Efficacy and Crop Safety of Penthiopyrad for the Control of Anthracnose in Avocado

Project No. P13075
Date: 07/2022

PROJECT TITLE:

Efficacy and Crop Safety of Penthiopyrad for the Control of Anthracnose of Avocado.

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the use of penthiopyrad on avocado for control of anthracnose. The purpose of this research is to collect efficacy and crop safety data to support registration of penthiopyrad on this specialty crop.

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

IR-4 PERFORMANCE 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
Alice Axtell

7/21/2022
Date

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MATERIALS & METHODS:

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

Test Site: Avocado planting

Pathogens(s): Anthracnose (*Colletotrichum gloeosporioides*)

Treatments:

Treatment	MFG	EPA Reg. #	AI	Application Method	Rate	No. of Appl. & RTI[3]	GPA
Untreated	N/A	N/A	N/A	N/A	N/A		N/A
Pristine (Standard)	BASF	7969-199	Boscalid + Pyraclostrobin	Foliar Directed[2]	18.5 oz/A + Adjuvant[1]	Make 2 foliar directed applications at intervals of 10 (±1) days.	80-200 gal/A
Fontelis 200 SC (1X rate)	Corteva	352-834	Penthiopyrad		24 fl oz/A + Adjuvant[1]	Make 2 foliar directed applications at intervals of 10 (+1) days.	
Fontelis 200 SC (2X rate)	Corteva	352-834	Penthiopyrad		48 fl oz/A + Adjuvant[1]	Make 2 foliar directed applications at intervals of 10 (+1) days.	

[1] Use a non-ionic surfactant not to exceed 0.08% v/v
[2] Note that the treated area for foliar directed applications is calculated as row spacing × number of rows × plot length
[3] 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 three or 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, inoculations should be conducted at 2 days after the first application for all treatments. Conduct appropriate statistical analysis to determine if significant differences exist between 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 disease severity at the time of each application and 2-3 weeks after the final application. Record foliar disease severity as the percentage of canopy affected with anthracnose. Evaluate fruit incidence and severity 2-3 weeks after the final application. Harvest 50 fruit from each plot and evaluate each fruit for incidence and severity of anthracnose infection. Incidence is the number of fruit with anthracnose infection while severity is the extent of the anthracnose infection. Data can be presented on a 0-100 scale but please include the raw fruit data with the report.

Crop Injury: Crop health should be evaluated and reported on all plots 2-3 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 0 to 5 scale:

- For fruit injury: 0= no adverse effect on fruit; 3= moderate damage and spotting; 5 = severe damage; spotting
- For foliage injury: 0= no adverse effect on foliage; 3= moderate foliage damage; and 5= severe foliage damage including defoliation and numerous spotting

Specify the type of injury (stunting, stand loss, leaf burn, leaf cupping or twisting, chlorosis, etc.) and record if any delay in maturity occurred. Evaluate if the crop is stunted and 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
Dr. Gazis Romina, University of Florida TREC, 18905 SW 280 Street, Homestead, FL 33031-3314; Ph: 786-217-9276; email: r.gazisseregina@ufl.ed	P13075.22-FLP02	SOR
Dr. Merari Feliciano Rivera University of Puerto Rico College of Agricultural Sciences P.O. Box 9000 Mayaguez, PR 00681 Ph: (787) 832-4040 ext. 6253 Email: merari.feliciano@upr.edu **Shipping address:** UPR EEA Subestación Experimental Agrícola Isabela Carr.#2 Km. 114.7 Isabela PR 00662	P13075.22-PRP06	SOR

RESEARCH FIELD COORDINATORS

SOR: Dr. Janine Spies, Univ. of Florida, 1642 SW 23rd Drive, Bldg. 685, PO Box 110720, Gainesville, FL 32611-0720; Tel: (352) 294-3991, FAX# 352-392-1988; e-mail: jrazze@ufl.edu