Apple Scab update

Janet van Zoeren

Lake Ontario Fruit Program

Integrated Pest Management specialist

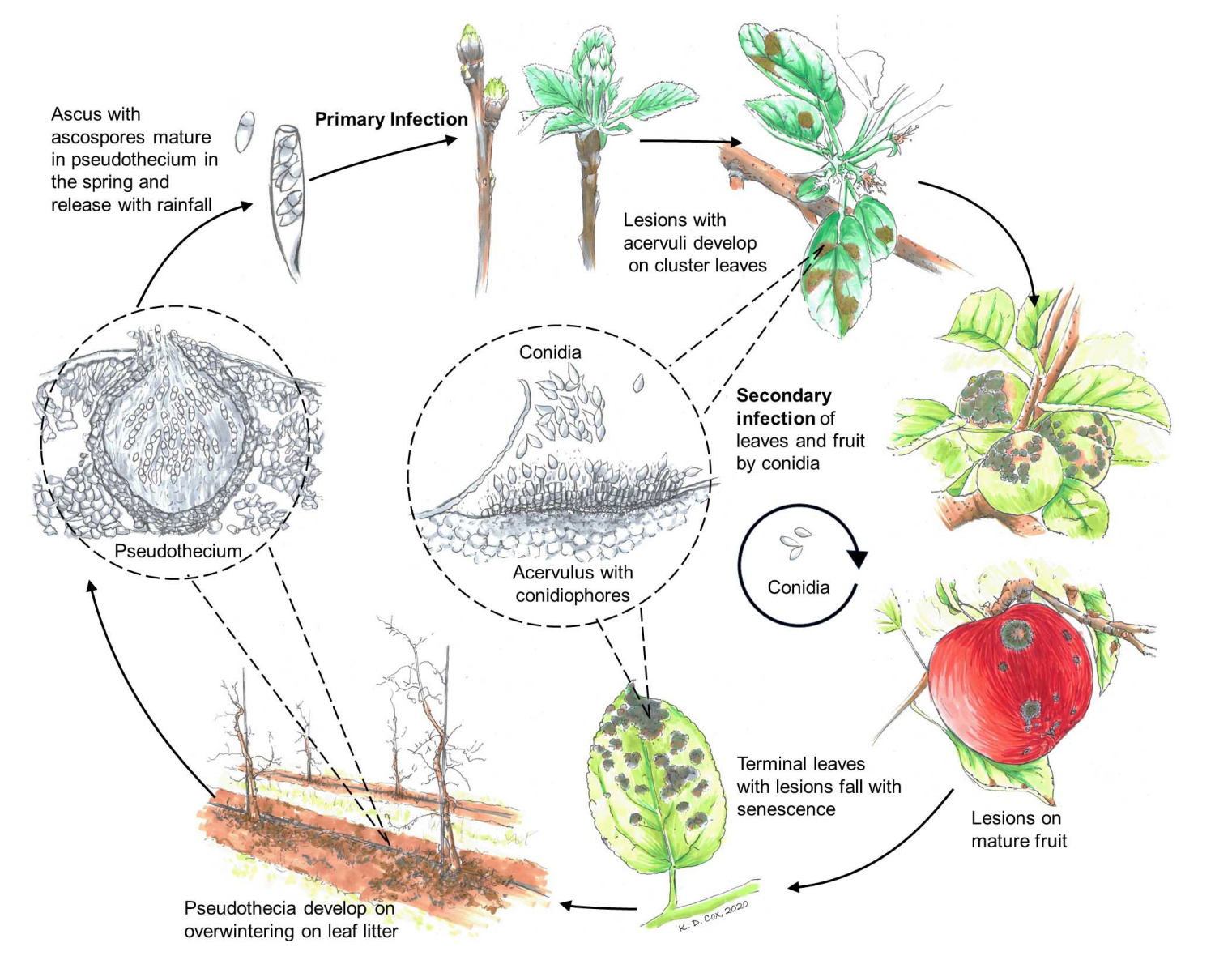
Understanding your enemy

- *Venturia inaequalis* – fungal disease
