

Apple Scab update

Janet van Zoeren

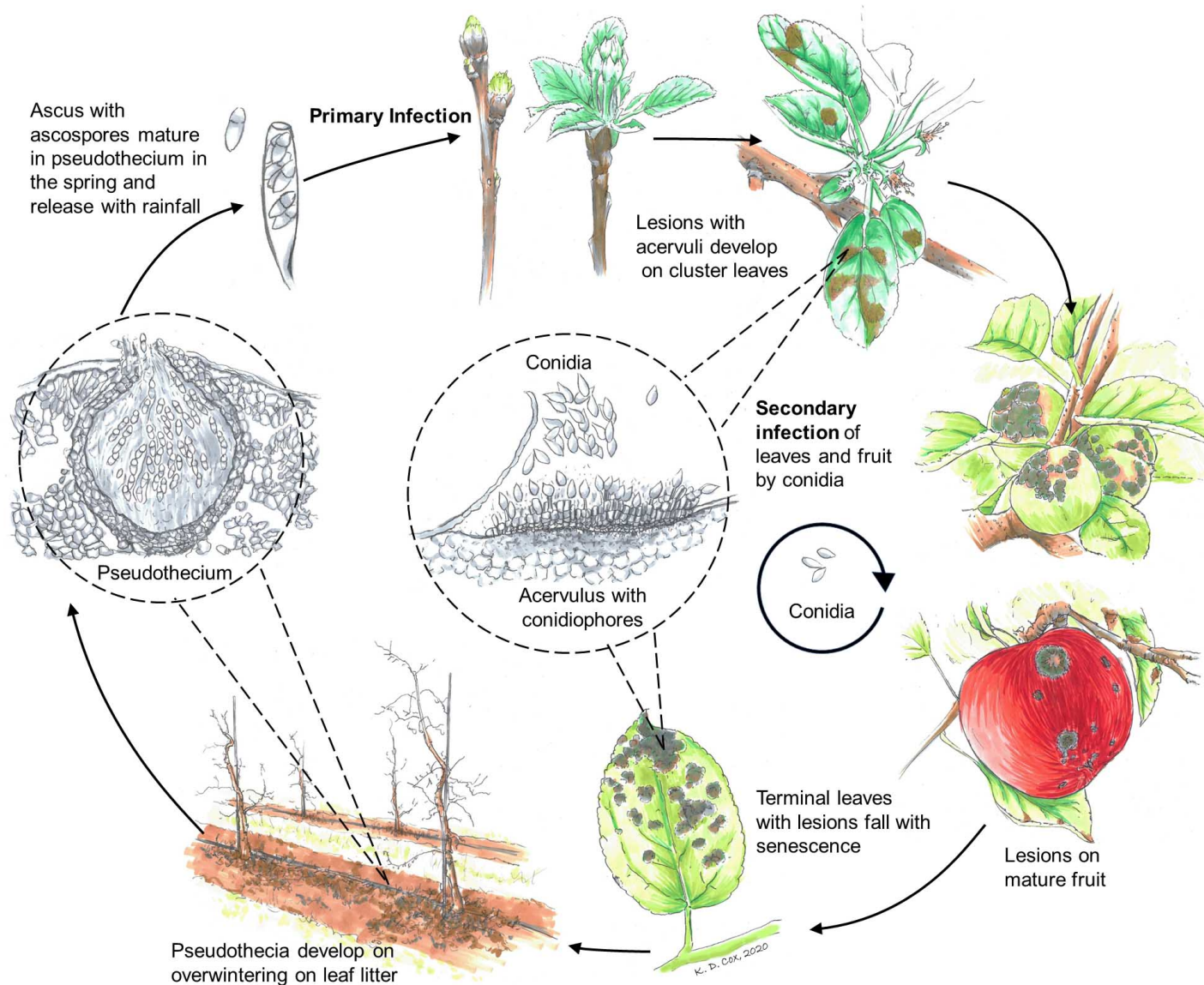
**Lake Ontario Fruit Program
Integrated Pest Management specialist**



