# Control of Stem and Fruit canker in Dragon Fruit

Project No. IS00445
Date: 06/2025

## PROJECT TITLE:

Control of Stem and Fruit canker in Dragon Fruit

## PROJECT JUSTIFICATION AND OBJECTIVES:

IR-4 received a request for managing stem and fruit canker in dragon fruit. The purpose of this research is to find additional control options to cover the season.

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 Research Coordinator
Jaimin Patel

06-06-25
Date

## MATERIALS & METHODS:

**Host plant:** Dragon Fruit - Use locally grown commercial variety that is susceptible to the test pathogen. Report variety/source, lot number, etc.

**Test Site:** Field

**Pathogens(s):** Stem and Fruit Canker (*Neoscytalidium* spp.)

**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 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).

**Treatments:**

| Treatment | MFG | EPA Reg. # | AI | Application Method | Product Rate[1] | No. of Appl. & RTI[2]/comments |
|---|---|---|---|---|---|---|
| Untreated | N/A | N/A | N/A | N/A | N/A | N/A |
| Standard registered control | Depends on product | Depends on product | Depends on product | Read label | Read label | Read label |
| Cannonball WG | Syngenta | 100-1454 | Fludioxonil | Foliar | 7 oz/A | Start with a preventative spray; RTI: 14 days; Apply in 50 GPA and ensure good fruit coverage |
| Omega 500 F[3] | ISK | 71512-1-100 | Fluazinam | | 13.8 fl. oz/A | Start with a preventative spray; RTI: 14 days; 4 applications; PHI: 5 days |
| Provysol | BASF | 7969-411 | Mefentrifluconazole | | 3 fl. oz/A | Start with a preventative spray; RTI:14 days |
| AC203 | ActiveCross | - | Proprietary | | 42 fl. oz/A | Start with a preventive spray; RTI: 7 days; Apply in 80-150 GPA & ensure good coverage; PHI: 0-day |

[1] Apply in a commercially acceptable spray volume for good foliage coverage; Please mention spray volume used per Acre in final report.
[2]RTI = Re-treatment Interval
[3]Use FULL PPE (Personal Protective Equipment) while applying Omega 500F

**Experimental Design:** Each test site should conduct three four (4) 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 in commercial settings. If natural inoculum is not present in the field plot, inoculations should be conducted one to two (1-2) days after the first application for all treatments. Conduct appropriate statistical analysis of collected data to determine if significant differences exist between treatments.

**Supplemental Crop treatments:** To protect the integrity of this study, manage pests causing significant damage to the crop other than the target pest. Early season applications of fungicides can be made but separate the first application of the test substances and these other fungicide applications as per label. You must report these applications, rate, dates, RTI, etc. in final report. 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 stem and fruit canker severity and incidence at the time of first application of each treatment and at every forteen (14) days thereafter until harvest. Record disease severity as the percentage of stems and fruits affected with disease per plant. Disease incidence is percent of replicated plants with any disease symptoms. Please collect the yield data as well. When reporting the results, please include percent change in the disease severity, disease incidence and yield compared to untreated control.

### Crop Injury:

Crop health should be evaluated and reported on all plots 2-3 days after each application and once at trial conclusion for all treatments (including non-treated). If injury is noted, then additional evaluations must be taken on a weekly basis until no more injury is observed. Assess four (4) randomly selected areas within each plot. Use visual ratings on a 0 to 5 scale:

- For foliage injury: 0 = no adverse effect on cladodes/fruit; 3 = moderate cladodes/fruit damage; and 5 = severe cladodes/fruit damage

Specify the type of injury (loss of cladodes, cladode burn, cladode twisting, chlorosis, fruit spotting, etc.) and record if any delay in maturity occurred. Please 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 Plant Pathologist 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 RFC.

**The final report and the raw data should be submitted to IR-4 within 60 days of last data collection.**

# Control of Stem and Fruit canker in Dragon Fruit

Project No. IS00445
Date: 06/2025

**USDA-NIFA FUNDING ACKNOWLEDGEMENT:**

IR-4 encourages researchers to publish the results obtained from this study, except data obtained from the screening of confidential pest control technologies. Any publication is required to acknowledge IR-4's financial and intellectual contributions.

Additionally, as IR-4 is funded through USDA-NIFA, we must acknowledge USDA support in accordance with 2 CFR Part 415. Sub-grantees **must** use the following acknowledgment for all competitive or capacity grants or initiatives supported by NIFA. This statement should be used in scientific publications, presentations, posters and related material:

***"This work is supported by the Interregional Project No. 4 (IR-4), project award no. 2022-79111-38469, from the U.S. Department of Agriculture's National Institute of Food and Agriculture."***

In addition, all publications and other materials, except scientific articles or papers published in scientific journals, **must** contain the following statement:

***"Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and should not be construed to represent any official USDA or U.S. Government determination or policy."***

**TRIAL SITE INFORMATION**

| Researcher | Field ID NO. | RFC |
|---|---|---|
| **Dr. Romina Gazis**<br>University of Florida<br>TREC, 18905 SW 280 Street,<br>Homestead, FL 33031-3314;<br>Ph: 786-217-9276<br>email: r.gazisseregina@ufl.edu<br>**Shipping address same as above** | IS00445.25-FL01 | SOR |

**RESEARCH FIELD COORDINATORS**

**SOR**: Kristen Searer-Jones, IR-4 Southern Region Field Office, Univ of Florida, 1642 SW 23 Drive Bldg 833, PO Box 110720, Gainesville, FL 32611-0720. Ph: 352-294-3979; email: k.searerjones@ufl.edu

**AMMENDMENTS MADE ON 05/23/2025:**

1. Number of applications for OMEGA 500 F changed from "up to 6 applications" to "4 applications" in the treatment table.

**AMMENDMENTS MADE ON 06/03/2025:**

1. Rate and use pattern changed for AC203: Application rate was changed from 24 fl. oz/A to 42 fl. oz/A, RTI was changed from 14-day to 7-day, and PHI:0-day was added.