  - Prefers cool wet temperatures

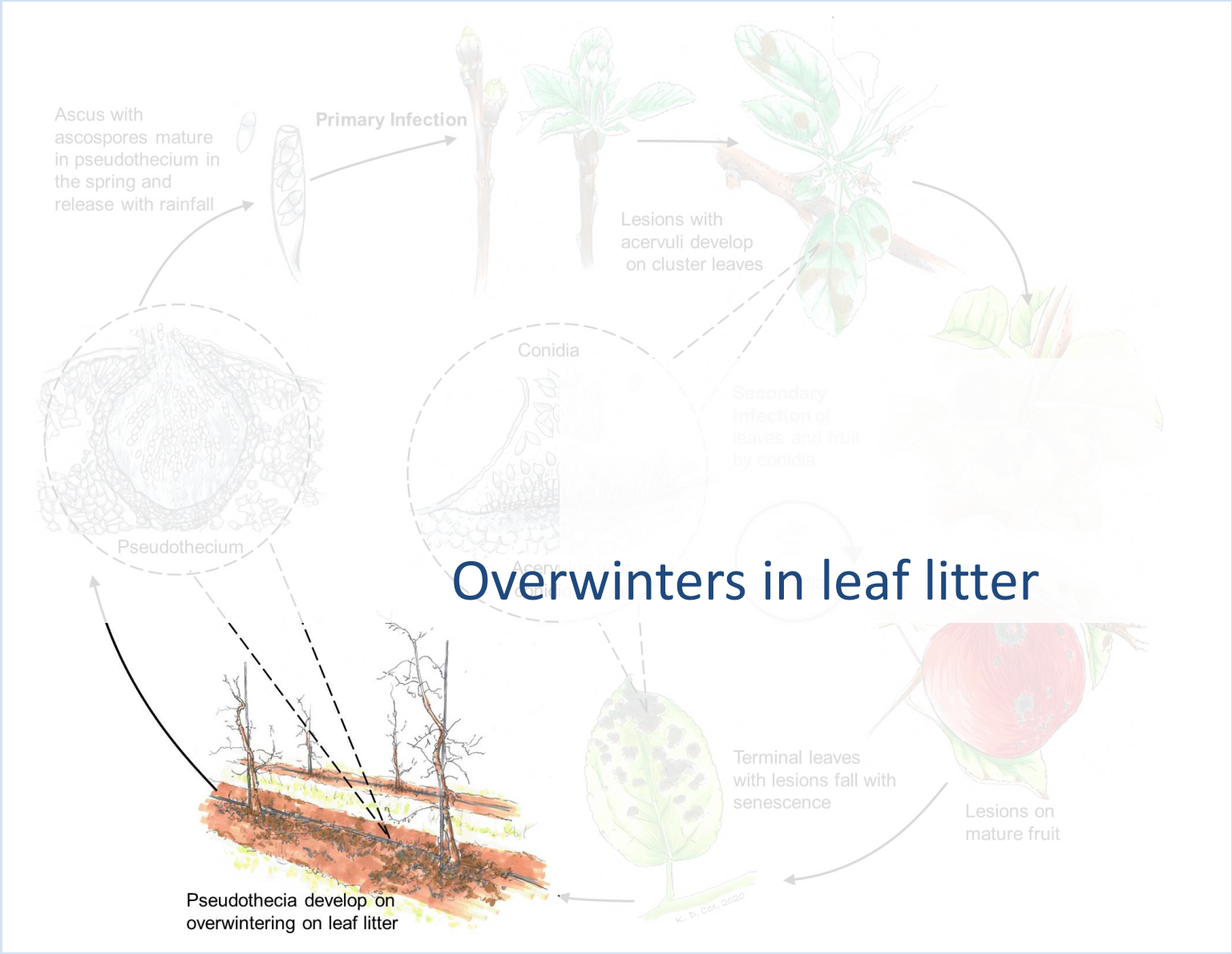
- 10+ fungicide applications/year

- Fungicide resistance for nearly all single-site chemistries

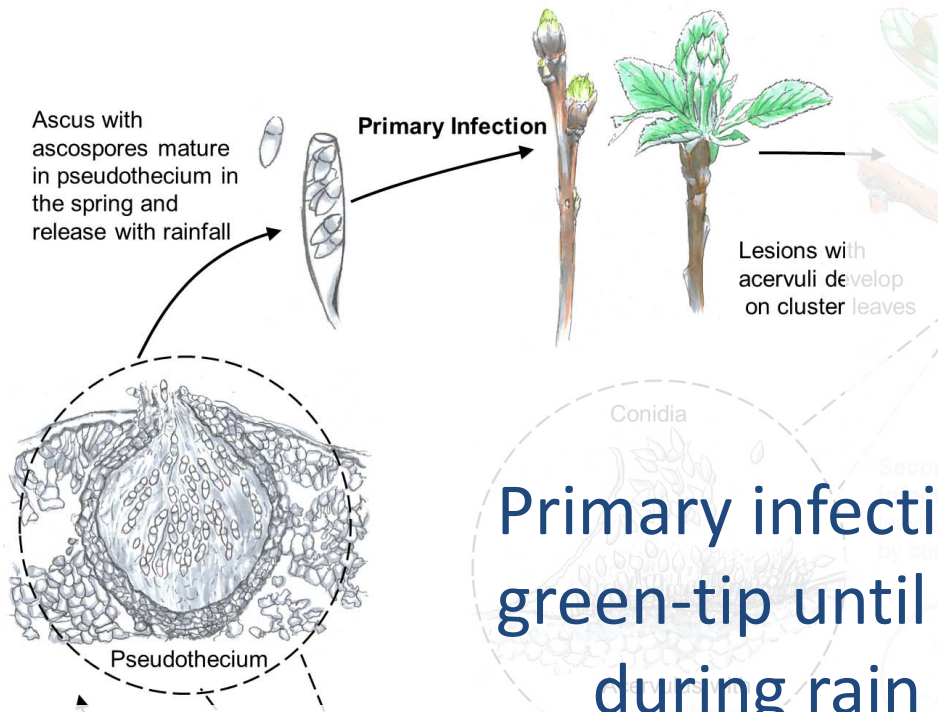