Understanding your enemy

- *Venturia inaequalis* – fungal disease
 - Prefers cool wet temperatures
- 10+ fungicide applications/year
- Fungicide resistance for nearly all single-site chemistries

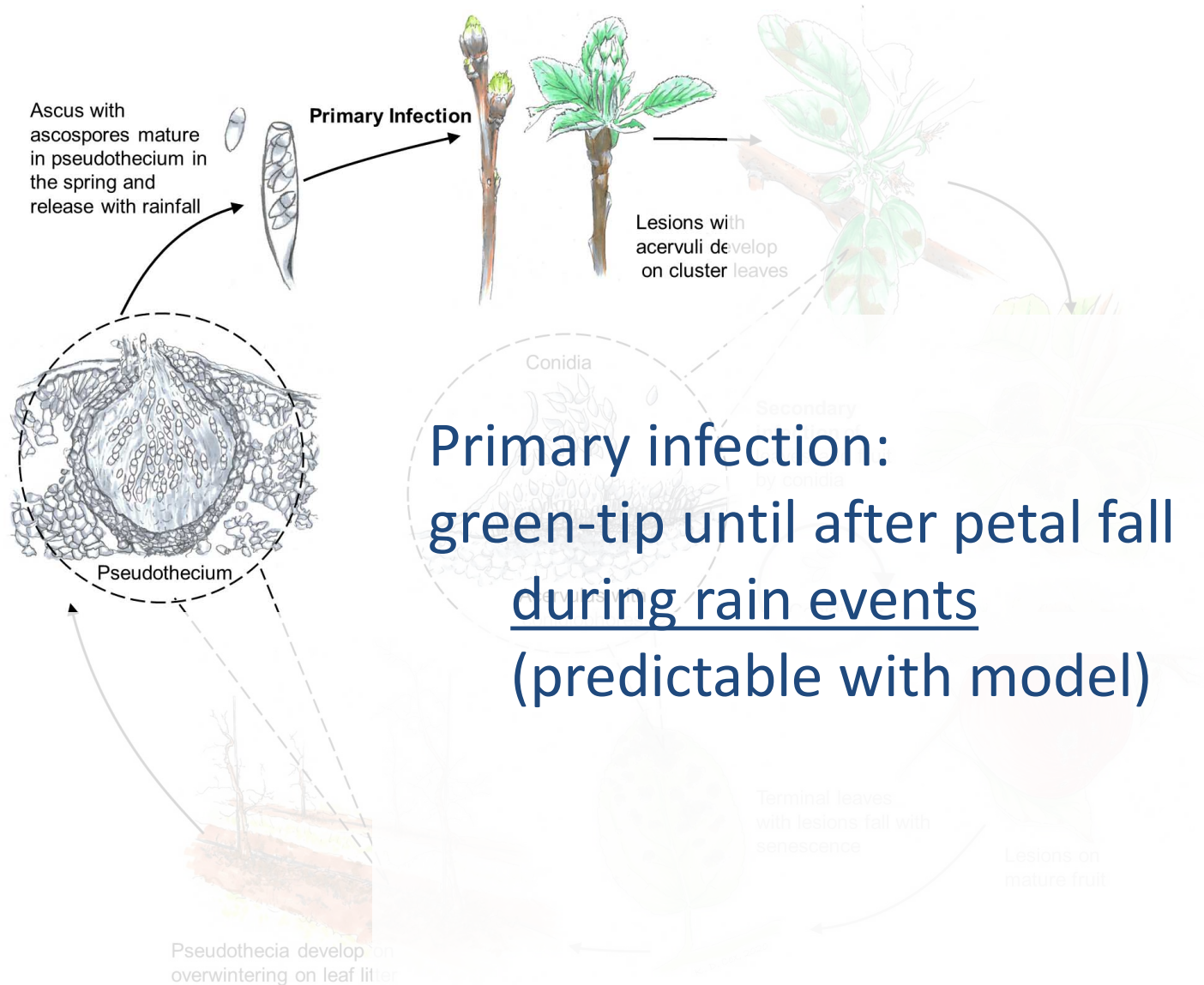
Understanding your enemy



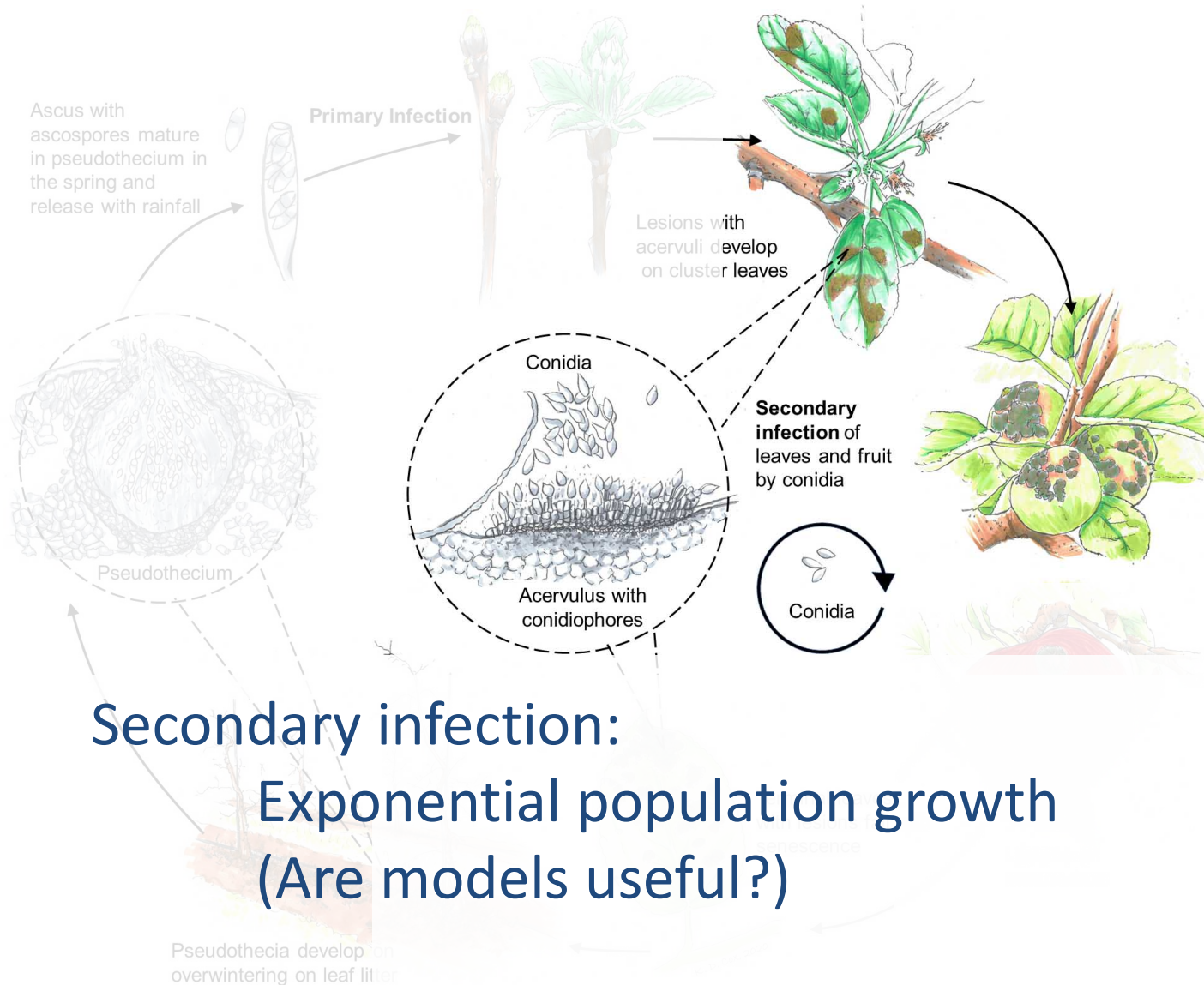
