METALAXYL AND OTHER FUNGICIDES FOR CONTROL OF 
PHYTOPHTHORA INFESTANS ON POTATO IN 
NORTHWEST WASHINGTON STATE¹

Gene D. Easton and Michael E. Nagle²

Abstract

In northwest Washington State, fungicidal control of late blight caused by Phytophthora infestans was evaluated for three years. During 1977, a high rainfall year with supplemental sprinkler irrigations, all metalaxyl and chlorothalonil treatments reduced tuber rot at harvest, but only metalaxyl extended control of tuber rot after 4 months' storage. During 1978, a high rainfall year, one application of metalaxyl sprayed over or dusted on potato seed pieces at planting or applied five times to foliage at 2 or 4 wk intervals gave excellent blight control equal to that with chlorothalonil applied to foliage every 2 wk.

In 1979, a low rainfall year, P. infestans did not kill plants in untreated plots until October. Five applications of metalaxyl sprayed every 2 wk on foliage did not control foliage blight. However, metalaxyl reduced foliage blight when dusted on cut potato seed pieces. Mancozeb sprayed every 2 wk also gave excellent control. The possibility that metalaxyl applied to foliage is effective in late blight control only when washed into the soil by rainfall or irrigation for uptake by roots is discussed.

Yields and percent U.S. No. 1 grade tubers were not significantly affected by any treatment in these 3-year trials.

Resumen

En el Estado de Washington en el noroeste de los EE.UU., se evaluó durante tres años el control por fungicidas del tizón tardío causado por Phytophthora infestans. Durante 1977, un año con un alto nivel de precipitaciones y con riego suplementario por aspersión, todos los tratamientos de metalaxil y clorotalonil redujeron la pudrición del tubérculo al momento de la cosecha. Pero sólo el metalaxil prolongó su control de la pudrición del tubérculo hasta después de 4 meses de almacenamiento.

¹Scientific paper no. SP 6524, Project 1709. Washington State University, College of Agriculture, Agricultural Research Center, Pullman 99164. Mention of a product used in these studies does not constitute a recommendation of the product by Washington State University over other products.

²Plant Pathologist and Agricultural Research Technologist III, Department of Plant Pathology, Washington State University, Irrigated Agriculture Research and Extension Center, Prosser, WA 99350.

Accepted for publication November 30, 1983.

KEY WORDS: Late blight, mancozeb, chlorothalonil.
Durante 1978, un año con un alto nivel de precipitaciones, una aplicación de matalaxil rociado o espolvoreado sobre los tubérculos-semillas en la siembra o aplicado cinco veces en el follaje a intervalos de 2 a 4 semanas, dio un excelente control del tizón tardío, igual que el control por clorotalonil aplicado al follaje cada 2 semanas.

En 1979, un año con un nivel bajo de precipitaciones, *P. infestans* no causó la muerte de las plantas en parcelas sin tratar hasta octubre. Cinco aplicaciones del metalaxil rociado en el follaje cada dos semanas no controlaron el tizón tardío. Sin embargo, el metalaxil redujo el tizón en el follaje al ser espolvoreado sobre los tubérculos-semillas cortados. El Mancoceb rociado cada dos semanas también dio un excelente control. Se discute la posibilidad de que el metalaxil aplicado en el follaje sea efectivo en el control del tizón tardío sólo al penetrar en el suelo con el agua de la lluvia o del riego y así ser asimilado por las raíces.

Los rendimientos y el porcentaje del primer tamaño según escala estadounidense no resultaron significativamente afectados por ningún tratamiento en los ensayos de esos tres años.

**Introduction**

In northwest Washington, late blight caused by *Phytophthora infestans* (Mont.) de Bary occurs annually, usually by late August, on about 800 ha of potatoes grown mainly for certified seed. Fungicides for control are applied to foliage mostly by ground equipment at first appearance of lesions.

In arid central Washington, late blight was first reported in 1947 and occurred in 1975 on 800 ha (7) and in 1982 as an epidemic on ca. 14,000 ha of potatoes under sprinkler irrigation (6). Because late blight seldom occurs and cannot be accurately forecast in this arid area, application of foliar fungicides before first appearance of lesions is not considered practical.

Metalaxyl, class acylalanine, \([\text{N-(2, 6, dimethylphenyl)-N-(methoxy-acetyl)-alanine methyl ester, Ridomil}\]®, formerly CGA 48988\) controls fungi of the order Peronosporales in many crops (4, 9, 13, 17, 19, 22, 23, 26, 27, 28). This chemical has effectively controlled *P. infestans* of potato by single and multiple applications to foliage and soil (1, 3, 11, 20, 23, 24, 25, 29). Applications begun after blight development, retarded further epidemic development after 2 days (10). More importantly, such applications have prevented late blight tuber rot (10).

This paper reports a 3-year study of the effectiveness of metalaxyl and other fungicides in controlling *P. infestans* on potato in northwest Washington as affected by method of application and weather. Only one year’s data are presented on incidence of tuber rot at harvest and after storage.

**Materials and Methods**

**Locations**—Sites for these tests in northwest Washington were on a Carbondale muck soil on Farm A in 1977, on a Rifle peat soil on Farm B in