Understanding your enemy



Understanding your enemy

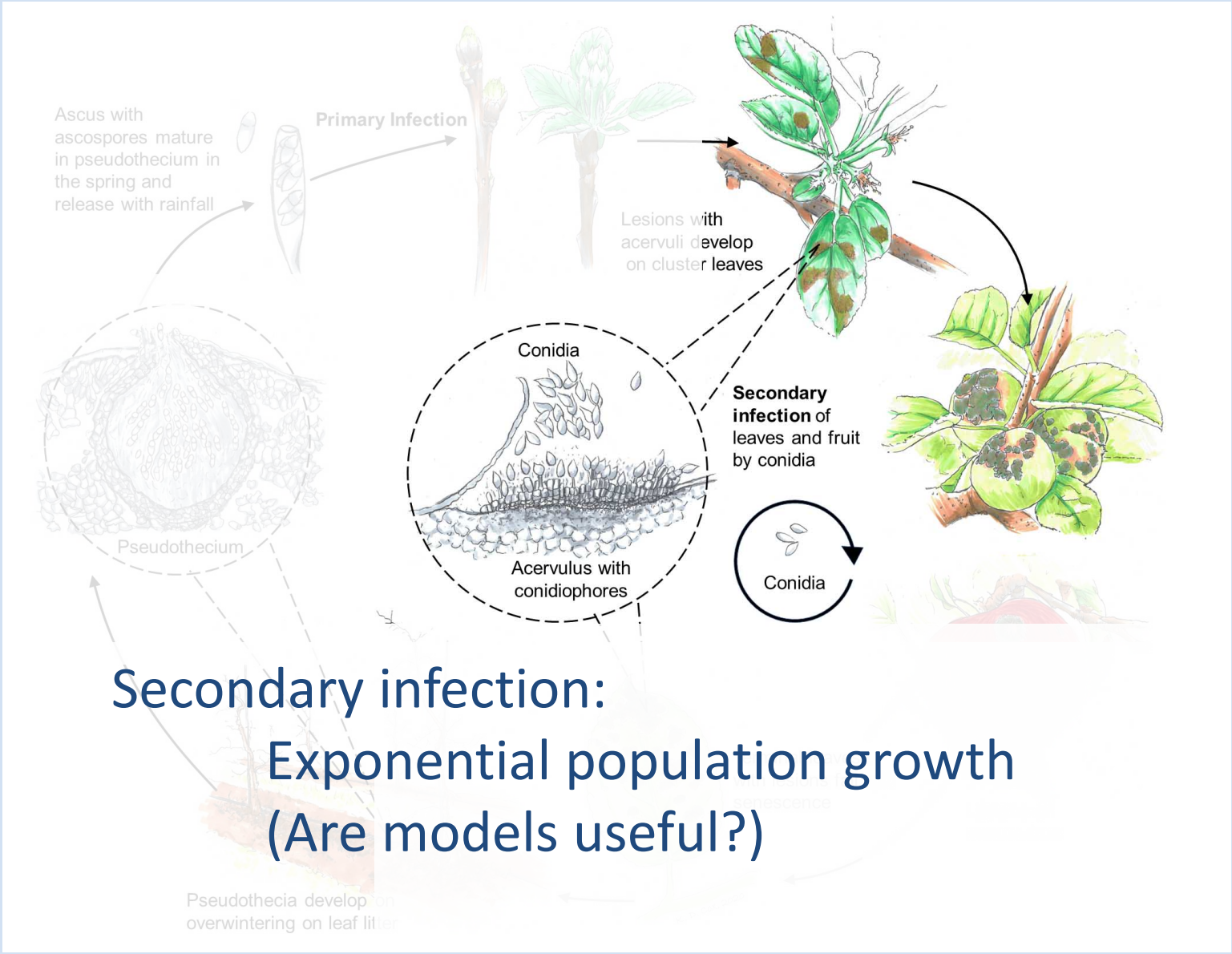


Understanding your enemy



Primary infection:
green-tip until after petal fall
during rain events
(predictable with model)