Understanding your enemy



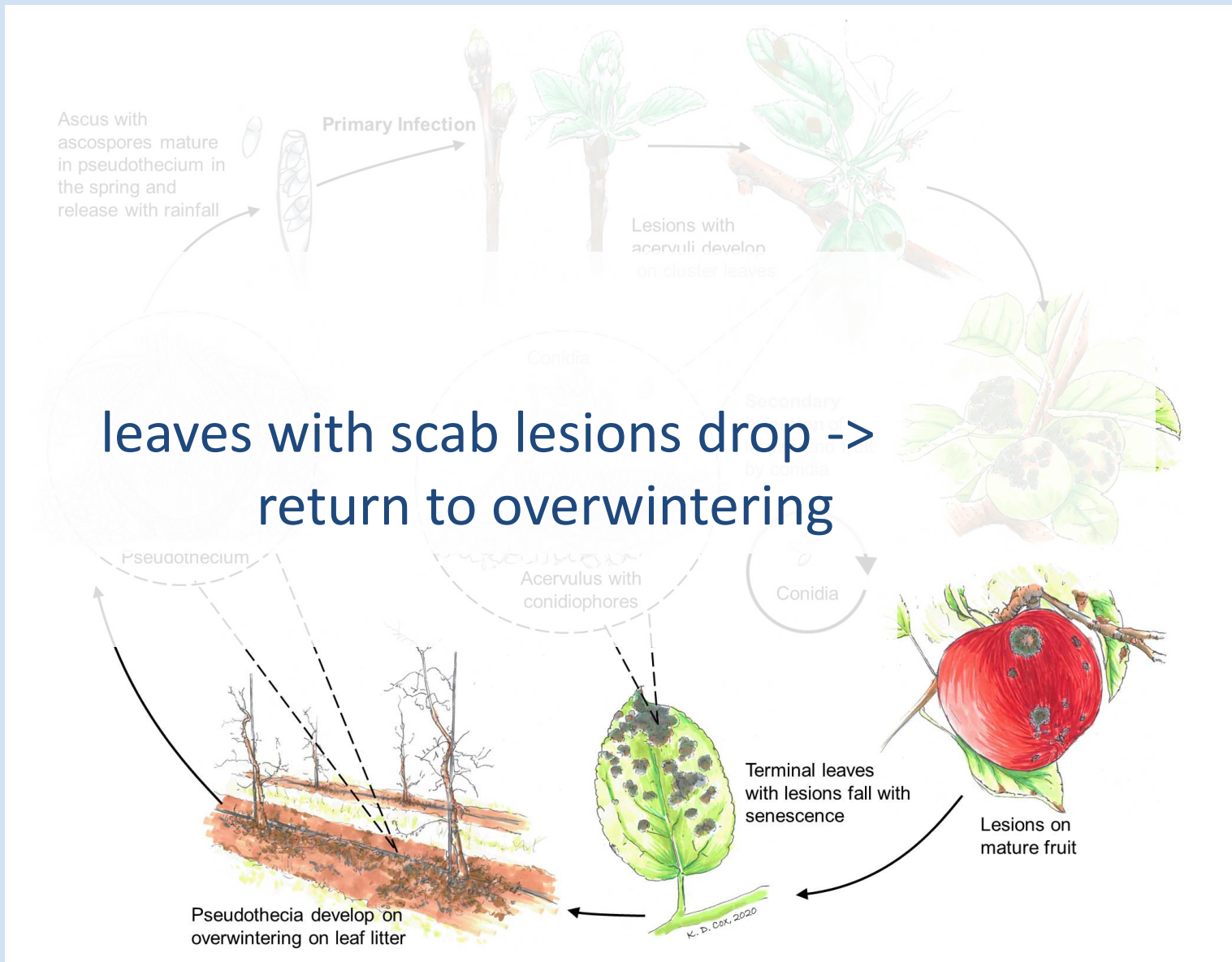
Understanding your enemy



Understanding your enemy



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

