Efficacy and Crop Safety of Pyraziflumid for the Control of Powdery Mildew in Greenhouse-Grown Lettuce

Project No. P12975
Date: 02/2023

PROJECT TITLE:

Efficacy and Crop Safety of Pyraziflumid for the Control of Powdery Mildew in Greenhouse-Grown Lettuce.

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the use of pyraziflumid on greenhouse-grown lettuce for the control of powdery mildew. The purpose of this research is to collect efficacy and crop safety data to support registration of the proposed use pattern for pyraziflumid 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.

Jaimin Patel, Ph.D.
Principal Plant Pathologist
IR-4 Project Headquarters
1730 Varsity Drive, Venture IV Suite 210
Raleigh, NC 27606
Office: (919) 515-3055;
E-mail: jpatel38@ncsu.edu

Signature of IR-4 Research Coordinator
Jaimin Patel

02/23/2023
Date

Efficacy and Crop Safety of Pyraziflumid for the Control of Powdery Mildew in Greenhouse-Grown Lettuce

Project No. P12975
Date: 02/2023

MATERIALS & METHODS:

Host plant: Lettuce (Butterhead varieties only) - Use a locally grown commercial variety that is susceptible to the test pathogen and is suitable for greenhouse production.

Disease / Pathogen: Powdery mildew / *Golovinomyces* sp.

Inoculum: Yes – Artificial inoculation should occur 1 day after the first treatment application. The goal is to simulate preventative applications of the product.

Treatments:

Product	MFG	EPA Reg. #	AI	Appl. Type	Rate	Adjuvant	No. of Appl., RTI* & PHI	GPA
UTC	N/A							
Procure-480SC [Industry Standard]	UPL	400-518	Triflumizole	Foliar Spray	8 fl oz/A	No	Make the first application 1 day prior to inoculum; make the second application after 14 days	50-100 gal/A
Pyraziflumid 20SC	NAI	N/A	Pyraziflumid	Foliar Spray	4.6 fl oz/A 3.2 fl oz/A	Use a non-ionic surfactant at the labeled concentration	Make the first application 1 day prior to inoculum; make the second application after 7 days PHI= 1 day	

***RTI:** re-treatment interval

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: Each test site should include four blocks and each should include all treatments. Arrange plots in a randomized complete block design or other appropriate statistical design. The individual plots should be large enough to permit accurate application of the test substance in a manner that represents the major application technique that will be used commercially.

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: Disease incidence and severity should be rated prior to the very first treatment application. Ratings should continue on a weekly basis. For incidence, evaluate plants in each replicate and calculate the number of infected plants (% of infection). For severity, evaluate each plant for percent upper leaf surface infection (% of leaf area infected) and percent lower leaf surface infection.

Crop Injury: Assess phytotoxicity in the experimental plants preferably 7-14 days after each application of the test substance, using the damage scale indicated below. 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. 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

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.

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. Phone: (517) 355-4534 Email: hausbec1@msu.edu	P12975.23-MIP01	NCR

RESEARCH FIELD COORDINATORS (RFC)

NCR: Nicole Soldan, IR-4 North Central Region Field Coordinator's Office, Michigan State University, 1066 Bogue, Plant and Soil Science Building Rm A440, East Lansing, MI 48824; Cell: (517) 712-8441; e-mail: schroe65@msu.edu