Understanding your enemy

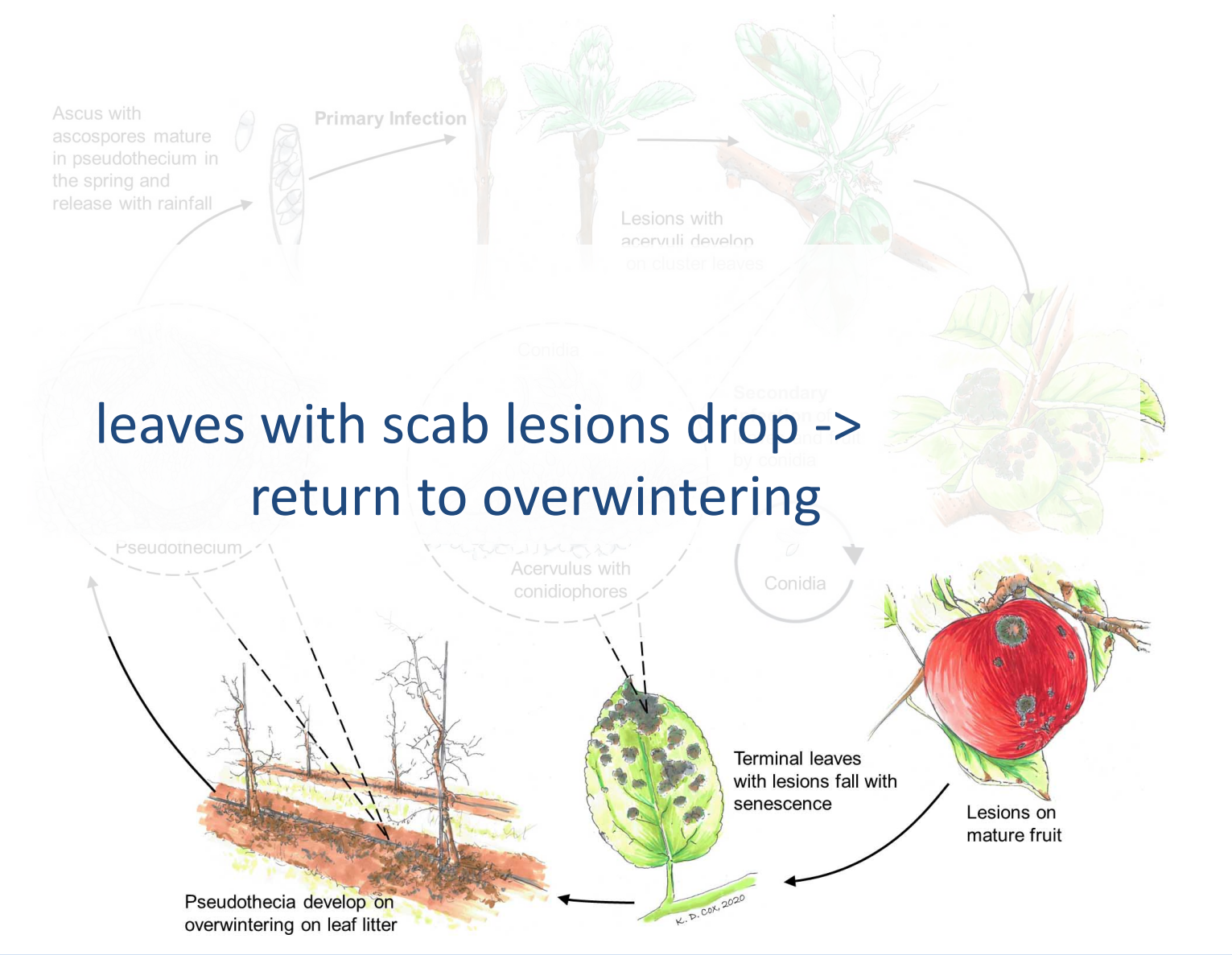


Secondary infection:

Exponential population growth

(Are models useful?)

Understanding your enemy



Understanding your enemy

- Spreads locally = can be managed locally!

Management recommendations –

Management recommendations – resistant varieties

Known resistance gene

- Enterprise, Freedom, Goldrush, Jonafree, Liberty and more.

https://blogs.cornell.edu/applevarietydatabase/disease-susceptibility-of-common-apples/
(or google search “Cornell apple variety database”)