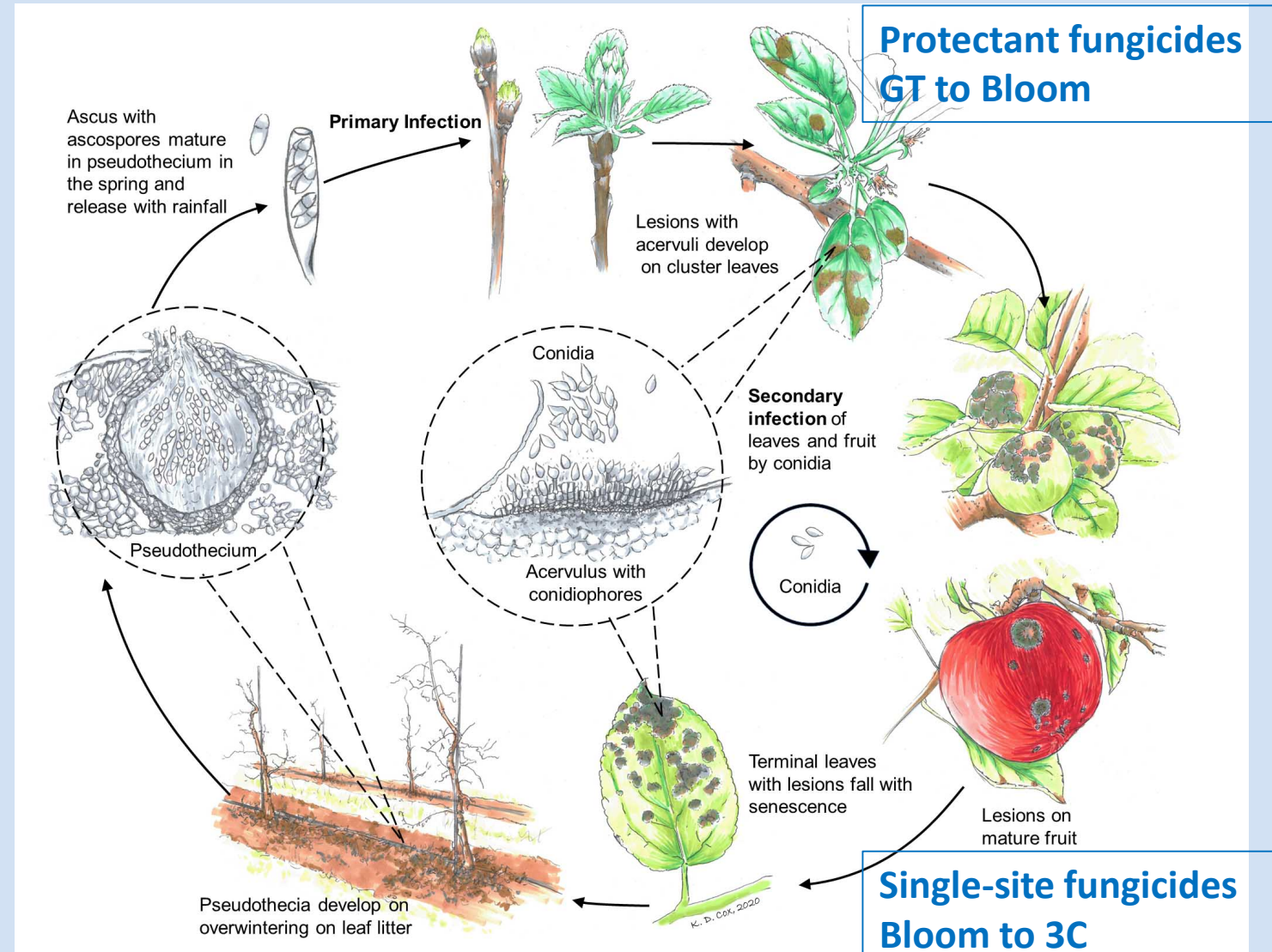
Sanitation: remove & destroy all dead plant material (fruit drops, leaf litter, prunings) to remove inoculum

