Efficacy and Crop Safety of Thiophanate Methyl for the Control of White Leaf Spot in Radish

Project No. P11568
Date: 03/2022

PROJECT TITLE:

Efficacy and Crop Safety of Thiophanate Methyl for the Control of White Leaf Spot in Radish.

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the use of thiophanate methyl on radish for control of white leaf spot. The purpose of this research is to collect efficacy and crop safety data to support registration of thiophanate methyl on this specialty crop.

Adherence to Good Laboratory Practices (GLPs) is not required for trials conducted under this research plan.

IR-4 RESEARCH COORDINATOR:

Consult with the Research Coordinator listed below regarding desired changes in this research plan prior to occurrence.

Dr. Alice Axtell, Principal Entomologist and Plant Pathologist,
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3/4/2022

Signature of IR-4 Research Coordinator — Date

Alice Axtell

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MATERIALS & METHODS:

Host plant: Radish - Use a locally grown commercial variety that is susceptible to the test pathogen.

Pathogen: White leaf spot (*Mycosphaerella capsellae*)

Treatments:

Product	MFG	EPA Reg. #	A.I.	Appl. Method	Rate	No. of Appl. & RTI	GPA
Untreated	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Positive Control[1]	Depends on product						20-50 gal/A
Topsin 4.5	Nisso	8033-122	Thiophanate methyl	Foliar directed	591 ml/A (=20 fl oz/A) 296 ml/A (=10 fl oz/A)	Conduct 2 applications at intervals of 7 (±1) days with the last application. DO NOT conduct the last application later than 10 (±1) days before harvest.	

[1]In absence of a commercial standard, it is optional to include a positive control in the trial. A positive control is a pesticide not registered for use on radish but with known efficacy against the pest of interest on other crops.

Application Timing: Apply preventatively following development of the true leaf.

Application Method Instructions: For foliar directed applications, do not proportionally reduce the application rate (the amount of active ingredient applied per acre). Direct the entire per-acre rate onto the crop. If row widths in the research plots are greater than local commercial practices, then the application rate should be calculated using a local commercial row width. Note that the treated area for directed applications is calculated as row spacing × number of rows × plot length.

Test Substances Manipulation & Application: Read product use directions prior to manipulation and application. Applicators and handlers must wear the personal protective equipment listed on the product label. Do not use old/expired products for trials conducted under this research plan. The IR-4 Research Coordinator will arrange for new test substance to be delivered.

Upon receipt of the test substance(s), document the corresponding lot/batch number. Store the test substance in a secure, clean, dry area at temperature ranges noted in the product label. Use application equipment that will provide uniform application of the test substance and simulates the intended commercial application technique. To ensure accurate delivery, calibrate test application equipment prior to application of the test substance(s).

Experimental Design: Treatments should be replicated at least 4 times and arranged in an appropriate experimental design that minimizes the bias deriving from environmental differences across the testing site. A completely randomized block design is usually recommended for field and large scale greenhouse trials. Experimental units should permit application of the test substances in a manner that represents the most common application technique that is used commercially. Experimental units should also be large enough to minimize the impact of the non-uniform distribution of the pest.

Supplemental Crop treatments: The integrity of the study should be protected by managing pests causing significant damage to the crop other than the test target pest. Only EPA-registered maintenance pesticides should be used at labeled rates and applied to all experimental units. Document all supplemental crop treatments.

DATA COLLECTION:

Efficacy:
Provide a visual assessment of disease incidence (% of plants with symptoms) and severity (% infected plant) on both the leaves and the roots. Use a 1-10 rating scale for disease severity. Ratings should start once the first symptoms are detected and every 7-10 days thereafter.

Crop Injury:
Assess phytotoxicity in the plot(s) preferably 7-14 days after each application of the test substance, using the damage scale indicated below. If an application interval is less than 7 days, then the assessment may be done at the next application date. The untreated plot should be assessed on each date that any treated plot is assessed. If the crop is to be harvested/sampled within 14 days of the last application, then make the assessment on the day of harvest. The rating is an assessment of the damage throughout the entire plot. If a rating of 1 or higher is given to a plot, a follow up rating is needed 7-14 days after that, even if there is no additional test substance application in the interim, unless this rating is given to the crop at harvest.

Scale:

- 0 = no damage seen in the plot
- 1 = damage in ≤10% of the plot
- 2 = damage in 11-25% of the plot
- 3 = damage in 26-50% of the plot
- 4 = damage in >50% of the plot

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STATISTICAL ANALYSIS:

Conduct appropriate statistical analysis to determine if significant differences exist between treatments. Statistical analysis from commonly used agricultural data programs, such as but not limited to Agricultural Research Manager (ARM), SAS, Minitab, etc. is acceptable.

Additionally, assess the level of % control from each treatment.

DATA REPORTING:

At trial completion, please submit a final report and the raw data in two separate files to the IR-4 Research Coordinator and the appropriate Regional Field Coordinator (RFC) listed below.

For the sake of consistency and to avoid missing information, IR-4 encourages collaborators to adopt and fill out the Final Report Research Template provided by the Research Coordinator prior to trial conclusion.

The final report and the raw data should be submitted to IR-4 within 60 days of last data collection.

For non-confidential test substances, IR-4 encourages researchers to publish the results obtained from the study. Any publications should acknowledge support by IR-4.

TRIAL SITE INFORMATION

Researcher	Field ID NO.	RFC
Dr. Mary Hausbeck, Michigan State University, Plant Biology Lab, 612 Wilson Road, Room 140, East Lansing, MI 48824. Ph: (517) 355-4534 Email: hausbec1@msu.edu	P11568.22-MIP07	NCR

RESEARCH FIELD COORDINATORS

NCR: Nicole Soldan, IR-4 North Central Research Center, Michigan State University, 3815 Technology Blvd. Suite 1031B, Lansing, MI 48910;Cell:517-712-8441; Email: schroe65@msu.edu