Management recommendations – sanitation

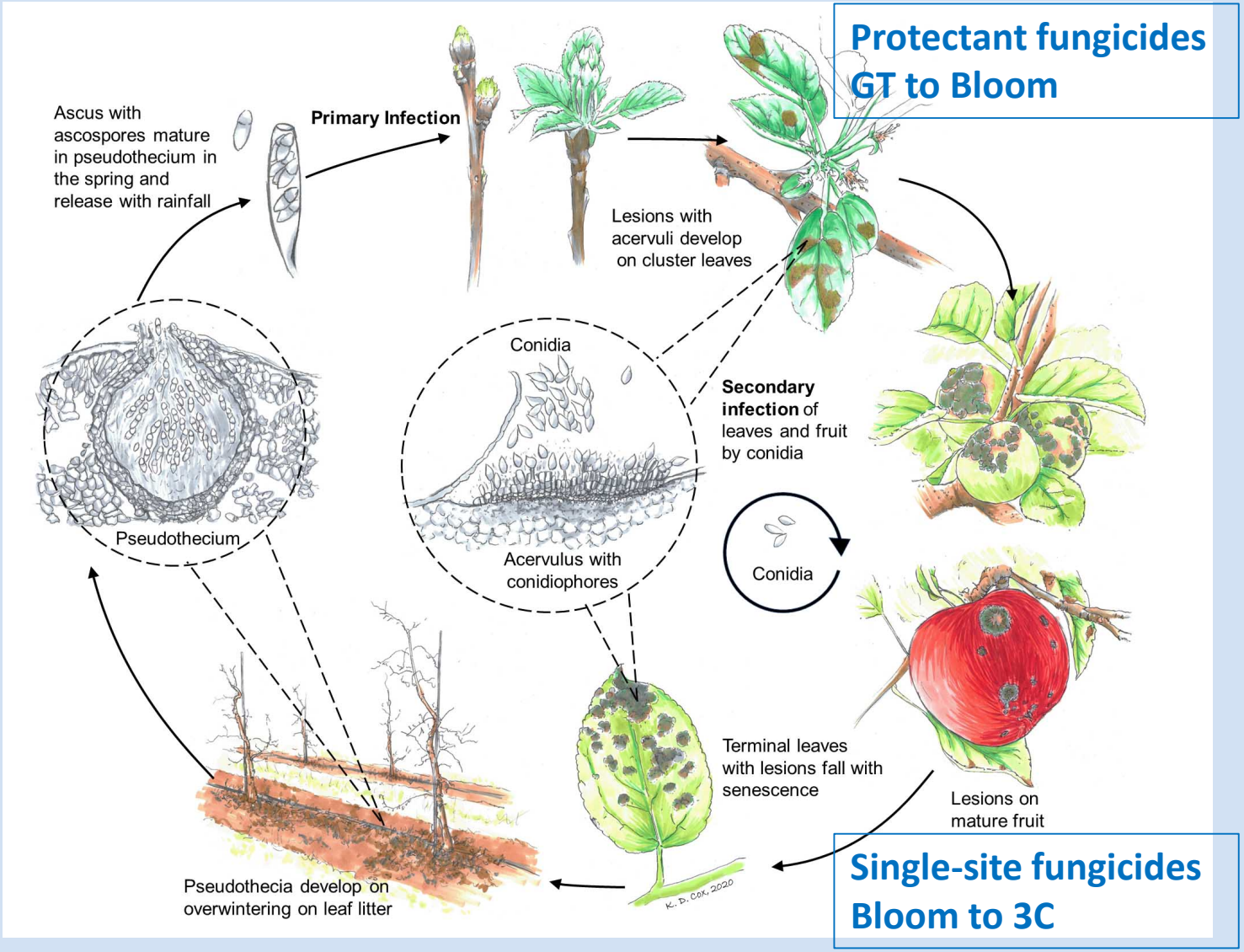
Sanitation: remove & destroy all dead plant material (fruit drops, leaf litter, prunings) to remove inoculum

Fall or spring **Leaf Shredding** (rake into middles, scalp the sod) or **Urea application** (40lbs/100) or **Dolomitic lime** (2.5 tons/Acre)

Delayed Dormant Copper application at silver tip (15% MCE)