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)

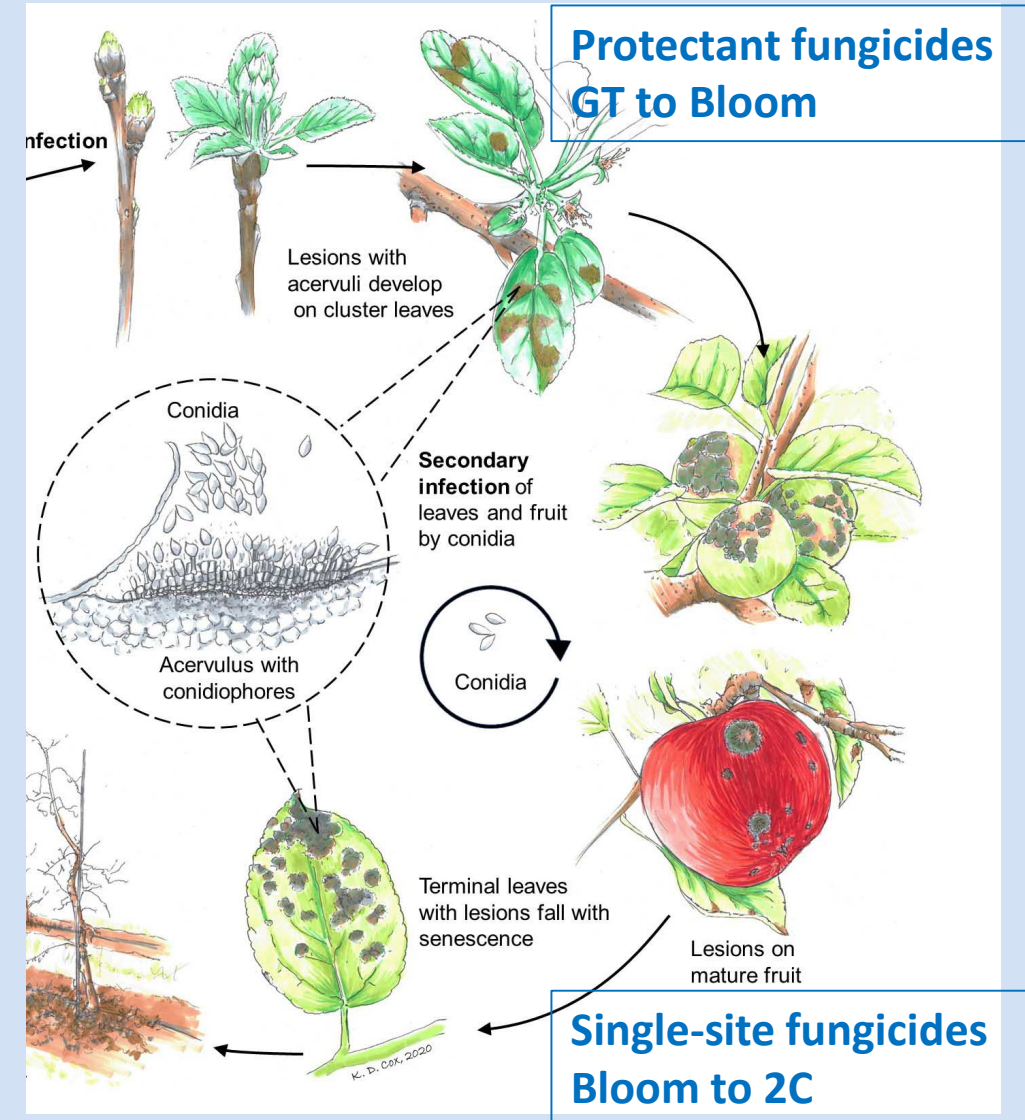
Management recommendations – spray timing

- 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

[Weather Data](#) [Pest Forecasts](#) [Station Pages](#) [Crop Management](#) [Weather Stations](#) [Help](#)

Apple Diseases

NEWA Apple Disease Models

Select a disease:
Apple Scab ▼

State:
New York ▼

Weather station:
Buffalo

Date of Interest:
1/30/2020

Calculate

Map

Results

More info

Apple Scab Results for BUFFALO NIAGARA INTL

You are approximately 80 degree days (base 43F) from green tip.

