Season-Long Management of Apple Diseases in Illinois

Mohammad Babadoost
University of Illinois
babadoos@illinois.edu
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1

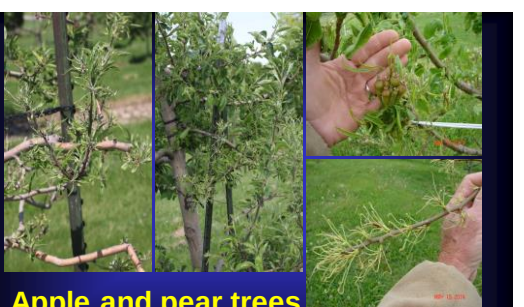
Apple Diseases in Illinois

- Abiotic problems (disorders)
- Annually-occurring diseases
- Emerging diseases

2

Abiotic Diseases (Disorders) of Apples

3



Apple and pear trees affected by glyphosate

4

Leaf yellowing of Honeycrisp

5

Annually-Occurring Biotic Diseases

6

Common Biotic Diseases of Apples

- Bacterial diseases: fire blight
- Spring fungal diseases: scab, rusts, powdery mildew
- Summer fungal diseases: sooty blotch/flyspeck, fruit rots (bitter rot, black rot, white rot)

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Fire Blight of Apples in Illinois

- Pathogen: *Erwinia amylovora*
- Fire blight epidemics in Illinois: in 2008 & 2009
- We investigated resistance of the bacterium to chemicals
- Main symptom: shoot blight
- No resistance to copper and antibiotics (i.e., streptomycin)

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9

Managing Fire Blight of Apple

- Copper at silver tip
- Streptomycin during bloom and after hail or serious wind storm
- Important notes:
  - Use MARYBLIT program
  - No resistance of *E. amylovora* to copper or streptomycin in Illinois
  - No more than 4 streptomycin appli.
  - Kasumin (Kasugamycin) registered

10

11

Fungicide Resistance of Apple Scab Fungus in 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 Dodine (FRAC M)

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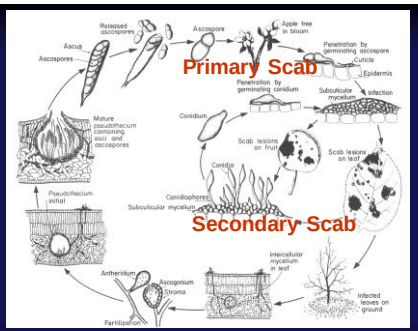
12



Disease cycle of apple scab

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Managing Apple Scab in Illinois

- Mowing leaves on the floor
- Apply urea (5%) [~ 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

- 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
  - 1st Cover: Mancozeb + Inspire Super

Mancozeb = Dithane 75DF
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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Mancozeb for Apple: Label

- Pre-Bloom/Bloom Use:
  - ½-Inch green – 10 days post bloom only
  - 6 lb product per spray per acre
  - 24 lb product per acre per season (4 spr.)
- Extended Application Schedule:
  - ½-Inch green – 77 days PHI
  - 3 lb product per spray per acre
  - 21 lb product per acre per season (7 spr.)

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Fungicides for Spring Diseases

Fungicide	Rate/ Acre	Max/ Season	FRAC	PHI (day)
Dithane 75DF	3 lb	21 lb	M3	77
Inspire Super	12 fl oz	48 fl oz	3+9	14
Fontelis	20 fl oz	60 fl oz	7	28

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Efficacy of the Fungicides for Spring Diseases of Apples

Fungicide	Scab	Powdery mildew	Rust	FRAC
Mancozeb	G	O	G	M
Inspire Super	E	E	E	3, 9
Fontelis	E	E-G	G	7