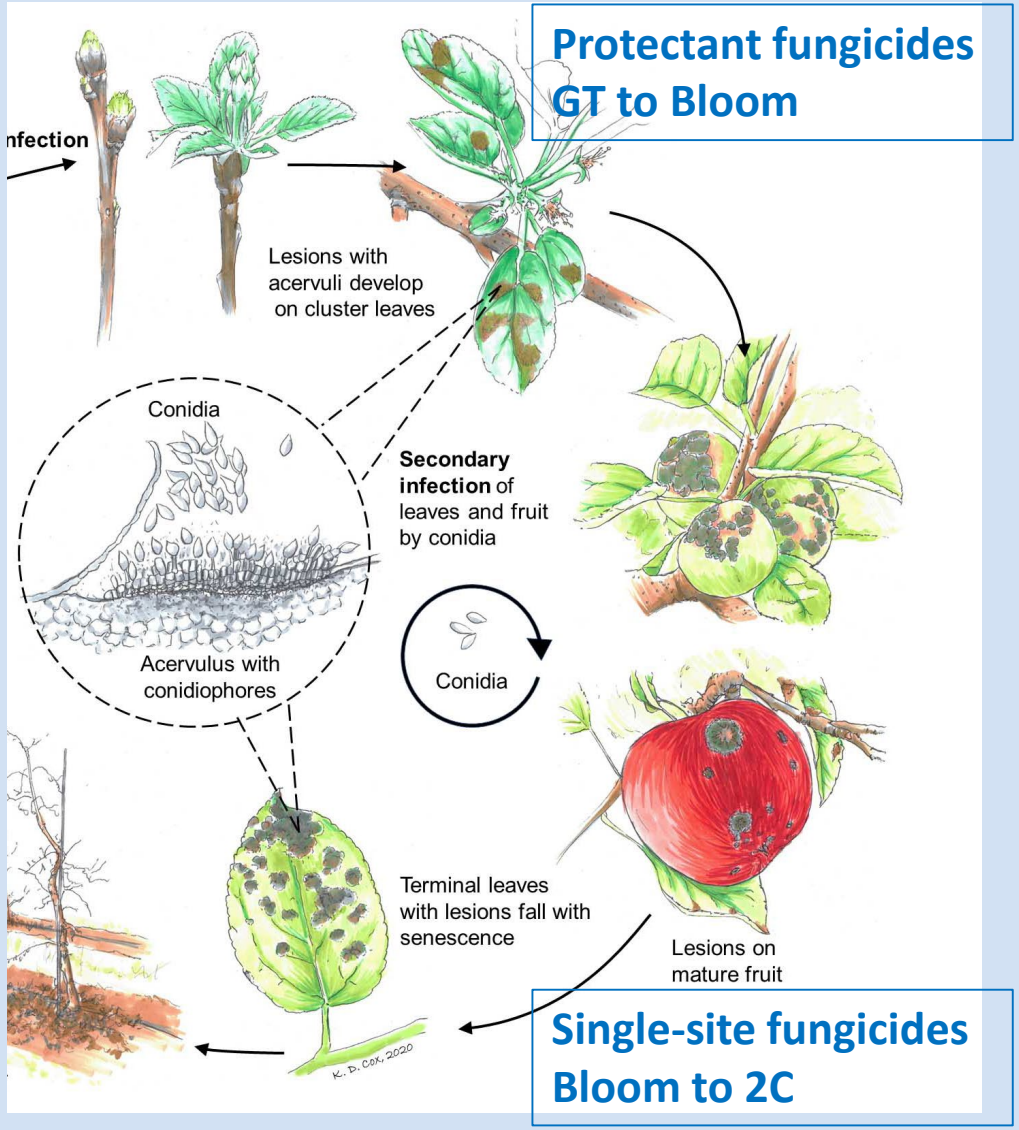
Management recommendations – spray timing

- Primary apple scab:
  - green tip to petal fall
  - Protectant fungicides
  - captan, mancozeb, sulfur, dodine
- Secondary apple scab:
  - bloom to 2-3rd cover
  - Single site fungicides
  - DMIs, QoIs, SDHIs



