**IR-4 NATIONAL PESTICIDE CLEARANCE**
**EFFICACY AND PERFORMANCE PROTOCOL**

**PR. NO.: 13067**
**DATE: 2/21**

## 1. PROJECT TITLE:

Fluoxapiprolin: Efficacy and Crop Safety of Fluoxapiprolin for the Control of Downy Mildew of Basil

## 2. JUSTIFICATION AND OBJECTIVES:

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

## 3. IR-4 RESEARCH COORDINATOR:

Kathryn Homa, IR-4 Project Headquarters, 500 College Road East, Suite 201 W, Princeton, NJ 08540, (732) 932-9575 X4604, FAX# (609) 514-2612, E-mail: homa@njaes.rutgers.edu

Signature of IR-4 Research Coordinator indicating protocol has been finalized. 2/19/21 Date

## 4. TEST SYSTEM/CROP:

Basil - Use a commercial **variety of sweet basil that is susceptible to downy mildew** and report: variety and source. Field trials should be conducted at appropriate sites to determine the efficacy and crop safety of fluoxapiprolin on sweet basil for control of downy mildew.

## 5. TEST/CONTROL SUBSTANCE:

Evaluate the test materials listed below. **The products tested should be fresh product.** Do not use other test products that have been stored for more than two years or that have been stored under conditions inconsistent with the product label. If needed, the IR-4 Research Coordinator will arrange for fresh test substances to be delivered. Upon receipt, document the lot/batch number. Store the test substance in a secure, clean, dry area at temperature ranges noted in the product label.

| Product<br>% AI and formulation | Active<br>Ingredient(s) | EPA Reg. Number | CAS Number |
|---|---|---|---|
| Fluoxapiprolin 20 SC Fungicide<br>(also known as BCS-CS55621 20 SC)<br>(0.167 lbs ai/gal) | Fluoxapiprolin | Not Registered | 1360819-11-9 |
| Revus Fungicide<br>(2.08 lbs ai/gal)<br>(Registered Standard) | Mandipropamid | 100-1254 | 374726-62-2 |

## 6. TEST SYSTEM DESIGN and STATISTICAL METHOD:

Each test site should conduct **at least four replicates of each treatment** listed in Section 9. 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. Conduct appropriate statistical analysis to determine if significant differences exist between treatments.

## 7. TEST SITE PREPARATION:

Prepare a test site following good local agricultural practices for the production of basil including fertilization, irrigation, if necessary and available, and other practices that ensure good crop production. The test site should have a known pesticide and crop treatment history of a minimum of 1 year.

## 8. TEST SUBSTANCE APPLICATION:

Use application equipment that will provide uniform application of the test substance and simulates the intended commercial application technique as specified below. To ensure accurate delivery, calibrate test application equipment just prior to application of the test substance.

## 9. APPLICATION TREATMENTS AND TIMING:

| Trt# | Treatment | Target Rate of active ingredient(s) | Target Rate of formulated product* | Application Type | Spray Volume Range** |
|---|---|---|---|---|---|
| 01 | Untreated | Not Applicable | Not Applicable | Not Applicable | Not Applicable |
| 02 | Fluoxapiprolin | 0.0179 lbs a.i./acre | 405 ml/acre + adjuvant*** | Foliar | 30-60 GPA |
| 03 | Revus **(Registered Standard)** | 0.13 lbs a.i./acre | 237 ml/acre + adjuvant | Foliar | 30-60 GPA |

*The nominal formulation concentration of the test substance will be used in calculating application rates.
**GPA=gallons per acre
***All applications shall include a non-ionic surfactant at a rate of 0.25% v/v.**

**Treatment 02 (Fluoxapiprolin): Make 3 foliar applications of fluoxapiprolin at the designated rate above at 7 day retreatment intervals.**

**Treatment 03 (Mandipropamid): Make 3 foliar applications of mandipropamid at the designated rate above at 7 day retreatment intervals.**

Begin applications preventatively, when conditions are optimal for the presence of disease.

