

THE 4-STAR PROGRAM FOR LATE BLIGHT CONTROL

by
M. Powelson¹, D. Corsini², P. Hamm³, D. Inglis⁴, D. Johnson⁵, L. Mikitel⁶,
J. Miller⁵, R. Rowe⁷ and R. Thornton⁶

"Desperate diseases require desperate remedies." This adage, attributed to Hippocrates, applies to potato late blight. Because this disease was prevalent and destructive in the Pacific Northwest in 1995, we must assume that the risk is great for a serious disease problem in 1996. Four key strategies for management of late blight in 1996 are:



Eliminate Sources of the Late Blight Fungus



Track the Fungus



Apply Appropriate Treatments



Reduce the Potential for Disease Next Year

Eliminate SOURCES of the Late Blight Fungus

Sources for the potato late blight fungus include cull piles, (field grading, loading and unloading of storages, potato debris from storage and seed cutting), volunteer potatoes and infected seed pieces. Each of these sources provide inoculum of the late blight fungus that can initiate the disease in the spring.

This Presentation is part of the Proceedings of the 1996 Washington State Potato Conference & Trade Show

¹ Dept. of Botany and Plant Pathology, Oregon State University, Corvallis, OR

² USDA/ARS, Aberdeen, ID

³ Hermiston Agricultural Research & Extension Center, Hermiston, OR

⁴ Mt. Vernon Research & Extension Unit, Mt. Vernon, WA

⁵ Dept. of Plant Pathology, Washington State University, Pullman, WA

⁶ Dept. of Horticulture and Landscape Architecture, Washington State University, Pullman, WA

⁷ Dept. of Plant Pathology, Ohio State University, Wooster, OH

Sanitation is the name of the game for managing culls and volunteer potatoes. The more complete the sanitation effort, the better the potential for suppressing the disease. Cull potatoes should be either chopped and spread out to freeze or fed to cattle. Burying culls in a deep pit is an option for individual growers but not for processors. Although destruction of volunteer potatoes is a challenging task, every effort should be made to do so. Volunteer potatoes become diseased when they originate from infected tubers or when the fungus is blown into the field. Options for their control include the application of broad spectrum or selective herbicides and/or cultivation. Special attention should be given to fields that had a late blight problem in 1995 and those fields with a large number of volunteer potatoes.

Planting clean seed is the first step in producing a healthy crop. Because the pathogen is tuber-borne and infected seed tubers do not always show symptoms, it behooves the grower to contract with a reliable source, learn status of late blight on seed producer's farm in 1995, examine field inspection reports, discuss measures taken to manage late blight in the seed field in 1995, and, if possible, visit the site to view the storage.

TRACK the Disease

Because late blight is a community disease, awareness of both its potential and status in your area will be necessary to maintain an effective control program. For the 1996 season, assume that the fungus is present and abundant and that the weather will be conducive. For up-to-date information on the status of late blight in the Columbia Basin, Washington State University has arranged for an 800 number. Growers can learn the disease situation by calling 1-800-LBLIGHT. Early season forecasts begin in midApril and the midseason forecasts will begin in midJune. Growers are encouraged to call several times a week during the early season and once a week beginning midseason.

Awareness of the late blight situation in your own field also will be necessary. Every effort should be made to identify when it first becomes apparent. Areas near the center of the pivot and low lying areas of fields should be scouted at least twice a week. Look for large, black or purplish lesions on stems and/or leaves; **EARLY IN THE MORNING**, look for white fungal growth on underside of leaves and on stems; and concentrate on stems and leaves **WITHIN** the canopy. Special attention should be given to the more susceptible varieties: Russet Norkotah and Shepody. If late blight is found, it should be reported to your county agent.

APPLY Appropriate Treatments

Protectant fungicides should be applied to both short and long season varieties. To protect growing plants, fungicides must be applied frequently enough to ensure coverage of new growth before it is attacked. The choice of products is up to the grower. However, it should be understood that **WHEN** and **HOW** protectant fungicides are applied and the **INTERVAL** between applications are more important than minor differences among effective products. The following are the fungicide scheduling recommendations.

Fungicide scheduling EARLY SEASON

PROTECTANT fungicides should be applied at the full label rate weekly for the first 3-4 weeks beginning when plants are 6-8 inches tall.

Fungicide scheduling MIDSEASON

If late blight is PRESENT in your field or fields nearby, apply PROTECTANT fungicides every 7 days. Alternatively, consider making 1-3 applications of SECTION 18 fungicides approved for 1996 in rotation with PROTECTANT fungicides on a 7-day schedule. If late blight has not been reported and the weather has been hot and dry, the interval for application of PROTECTANT fungicides could be lengthened to 14 or 21 days. For management of leak and pink rot, incorporate Ridomil pre-packs into fungicide rotation program when tubers are nickel size. The fungicide partner, not metalaxyl, gives control of late blight.

Fungicide scheduling LATE SEASON

If late blight is PRESENT, continue applying PROTECTANT fungicides until all vines are completely dead. Tin or copper-based fungicides may be useful at this time. If late blight has NOT been found and the weather is hot and dry, no fungicides are needed.

Effectiveness of a fungicide is a function of coverage. Ground application in 30 gal water/A at 50 psi is the best method for assuring complete coverage of the foliage, especially the lower canopy. Where ground application is not feasible, aerial application is recommended. Fungicides should be applied in 10 gal water/A as close to the surface of the canopy as possible. The strips should be overlapped and areas of a field that are inaccessible by air, should be treated by ground application. Chemigation is the least desirable application method and should be used only if equipment can apply the fungicides in <0.2 inches water/A.

REDUCE the Potential for Disease Next Year

Because the late blight fungus requires a living host to survive, tubers should not be harvested until all the vines are completely dead. Vine killer should be applied early enough to ensure that the vines are dead at least 2 wk prior to harvest. Harvest should be delayed during wet weather because wet soil adhering to the tuber surface creates conditions favorable for bacterial soft rot. Dead vines, rotten tubers, soil and organic matter should be removed in the field to ensure that a clean pile goes into storage.

If lots of graded potatoes have >2% blighted tubers, they should not be stored but regraded closely and marketed immediately. If lots have a small amount of blighted tubers (<2%), storages should be cooled quickly and the relative humidity maintained at the lowest level during the drying and curing period. Once the holding temperature is reached, the humidity should be adjusted to avoid free moisture on the tubers. Storage rooms should be monitored daily for tuber rot during the first 1 1/2 months after harvest.

By eliminating sources of the fungus before the crop has emerged, tracking the disease in the field, applying protectant fungicides on a timely schedule, and adhering closely to the basics for harvest and storage of late blight exposed tubers, we can successfully manage late blight in the Pacific Northwest.