Management recommendations – spray timing

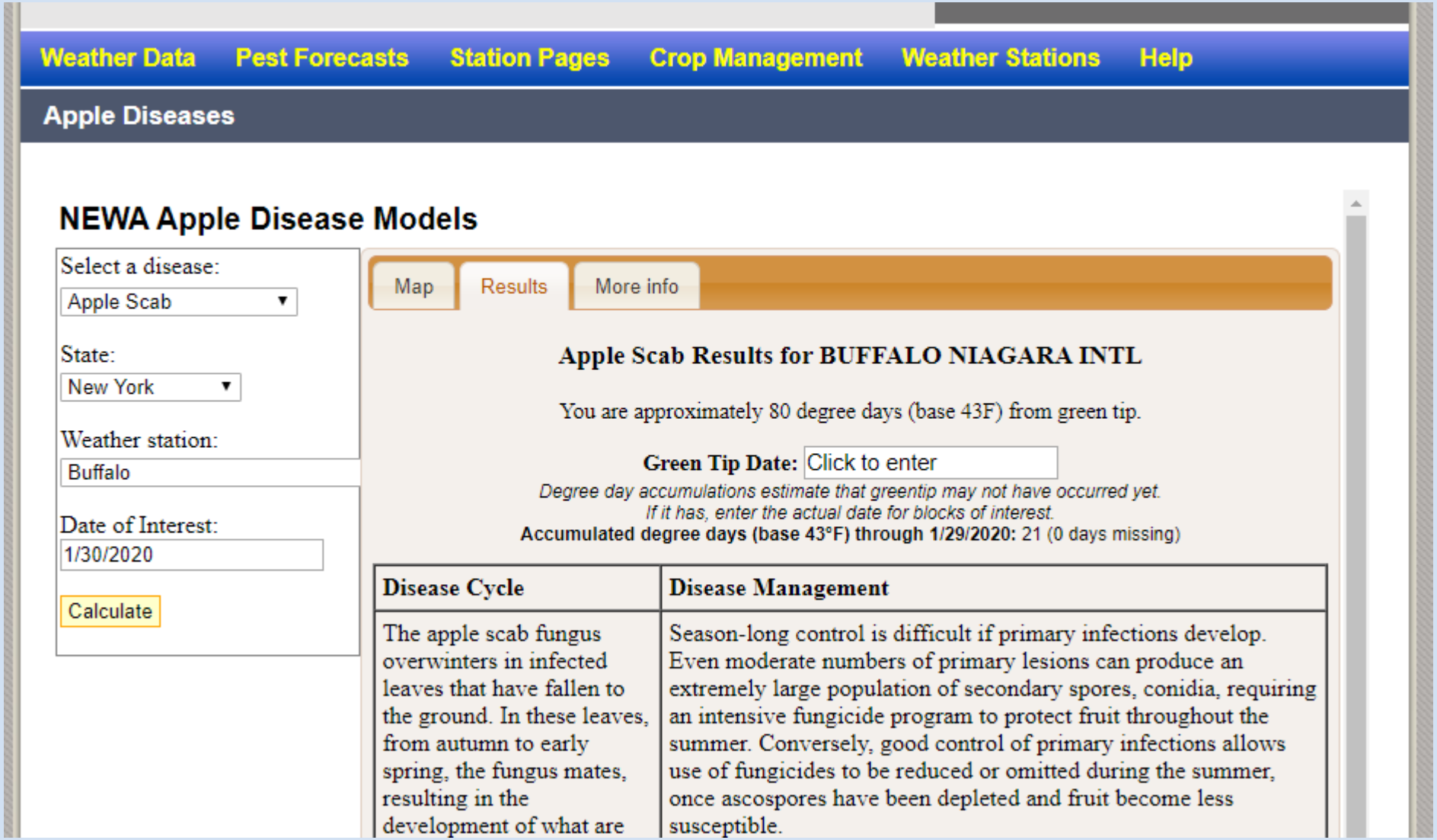
- Apple scab forecasting
  - Predicts ascospore maturity, ejection, & infection events - **conditions for 1^{o} infection**
  - 2^{o} apple scab "technically" not predicted
  - NEWA / RIMpro



Management recommendations – spray timing

- **NEWA network**
  - Google “New York NEWA apple disease model”

Management recommendations – spray timing



Management recommendations – spray timing

Map | Results | More info

Apple Scab Results for Peru

The Ascospore Maturity degree day model begins at 50% green tip on McIntosh flower buds. To recalculate ascospore maturity for your orchard, enter your green tip date:

Green Tip Date: 4/18/2015

Ascospore Maturity Summary

	Past	Past	Current	Ensuing 5 Days				
Date	5/20	5/21	5/22	5/23	5/24	5/25	5/26	5/27
Ascospore Maturity	78.0%	82.0%	84.0%	86.0%	90.0%	93.0%	95.0%	97.0%
Daily Ascospore Discharge	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.6%	34.8%
Cumulative Ascospore Discharge	23.6%	23.6%	23.6%	23.6%	23.6%	23.6%	27.2%	62.0%

Ascospore Maturity Graphs

Management recommendations – spray timing

The Ascospore Maturity model predicts that 95% of the ascospores have matured. At this point, essentially all ascospores will be released after a daytime rain of greater than 1/10 inch with temperature above 50°F.

Infection Events Summary

	Past	Past	Current	Ensuing 5 Days				
Date	5/20	5/21	5/22	5/23	5/24	5/25	5/26	5/27
Infection Events	No	No	No	No	No	Combined	Yes	Combined
Days to Symptoms	-	-	-	-	-	-	9-10	-
Average Temp (F) for wet hours						64	64	74
Leaf Wetness (hours)	0	0	0	0	0	8	5	7
Rain Amount	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.04

Download Time: 5/28/2015 23:00

Management recommendations – spray timing

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Download Time: 5/28/2015 23:00

Management recommendations – spray timing

- Provides **warnings** of **possible** infection events
- Based on algorithms from local satellite data
- The model does not replace common sense!

