Efficacy and Crop Safety of Fluazaindolizine for the Control of Nematodes in Banana Plantations

Project No. P13222
Date: 01/2022

PROJECT TITLE:

Efficacy and Crop Safety of Fluazaindolizine for the Control of Nematode in Banana Plantations.

PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for the use of Fluazaindolizine fungicide for control of nematodes in banana plantations. The purpose of this research is to collect efficacy and crop safety data to support registration of Fluazaindolizine for use 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.

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Signature of IR-4 Research Coordinator
Alice Axtell

1/28/2022
Date

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MATERIALS & METHODS:

Host plant: Banana - Use locally grown commercial varieties that are susceptible to the test pest.

Plant Host Density: 1210 plants/Acre, placed at a distance of 6 ft x 6 ft.

Pest(s): Burrowing nematode (*Radopholus similis*), root lesion nematode (*Pratylenchus coffeae*), banana spiral nematode (*Helicotylenchus multicinctus*), Southern root-knot nematode (*Meloidogyne incognita*), and reniform nematode (*Rotylenchulus reniformis*).

Treatments:

Treatment	MFG	EPA Reg. #	AI	Rate
Untreated	N/A	N/A	N/A	N/A
Vydate L	Corteva	352-732	Oxamyl	10 ml undiluted product/corm
Reklemel SC	Corteva	N/A	Fluazaindolizine	15.4 fl oz/A
				30.7 fl oz/A
				61.4 fl oz/A

Directions for Treatment Application:

- Vydate L: Apply to soil with a spot gun provided with a coarse spray nozzle around the pseudostems and incorporate into soil by water or mechanical means. Apply every 2 months for up to 4 times.
- Reklemel SC: Apply to soil around the replanted daughter stems at planting **and** 4-8 weeks after planting or in synchrony with root growth and the precipitation season.

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: Treatments should be replicated at least 5 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: YES ☑ NO ☐ OPTIONAL ☐

One bulk sample should be collected per experimental unit. Each bulk sample should consist of 4-8 individual samples (depending on plot size and # of plants) collected from the root zone within each unit. Individual samples will be collected using a shovel or soil corer (8-12 inches deep) and will contain both roots and soil. Prior to extraction roots will be separated from soil and total root weight of the bulk sample recorded. Nematodes should be extracted from soil and roots separately using either a modified Baermann method or with a centrifugal-flotation technique (depending on availability in the lab).

Samples should be collected just before first treatment application, about one month after the first application, about one month after the second application and just before or after harvest.

Crop Injury: YES ☑ NO ☐ OPTIONAL ☐

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

Additionally, measure the diameter of the stem at conclusion of the trial.

Yield: YES ☐ NO ☐ OPTIONAL ☑

Determine yield at the conclusion of the study following the locally accepted methodology.

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. Wilfredo Robles University of Puerto Rico, Mayaguez Agricultural Experiment Station, Corozal Agricultural Experiment Station University of Puerto Rico, Mayagüez IR-4 Field Research Center Carr. 159 Km. 7.5 Bo.Padilla Ermita, Corozal P.R. 00783 Cel. (787) 298-4667 wilfredo.robles2@upr.edu	P13222.22-PRP07	SOR

RESEARCH FIELD COORDINATORS

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