Mefentrifluconazole: Efficacy and Crop Safety for the Control of Hops Powdery Mildew

Project No. P13505
Date: 03/2023

PROJECT TITLE:

Mefentrifluconazole: efficacy and crop safety for the control of hops powdery mildew

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the use of Mefentrifluconazole on hops for control of powdery mildew. The purpose of this research is to collect efficacy and crop safety data to support registration of mefentrifluconazole on hops for the control of powdery mildew.

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.

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Signature of IR-4 Research Coordinator
Jaimin Patel

03/10/2023
Date

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MATERIALS & METHODS:

Host plant: Hops - Use locally grown commercial varieties that is susceptible to the test pest. Report variety/source, lot number, etc.

Test Site: Field

Disease / Pathogens(s): Powdery mildew / *Podosphaera macularis*

Treatments:

Treatment[1]	MFG	EPA Reg. #	AI	Application Method	Rate	No. of Appl. & RTI[2]
Untreated	N/A	N/A	N/A	N/A	N/A	
Flint Fungicide alternate with Procure 480 SC (Standard control)	Bayer alternate with UPL	264-777 And 400-518	Trifloxystrobin alternate with Triflumizole	Foliar	4 oz with 91-200 gal/A alternate with 12 fl. oz/A in minimum of 50 gal	Rotate two fungicides at 14 day RTI; Read label for other instructions
Cevya Fungicide	BASF	7969-407	Mefentrifluconazole		3 fl oz/A	Make 3 applications at 7 day RTI.
Cevya Fungicide	BASF	7969-407	Mefentrifluconazole		5 fl oz/A	Make 3 applications at 7 day RTI.
Cevya Fungicide	BASF	7969-407	Mefentrifluconazole		10 fl oz/A	Make 3 applications at 7 day RTI.
Cevya Fungicide	BASF	7969-407	Mefentrifluconazole		5 fl oz/A + Induce or common adjuvant	Make 3 applications at 7 day RTI.
Cevya Fungicide + Commonly used EC formulated insecticide	BASF	7969-407	Mefentrifluconazole		5 fl oz/A + Commonly used EC insecticide	Make 3 applications at 7 day RTI.

[1]Begin applying all treatments preventatively or at first sight of disease symptoms/signs; Apply 1st spray for all treatments, including standard control on the same day.
[2] RTI= Re-treatment Interval

Test Substances Manipulation: 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 conduct four replicates of each treatment. 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. If natural inoculum is not present in the field plot, plants should be inoculated at 1-2 days after the first application for all treatments.

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. Early season applications of fungicides can be made but separate the first application of the test substances and these other fungicide applications by a minimum of 3 weeks. Maintenance pesticide applications must be applied across the entire test site including the non-treated control plots. 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:

Evaluate foliar powdery mildew disease severity starting at first appereance of disease. Collect additional four severity data at 7- day interval. Record foliar disease severity as the percentage of canopy affected with powdery mildew. Also, determine cone powdery mildew incidence before the harvest. The cone powdery mildew incidence is the percent cones infected with powdery mildew per evaluated plant. Please include the raw data with the report.

Yield:

Determine number of marketable cones and relevant information to determine effects of test substance.

Crop Injury:

Crop health should be evaluated and reported on all plots 3 days after each application and once at trial conclusion. If injury is noted, then additional evaluations must be taken on a weekly basis until no more injury is observed. Assess four randomly selected areas within each plot. Use visual ratings on a 1 to 5 scale:

- For cone injury: 1 = no adverse effect on cone; 3 = moderate damage and spotting; 5 = severe damage; spotting
- For foliage injury: 1= no adverse effect on foliage; 3 = moderate foliage damage; and 5 = severe foliage damage including defoliation and numerous spotting

Specify the type of injury (pre-mature cone falling, stunted plants, leaf burn, leaf cupping or twisting, chlorosis, etc.) and record if any delay in maturity occurred. Provide an overall assessment (if the level of phytotoxicity would be acceptable in commercial production).

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 90 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
Will Meeks University of Idaho Twin Falls Research & Extension Center 315 Falls Ave., Evergreen Bldg. Twin Falls, ID, 83301 Phone: 208-736-3630 wmeeks@uidaho.edu	P13505.23-IDP01	WSR

RESEARCH FIELD COORDINATORS

WSR: Dr. Kari Arnold, Regional Field Coordinator, Western Region IR-4 Project, Cell: 530-574-9181; Email: klarnold@ucdavis.edu