Acid Salts	Agri-Fos Alude
Biologicals	Oxidate Actinovate SP Serenade

### Resources

The following websites are very good late blight resources available from other universities. They more thoroughly describe prevention and control strategies as well as explain how to rotate fungicides for resistance management (FRAC groups).

- <http://portage.uwex.edu/files/2010/05/LateBlightOccurrenceandMGT2009McGrath.pdf>
- [http://www.wsu.edu/~djohnsn/index\\_files/Paper4.pdf](http://www.wsu.edu/~djohnsn/index_files/Paper4.pdf)

### ***What rates and formulations are being used in other states?***

- New York (Cornell) – Vegetable MD Online (Updated 2010): [http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Pot\\_LabeledRts.html](http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Pot_LabeledRts.html)
- University of California Davis – IPM Online (Updated 2012): <http://www.ipm.ucdavis.edu/PMG/r607101211.html>

### ***Is the product and formulation registered for use in Alaska?***

- Alaska DEC pesticide registration website: [www.kellysolutions.com/ak/pesticideindex.htm](http://www.kellysolutions.com/ak/pesticideindex.htm)

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[www.uaf.edu/ces](http://www.uaf.edu/ces) or 1-877-520-5211

Reviewed May 2020