O = none; G = good; E = excellent

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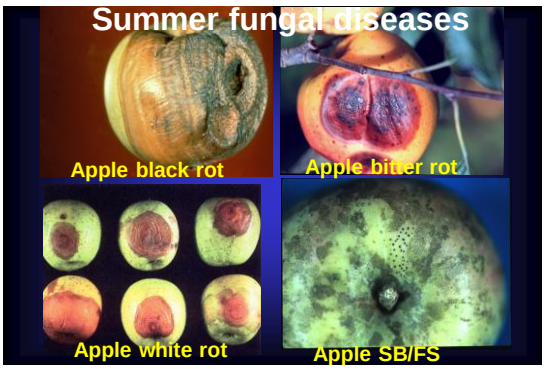
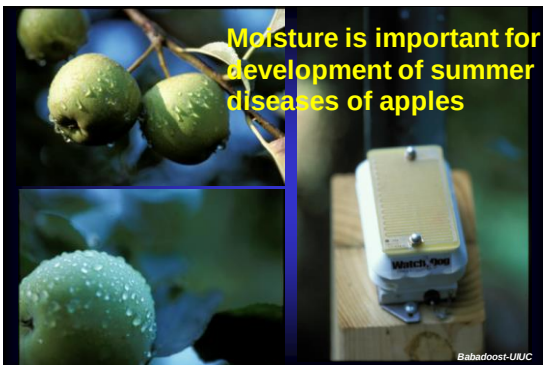
18



19



20

21

Fruit Rots of Apples: Trials

- 2017
  - Calhoun
    - ✓ Gala (data collected - good)
    - ✓ Jonathan (fire blight: no data)
  - Rockford
    - ✓ Brushing Gold (harvest: no data)
- 2018
  - Rockford: Effectively controlled
  - Edwardsville: Complete failure

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Fruit Rots of Apples: Trials

- 2019
  - Urbana, UIUC Research Farm
    Honey Crisp (excellent results)
  - An experiment with 12 treatments:
    1 control + 11 fungicide treatments
  - First application: 20 May (petal fall);
    last application: 19 August
    (3 weeks before harvest)

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Management of Summer Disease in Honey Crisp in Illinois in 2019

- Up to 16 trees for each treatment
- Disease data at the first observation of the disease (28 July) and 3 weeks after the final spray (9 September)

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Management of Summer Disease in Honey Crisp in Illinois in 2019

- Each time, 4 trees were evaluated for each treatment
- In each tree, 60 fruits were evaluated: 5 fruits on each sides of east, north, west, and south at upper, meddle, and lower canopy

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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

26

Management of Summer Disease in Honey Crisp in Illinois in 2019

- Only BITTER ROT developed in the experimental trees
- It was drier than normal in July in the area
- Further efficacy trials are needed for reliable recommendation

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27

Management of Summer Disease in Honey Crisp in Illinois in 2019

- Effective fungicides: Aprovia, captan, and Merivon

Fungicide	FRAC	PHI (day)
Captan	M	0
Topsin-M	1	1
Aprovia	7	30
Merivon	7, 11	0

28

Managing Summer Disease of Apple

- Cultural practices: Remove monies and burn dead woods by bloom time
- Suggested fungicides for summer diseases:

  Merivon + captan *alt* Topsin-M + captan
  Application from petal fall until 2 weeks before harvest at 10- to 14-day intervals

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Emerging Apple Diseases in Illinois

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Emerging Apple Diseases in Illinois

- Bitter rot of apples
- Glomerella leaf spot
- Phytophthora collar, crown, and root rots

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32

Incidence of Bitter Rot in Illinois

- Mainly in southern Illinois
- Affected cultivars: Honey Crisp, Empire, Jonathan, Gala, Golden Delicious, McIntosh

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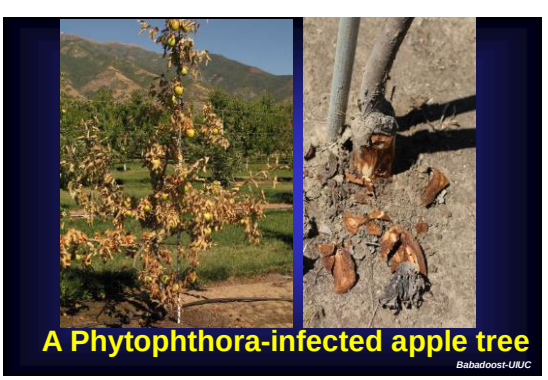
33

34



35

36