Management recommendations – spray timing

- Considerations for scab models:
  - **Models predict favorable conditions: apply at the highest risk periods not every infection**
  - Avoid spraying only **after** an infection period (high selection for resistance)

Ascospore Maturity Summary

	Past	Past	Current	Ensuing 5 Days				
Date	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31
Ascospore Maturity	90.0%	93.0%	95.0%	97.0%	98.0%	98.0%	99.0%	99.0%
Daily Ascospore Discharge	0.0%	0.0%	3.6%	34.8%	17.9%	0.0%	0.0%	9.6%
Cumulative Ascospore Discharge	23.6%	23.6%	27.2%	62.0%	79.9%	79.9%	79.9%	89.5%

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Date	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31
Infection Events	No	Combined	Yes	Combined	Yes	No	Combined	Combined
Days to Symptoms	-	-	9-10	-	9-10	-	-	-
Average Temp (F) for wet hours		64	64	74	69		72	52
Leaf Wetness (hours)	0	8	5	7	6	0	6	24
Rain Amount	0.00	0.05	0.01	0.04	0.07	0.00	0.25	0.42

Download Time: 6/1/2015 23:00

Thank you for your time!

Private Applicator CORE training:

Orleans CCE office

March 18th + 20th (Wed and Fri) 8am-12:30

Exam March 24th – registration at 8:30

Special Permit Training:

April 7th Wayne County

April 8th Orleans County

DATES TENTATIVE

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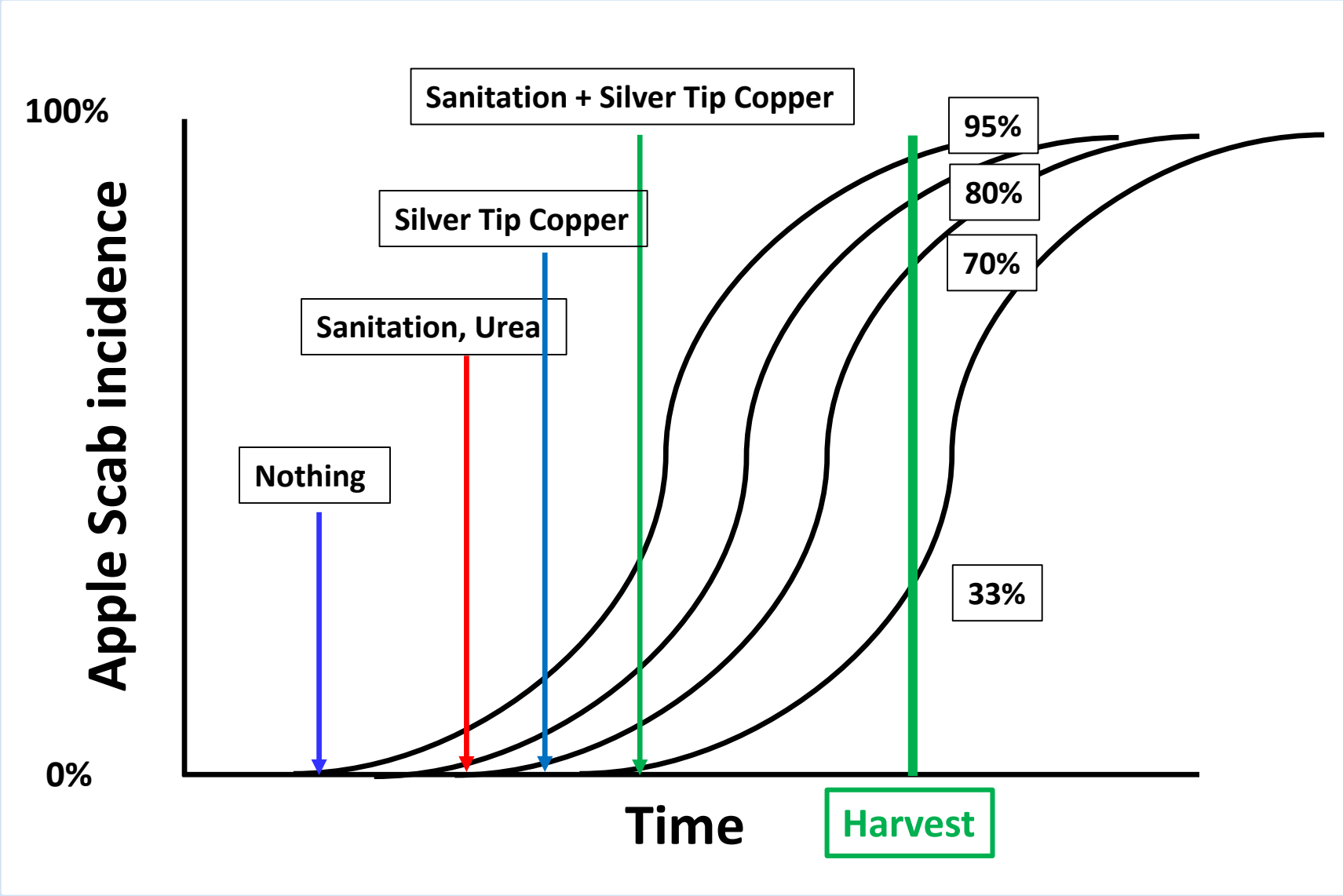
Management recommendations



Management recommendations