

# **Update on Soilborne Diseases and Other Concerns**

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**Charcoal rot**



# Macrophomina





**Fusarium wilt**

*Fusarium oxysporum*  
f. sp. *fragariae*







**Diagnosis:**  
**Macrophomina**  
**Fusarium**  
**Verticillium**

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# Macrophomina: May 23





# Macrophomina: June 21





# Macrophomina: July 5





# Macrophomina: July 26





## **Mac./Fus.: The bad news**

- ***Macrophomina* and *Fusarium* both very damaging.**
- **Spreading in fields, counties, state.**
- **No truly resistant strawberry cultivars.**
- **Alternative fumigants not completely effective.**
- **Bed fumigations not sufficient.**
- **Post-plant fungicides do not work.**



# **Mac./Fus.: The good news for Strawberry Growers**

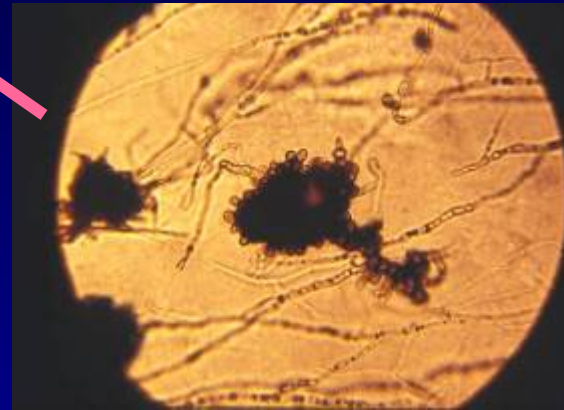


# Mac./Fus.: The good news for Everybody Else

- *Fusarium* is host-specific to strawberry.
- *Macrophomina* from strawberry may have strawberry as a preferred host.



# Verticillium wilt





# Management: soilborne diseases

- **Site selection:** avoid infested fields.
- **Crop rotation:** plant non-hosts.
- **Pre-plant fumigation:** still useful.
- **Sanitation:** don't move infested mud, contaminated equipment.
- **“Resistance”:** use tolerant (?) cultivars.
- **Production:** reduce plant stress.







<b>Treatment</b>	<b>% leaf w/ p. mildew</b>
<b>Merivon 6 oz</b>	<b>0.20</b>
<b>Quadris Top 14 fl oz</b>	<b>0.92</b>
<b>Rally 5 oz / Torino 3.4 fl oz</b>	<b>1.05</b>
<b>Merivon 7 oz</b>	<b>2.09</b>
<b>Fontelis 1 pt</b>	<b>2.18</b>
<b>Quintec 6 fl oz</b>	<b>2.23</b>
<b>IKF309 4 fl oz / Quintec 6 fl oz</b>	<b>2.30</b>
<b>Torino 3.4 fl oz / Rally 5 oz</b>	<b>2.45</b>
<b>Fontelis 1.5 pt</b>	<b>2.70</b>
<b>IKF309 5 fl oz</b>	<b>2.73</b>
<b>Untreated control</b>	<b>8.02</b>
LSD (P = 0.05)	0.69



<b>Treatment</b>	<b>% leaf w/ p. mildew</b>
<b>Tavano 13 fl oz</b>	<b>2.90</b>
<b>Fracture 24.4 fl oz / Pristine 20 oz</b>	<b>2.90</b>
<b>Rally 5 oz</b>	<b>2.96</b>
<b>Rally 5 oz / Quintec 6 fl oz</b>	<b>3.20</b>
<b>IKF5411 17 fl oz</b>	<b>3.64</b>
<b>Tavano 6 fl oz</b>	<b>4.07</b>
<b>Fracture 18.2 fl oz + Q. Top 14 fl oz</b>	<b>4.94</b>
<b>Merivon 4 oz</b>	<b>5.14</b>
<b>Fracture 18.2 fl oz / Switch 14 oz</b>	<b>5.25</b>
<b>IKF309 4 fl oz</b>	<b>6.38</b>
<b>Untreated control</b>	<b>8.02</b>
<b>LSD (P = 0.05)</b>	<b>0.69</b>





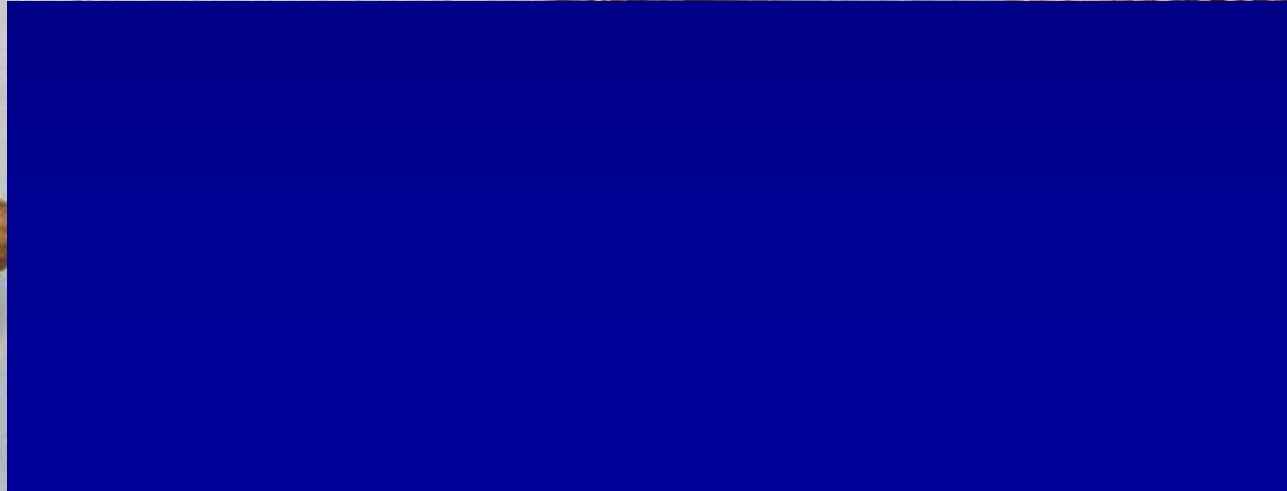
# **Botrytis fruit rot fungicides**

- **2013 trials: no significant differences in percent rot:**
  - Botector, Fontelis, Fracture, Merivon, Pristine, Quadris Top, Switch, Tavano, experimentals, untreated
- **Recent field surveys (Monterey/Santa Cruz): some indication of resistance to Cabrio, Elevate, and Endura (but not to Rovral) [A. D. Pokorny]**

# Diagnosis

- **Biotic diseases / Abiotic problems: symptoms may be similar.**
- **Factors to check:**
  - Time of year
  - Field distribution
  - Environmental conditions

















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