

## Apple Diseases: Observation in 2020 and Recommendations for 2021 (Emphasizing Bitter Rot)

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## Major Diseases of Apples: South

- Fire blight (*Erwinia amylovora*)
- Scab (*Venturia inaequalis*)
- Rusts (*Gymnosporangium* spp.)
- Sooty blotch (*Peltaster fructicola*, ....)
- Flyspeck (*Zygophiala jamaicensis*)
- Fruit rots
  - ❖ Bitter rot (*Colletotrichum* spp.)
  - ❖ Black rot (*Botryosphaeria obtusa*)
  - ❖ white rot (*Botryosphaeria dothidea*)

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**Apple fire blight symptoms**

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## Apple Fire Blight: Management

- Pruning: Winter (blighted shoots & cankers); Summer (shoots, sunny day)
- Chemical applications
  - ❖ Copper: at silver tip
  - ❖ Streptomyces:
    - ✓ During bloom; follow MARYBLYT program or every 4-5 days
    - ✓ After hailstorms
    - ✓ Do not apply more than 4 times
  - ❖ Apply Apogee at late bloom

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**Spring fungal diseases of apples**

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**Disease cycle of apple scab**

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## Fungicide Resistance of Apple Scab Fungus – 2012

- Resistant to strobilurin fungicides (Sovran), thus other strobilurins (**FRAC 11**)
- Resistant to strol-inhibitor (DMI) fungicides (Rally), thus other DMIs (**FRAC 3**)
- Resistant to Doline (**FRAC M**)

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## Apple Scab in Illinois: Managing

- Mowing leaves on the floor
- Apply urea (5%) [ $\sim$  40 lbs urea in 100 gal water per acre]
- Spray crabapples next to your orchard
- Spraying trees from green tip to 10 days after petal fall is essential

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## Apple Diseases Management: 2021

- **Spring Diseases (scab, rusts)**
  - ❖ **Green-Tip:** Mancozeb + Inspire Super
  - ❖ **½-Inch Green:** Mancozeb + Fontelis
  - ❖ **Tight Cluster:** Mancozeb + Inspire Super
  - ❖ **Apple Pink:** Mancozeb + Fontelis
  - ❖ **Apple Bloom:** Mancozeb + Inspire Super
  - ❖ **Petal Fall:** Mancozeb + Fontelis
  - ❖ **1<sup>st</sup> Cover:** Mancozeb + Inspire Super

Mancozeb = Manzate PRO Stik  
All sprays at 7-day interval

Mancozeb: 3 lb/A; Inspire Super: 12 fl oz/A;  
Fontelis: 20 fl oz /A

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## Summer fungal diseases



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## Development of Bitter Rot

- A small gray-brown fleck or circular brown spot is the first symptom
- Enlarging lesions remain circular, become slightly sunken in the center
- When the lesions are about 1 inch in diameter, small raised fruiting bodies (acervuli) form near the center of the lesion



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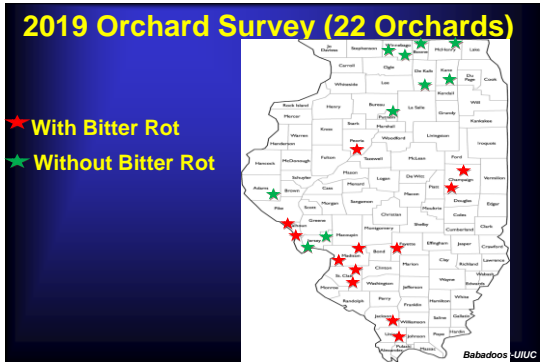
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## Research on Bitter Rot

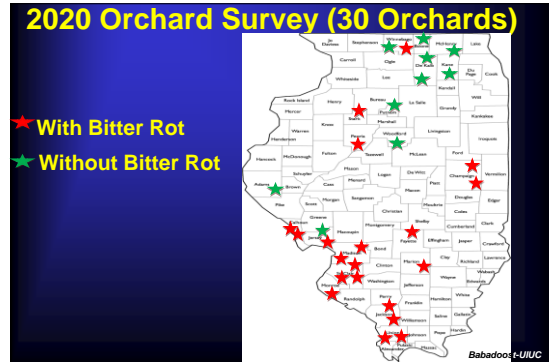
- Field surveys in 2019 & 2020
- Identification of pathogen species
- Laboratory fungicide testing
- Orchard fungicide testing 'Honey Crisp': for all summer diseases