Green Tip Date:

Degree day accumulations estimate that greentip may not have occurred yet.
If it has, enter the actual date for blocks of interest.

Accumulated degree days (base 43°F) through 1/29/2020: 21 (0 days missing)

Disease Cycle	Disease Management
The apple scab fungus overwinters in infected leaves that have fallen to the ground. In these leaves, from autumn to early spring, the fungus mates, resulting in the development of what are	Season-long control is difficult if primary infections develop. Even moderate numbers of primary lesions can produce an extremely large population of secondary spores, conidia, requiring an intensive fungicide program to protect fruit throughout the summer. Conversely, good control of primary infections allows use of fungicides to be reduced or omitted during the summer, once ascospores have been depleted and fruit become less susceptible.

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:

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](#)

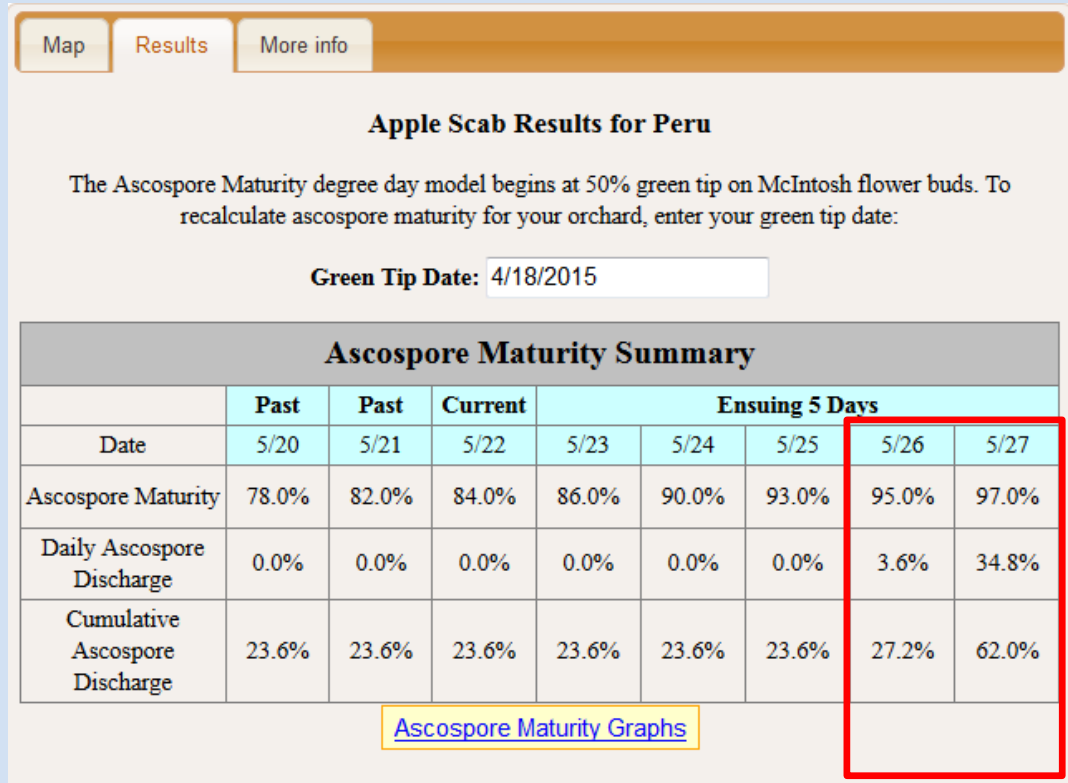
Management recommendations – spray timing

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
<u>Infection Events</u>	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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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

- 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%

[Ascospore Maturity Graphs](#)

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Date	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31
<u>Infection Events</u>	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:

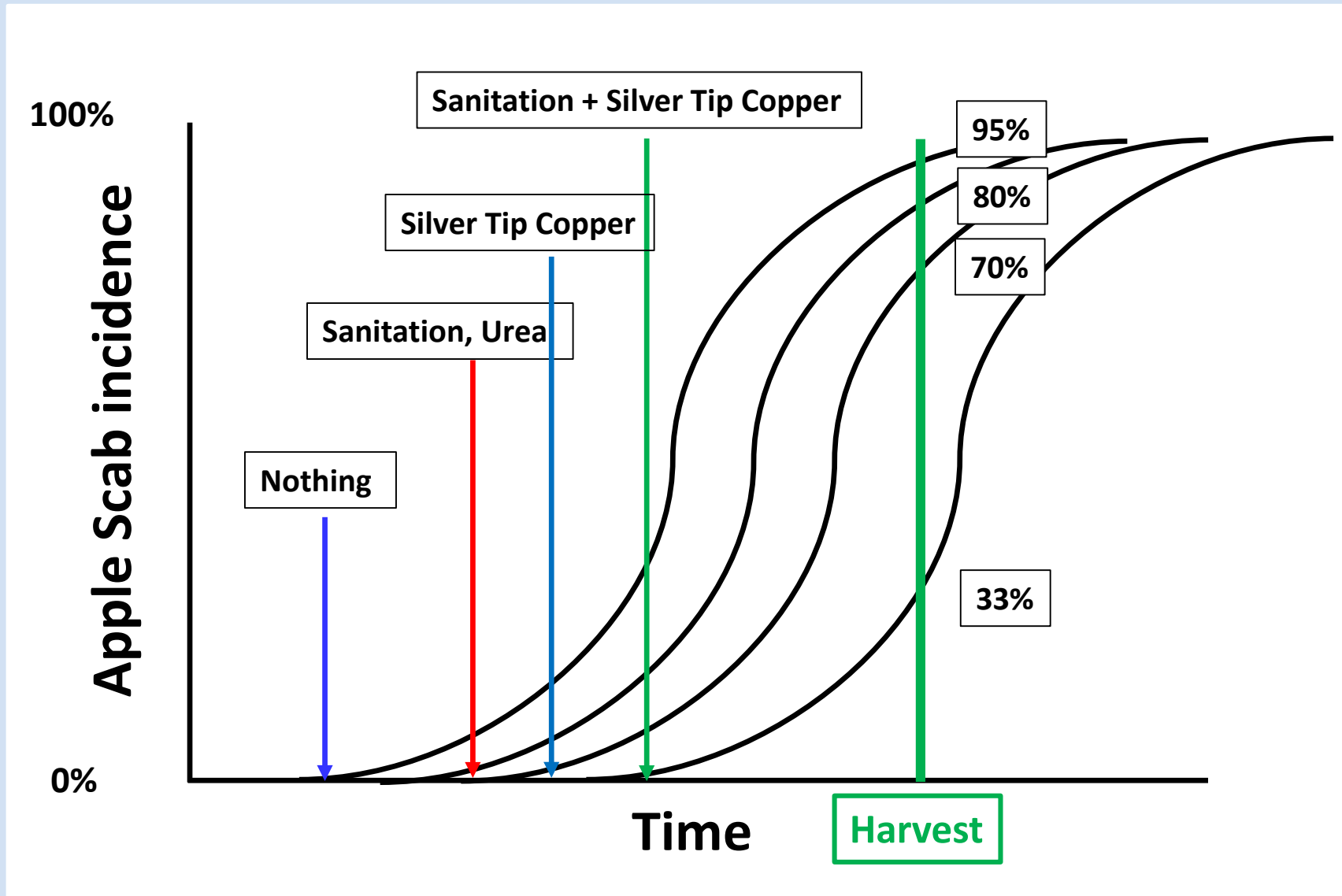
April 7th Wayne County

April 8th Orleans County

DATES TENTATIVE

Janet van Zoeren
585 797 8368
jev67@cornell.edu

Management recommendations



Management recommendations

