Managing Potato Late Blight in the Columbia Basin –The Basics

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Integration of several control tactics is needed to manage potato late blight in the Columbia Basin. These include strict sanitation practices, proper irrigation management, cultural practices and timely applications of fungicides. Management of temperature, relative humidity, air movement, and holding time of tubers is needed to manage tuber late blight in storage. This paper lists practices that will help manage late blight in the field in the Columbia Basin.

Sanitation

Sanitation practices are aimed at reducing potential sources of infections and include.

1. Planting late blight free seed
2. Eliminating culls and tuber refuse
3. Eliminating volunteer potato plants
4. Treating seed with a fungicide containing mancozeb or Curzate
5. Planting seed tubers within 24 hours of cutting

Epidemics of late blight characteristically arise from a very low level of infected seed tubers or just a few infected volunteer plants. Certified seed lots should be selected from seed areas where late blight did not occur or from farms where the disease was successfully managed. Seed health certificates and visits to the seed farm during the growing season can be helpful in selecting satisfactory seed lots. Volunteers in fields that had late blight the previous year are especially likely to be infected and pose a threat the current year.

Spores of the late blight organism can form on infected seed tubers and spread to and infect other seed pieces during cutting and handling. Research at WSU has documented that sporulation can occur on infected seed within 24 hours because of favorable temperature and humidity within a pile of cut seed tubers. Spread to other seed pieces occurs as air currents disperse spores and as seed pieces are mixed during handling. Fungicide seed treatments that contain mancozeb or Curzate reduce this spread. Planting seed tubers within 24 hours of cutting will also help reduce tuber infections. The use of fungicides on potato seed will not negate the importance of using certified seed tubers free of late blight. Soil temperatures should be 55 F and increasing at planting.

Cultural and irrigation practices

Judicious cultural and irrigation practices reduce the rate at which late blight increases and potentially reduce the number of fungicide applications needed for late blight management. Effective practices include:

1. Potatoes should not be grown within 80 ft of the pivot center. This is usually the wettest area of the circle and most conducive environment for late blight infection on foliage and tubers, and is often where late blight initially infects the crop. Late blight often begins in fields near the pivot center, and recent research demonstrated that large proportions of infected tubers originate in this area. Rot in storage can move throughout the storage from concentrated sources of infected tubers. Lost production area is about 0.4 acre or 0.3% of a 125-acre field. This is with a 25 ft radius subtracted for pivot turn around road). Yield and tuber quality are often lower in this area so lost tuber yield would be less than the lost production area. Benefits can be a reduction in number of fungicide applications, better late blight control, and fewer infected tubers going into storage.

2. Irrigate sparingly until just before tuber initiation. This reduces the risk of early season late blight, infection by *Verticillium dahliae* (cause of early die disease), and infection of seed pieces by soft rot bacteria.

3. Avoid pivot overlaps, over watering, and watering during rainy periods or prolonging leaf wetness periods when dew is occurring. Try to irrigate when leaf wetness periods will be less than eight hours. Watering during late afternoon and evening will extend the leaf wetness period. Reduce irrigation at the end of the growing season.

4. Plant seed pieces relatively deep and form an adequate hill.

5. Use good fertilization practices. Massive vine growth creates a microclimate favorable for late blight

6. Harvest during dry weather. Pulp temperatures should be less than 68 F.

7. Monitor fields for late blight, especially near the center of pivots, along wheel tracks, and low areas in fields.

Fungicide applications

Timely fungicide applications at effective rates are an important component of managing late blight. Important factors in managing late blight with fungicides include:

1. Consult the late blight information line (800 984 7400) for timing of initial fungicide applications and intervals between applications. Forecasts for the Columbia Basin use the Columbia Basin Late Blight Forecasting Model, current disease conditions and weather forecasts. The model is based on the number of days with rain in April and May.

2. Begin fungicide applications at least seven days prior to late blight exposure. Usually this requires the first application just prior to row closure and continuing on a 7-day interval for at least three weeks.

3. Continue applications at recommended intervals to protect new and old foliage until harvest.

4. Use short application intervals when disease pressure is high. There are not fungicides available with a knock out punch!

5. Ridomil, copper, and tin fungicides are not effective for late blight in commercial fields in the Columbia Basin. Super Tin is effective when mixed with metiram (Polyram) or mancozeb.

6. Foliar applications of phosphorous acid (Phostrol) will reduce late blight tuber rot at harvest and in storage. Two to three applications (8 – 10 pt/acre) at two-week intervals beginning at tuber initiation effectively reduced late blight tuber rot at Othello in 2001 –2003. Pink rot was also reduced with phosphorous acid applied to foliage.

7. An effective and cost saving program for applying late blight fungicides begins by applying the first fungicide application by air and then rotating with chemigation there after. This method has the greatest advantage when disease incidence and pressure require a 7-day application frequency.

8. All fields need protection, even those scheduled for early harvest. Follow product label information when applying fungicides.