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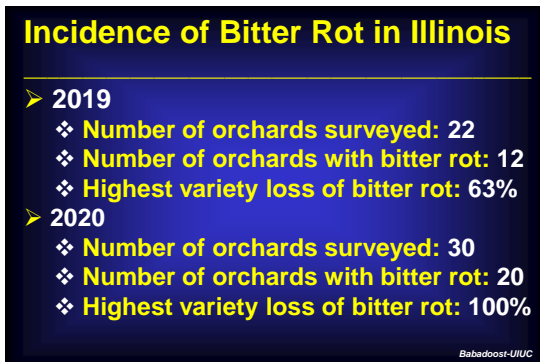
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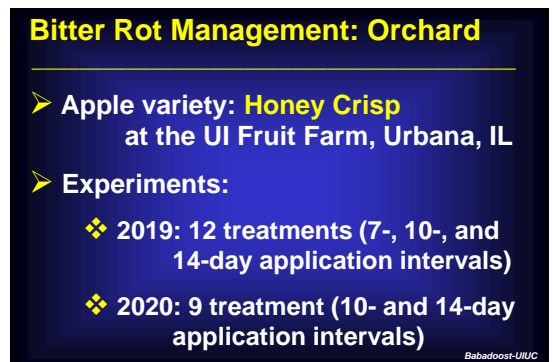
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### Apple Summer Disease Management in Illinois in 2019

Treatment (Rate/Acre)	% Fruit with Bitter Rot	Treatment (Rate/Acre)	% Fruit with Bitter Rot
Control (untreated)	51.25	Merivon 4.18SC (5.5 fl oz) + captan 80WDG (5 lb) – 10 Day	0.00
Captan 80WDG (5 lb) + NanoPro (4 oz) – 7 Day	0.00	Merivon 4.18SC (5.5 fl oz) + captan 80WDG (5 lb) – 14 Day	0.00
Reliant (4 pt) + NanoPro (4 oz) – 7 Day	22.20	ProPhyt (4 pt) – 10 Day	24.87
Aprovia 0.83SC (7 fl oz) – 7 Day	0.00	ProPhyt (4 pt) + captan 80WDG (5 lb) – 10 Day	0.00
Merivon 4.18SC (5.5 fl oz) – 7 Day	0.00	Ziram 76DF (6 lb) + captan 80WDG (5 lb) – 7 Day	0.00
Merivon 4.18SC (5.5 fl oz) + captan 80WDG (5 lb) – 7 Day	0.00	Topsin-M 70WSB + captan 80WDG (5 lb) – 10 Day	0.00

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### Apple Summer Disease Management in Illinois in 2020

Treatment (Rate/Acre)	% Fruit with Bitter Rot			
	7/25	8/8	8/22	9/05
Control (untreated)	5	20.33	67	100
Merivon 4.18SC (5.5 fl oz) + captan 80WDG (5 lb) – 10 Day	0	0	0	0
Merivon (5.5 fl oz) + captan (5 lb) – 14 Day	0	0	0	0
Merivon (5.5 fl oz) + captan (5 lb) – Alt Flint (2.75 fl oz) + captan (5 lb) – 14 Day	0	0	0	0
Aprovia 0.83SC (7 fl oz) + captan (5 lb) – Alt Flint (2.75 fl oz) + captan (5 lb) – 14 Day	0	0	0	0
Merivon (5.5 fl oz) + captan (5 lb) – Alt ProPhyt (4 pt) + captan (5 lb) – 14 Day	0	0	0	0
Merivon (5.5 fl oz) + captan (5 lb) – Alt Ziram 76DF (6 lb) + captan (5 lb) – 14 Day	0	0	0	0
Topsin - M (1 lb) + captan (5 lb) – Alt Flint (2.75 fl oz) + captan (5 lb) – 14 Day	0	0	0	0

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### Management of Summer Disease in Honey Crisp in Illinois: Fungicides

Fungicide	FRAC	PHI (day)
Aprovia	7	30
Captan	M	0
Flint	11	14
Merivon	7, 11	0
ProPhyt	33 (P 07)	0
Topsin-M	1	1
Ziram	M	14

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### Managing Bitter Rot and other Summer Disease of Apples in Illinois

- Do not allow bitter rot in your orchard
- Cultural practices are essential: Remove mummies and dead woods and burn them before bloom
- Use effective fungicides: Begin at petal fall

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### Apple Diseases Management

- Summer Diseases (Fruit Rots and Sooty Blotch/Flyspeck)
  - ❖ Merivon + captan: Alternated with Topsin-M + captan OR
  - ❖ Merivon + captan: Alternated with ProPhyt + captan
  - ❖ Begin summer disease management at petal fall
  - ❖ Spray at 10- or 14-day intervals

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### Thanks for Your Attention

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