Target 3 applications of fluoxapiprolin if sufficient disease pressure is present in the field plots. If sufficient disease pressure does not develop after the third application, target up to **6 applications to obtain reliable results**. A minimum of 3 reliable assessments are needed.

## 10. EVALUATION OF PEST AND CROP INJURY:

Downy mildew incidence and severity ratings on foliage **should be rated weekly** approximately 1-3 days after each application **and 7 days after the last application**. An initial rating should be done before any applications to determine if the disease was present in the plots before the applications begin.

**Incidence ratings:**
Incidence ratings should be recorded by examining at least 25 randomly selected leaf samples per replicate to determine the mean percentage of leaves with active sporulation.

**Severity ratings:**
Severity ratings should be determined by using an ordered categorical scale of 0 to 3:
0 = no sporulation, 1 = light sporulation, 2 = moderate sporulation, and 3 = heavy sporulation on the underside of the leaf surface.

**Crop Safety Assessments:**
Crop health should be evaluated on all plots at least twice- once during trial conduct and once at its conclusion. If injury occurs then additional evaluations should be considered. Evaluate the impact on disease development. Assess four randomly selected areas within each treatment.

Use visual ratings on a 0 to 5 scale:
Foliage injury: 0 = no adverse effect on foliage; 3 = moderate foliage damage; 5 = severe foliage damage including defoliation and numerous spotting

Also specify the type of injury (stunting, stand loss, leaf burn, leaf cupping or twisting, chlorosis, etc.) 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).

## 11. SUPPLEMENTAL CROP TREATMENTS:

The integrity of the study should be protected by managing pests causing significant damage to the test crop. Only EPA-registered maintenance pesticides should be used at labeled rates. Document all supplemental crop treatments.

## 12. FIELD DOCUMENTATION AND RECORD KEEPING:

All operations, data and observations, appropriate to this study should be recorded directly and promptly. At a minimum, collect and maintain the following raw data:

- Test site information
- Plot maps
- Information regarding calibration, and use of application equipment
- Treatment application data
- Crop maintenance pesticides and cultural practices
- Meteorological/Irrigation records
- Other data requested in this protocol such as pest damage ratings and crop safety/injury ratings.

## 13. PROTOCOL/MODIFICATIONS:

Consult with the IR-4 Regional/ARS Field Research Coordinator and IR-4 HQ Research Coordinator regarding desired changes in this protocol prior to occurrence.

## 14. FIELD RESEARCH REPORT:

The Field Research Director should write a one to two page summary report similar to those found in a Plant Disease Management Report. The report and supporting documents should be sent to the Regional/ARS Field Coordinator listed below. It is recommended that the Field Research Director maintain a complete copy of these field documents.

## 15. FIELD PERSONNEL / ID NO. / REGIONAL/ARS FIELD RESEARCH LOCATION

| Field Research Director | Field ID NO. | RFC | Test Crop |
|---|---|---|---|
| Dr Margaret Tuttle McGrath, Cornell University, Dept of Plant Pathology, 3059 Sound Avenue, LIHREC, Riverhead, NY 11901; Ph: 631-727-3595; e-mail: mtm3@cornell.edu | P13067.21-NYP06 | NER | Sweet Basil |
| Dr Richard N. Raid, Everglades Research & Education Center, 3200 East Palm Beach Road, Belle Glade, FL 33430, (561) 993-1564, e-mail: rnraid@ufl.edu | P13067.21-FLP16 | SOR | Sweet Basil |

**RFC = Regional/ARS Field Coordinator**

**Location:**

**NER:** Ms. Marylee Ross, Univ. of MD/LESREC, 27664 Nanticoke Rd., Salisbury, MD 21801, (410) 742-8788 x 310, FAX# 410-742-1922; e-mail: mross@umd.edu

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