Introduction to Fungicide Resistance and Its Management

FRAME Training Module 2 – Curriculum Guidelines For Module Delivery

Target Audience

Extension professionals, crop consultants, vineyard managers

Delivery and Learning Objectives

Content is designed to be delivered in a workshop format—either online or in person.

The activity consists of a presentation/seminar that provides an overview of pesticide (and fungicide) resistance, how it develops, and how to mitigate it.

Following the presentation, participants will complete the evaluation of two different spray programs, associated with vineyards that have lost disease control to fungicide resistance. This will test their ability to apply the concepts learned in the presentation against what they might see in their professional activities. The evaluation will be done in groups using a guided discussion.

Workshop Materials

Workshop Contents

- Pre-recorded FRAME presentation. The presentation is provided in .mp4 format.
- Pre-developed in-meeting slide deck including introduction slides, areas to input your own program logistics, QR code and link for pesticide label databases, and prompt questions for the interactive group work.
- FRAME Module 2 Scenario Answer Key (For Instructor Only)

Handouts for Participants

- FRAME Factsheet: *Fungicide Resistance Management in Vineyards*
- FRAME Factsheet: *Vineyard Disease Management – A Checklist*
- CAPCA article: *Fungicide Resistance Monitoring and Management in US Vineyards*
- Handout on *Accessing Fungicide Label Databases* (i.e., QR Code)
- FRAME Module 2: Breakout Room / Group Work Handout
- *All handouts are also available online at the FRAME Educator's webpage under Module 2:* https://framenetworks.wsu.edu/educator-information/.

Advertising the Workshop

When advertising this workshop, please use the following language in your advertising campaigns / webposts:

The contents of this workshop were developed as a part of the Specialty Crop Research Initiative Award No. 2024-51181-43184 titled "Pathogen Monitoring and Disease Management Within a Vineyard FRAMEwork,' from the U.S. Department of Agriculture's National Institute of Food and Agriculture. Please visit https://framenetworks.wsu.edu/ for more information.

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Workshop Flow and Tips

Pre-workshop Recommendations

Prior to setting up the workshop, determine whether you will be offering regional pesticide applicator recertification credits (or equivalent training credits). Check with your local agencies to determine their requirements regarding activity duration, attendance verification, and workshop learning validation.

You may also wish to establish a pre-meeting survey (completed at the time of registration) and a post-meeting survey to assist in collecting baseline information for your region. Potential survey questions are provided at the end of this document.

Workshop Agenda

- (5 minutes) Use the pre-developed slide deck to introduce yourself and the activity to the audience. This is also where you can add specific logistical information regarding regional licensing/credit requirements.
- (30 minutes) **Play the FRAME pre-recorded video**.
- (5 minutes) Open the floor for any audience questions.
- (35 minutes). **Begin the interactive session.** Groups will be given 2 powdery mildew spray programs and asked to evaluate those programs to determine 'what went wrong'. Information provided includes weather information, spray coverage information, and actual spray regimes. Participants can use the *Accessing Fungicide Label Databases* handout to look up product information
    - *Webinar*
        - Pre-assign attendees to breakout rooms at the start of the meeting to help maintain flow.
        - If using a moderator for each breakout room, pre-select individuals before the webinar to confirm their willingness and attendance.
    - *In-person*
        - We recommend pre-assigning individuals to working tables or providing group numbers (if not seated at tables) to facilitate quick group formation.
        - A designated group moderator may not be necessary, as meeting hosts can circulate to stimulate discussion.
    - *General Session Logistics*
        - Have each group take some time to read through their spray programs.
        - Using the handouts provided, and what they learned from the lecture, have them discuss what they feel are issues with their programs. Complete the workshop handout with the guiding questions.
        -
- (40 minutes) **Wrap – up.**
    - Bring everyone back together and have each group present 1 thing they felt was a problem in each program. We limit each group to 1 thing so that each group might get an opportunity to add to the discussion. The session host should use the *Scenario Answer Key* provided to ensure all intended points are made.

- Open the floor for final questions and answers.
- Display or provide any necessary logistical information regarding regional pesticide applicator recertification credit requirements.
- Provide post-meeting survey.

Supplemental Information / Details

Optional Pre-Meeting Survey

Provide a survey questionnaire and require attendees to complete the information as a prerequisite for joining the meeting (if a webinar), or that they complete prior to starting the workshop (in-person). Survey questions / information could include:

- Are you confident in your ability to develop fungicide spray programs that reduce the likelihood of resistance development in powdery mildew or Botrytis bunch rot?
  - Yes
  - No
  - I think so, but I still have questions
- What are the top 2 things you do to help prevent fungicide resistance in your spray operations? (open ended question).
- How frequently do you calibrate your sprayer?
  - A few times in the season as the canopy develops
  - Once a year
  - Every few years
  - I can't remember the last time my sprayers were calibrated
- How do you approach timing your powdery mildew or Botrytis bunch rot sprays (select one):
  - I start spraying as soon as there is vine growth (for example, 3 inch shoot growth), and continue spraying until past véraison
  - I start spraying as soon as I see the first signs of disease
  - I start spraying based on models or spore trap counts
  - I spray starting at specific vine growth stages for each disease, and stop spraying at specific vine development stages

Post-Meeting Survey

Provide a post-webinar survey to determine short-term impact. It might also be helpful to require participants to complete this survey before they can access a link or other information related to getting their pesticide applicator recertification credits. Potential questions include:

- Please list 3 things you have learned from this webinar. (open text question)
- Please list 2 things you might change for the upcoming growing season, whether it's on-farm practices or changes in consulting approaches. (open text question)
- Did you have any questions regarding the topics covered in this webinar that remain unanswered? (open text question)
- How likely are you to recommend this webinar, or future potential FRAME webinars to colleagues or clients? (select 1)
  - Very likely
  - Potentially, with reservation

    - Not likely
- Any suggestions for improving this specific-topic webinar? (open text question)