

New York 1 Apple

‘SnapDragon®’

Susan Brown, Meeting with Te Mata

October 30, 2023

Outstanding Cultivar Award (2023)



- Award given by the American Society of Horticulture Sciences (ASHS) for a fruit cultivar that has had a significant impact to the industry
- Previous winners from Cornell include 'Empire' and 'Jonagold'

CrunchTime Apple Growers Marketing Award

- **35th Annual Marketing Excellence Award Winner: Crunch Time Apple Growers**



- 15,000 packages of SnapDragon apples were handed out at three home games.
- Micah Hyde Charity Softball Game — Prior to the start of the game, Snappy and his crew activated in the Kids Zone at Sahlen Stadium to distribute sliced apples.
- Former Buffalo Bills player and NFL Hall of Fame player Andre Reed partnered with SnapDragon apples for his Celebrity Golf Tournament in San Diego.
- **Results**
- Sales of SnapDragon apples were up 60% in the Buffalo area and up 26% overall. Retailers with locations in what would be considered Bills territory experienced 56% growth.
- Brand recognition was significantly better in May than it was at the first activation at the 5K in September. At the Micah Hyde softball game in May, when people were offered a sample, they would frequently comment that SnapDragon was their favorite apple

CrunchTime AG Partnership with local NFL team: The Buffalo Bills



National Football League (NFL) 3-Year Partnership



71, 608 seats in stadium. Apple samples given away at 2 home games, for purchase at concession stands and the only apple the teams eat.



The Bills-Chiefs game featuring arguably the two best quarterbacks in the NFL, Allen and Kansas City's Patrick Mahomes, averaged 25.4 million viewers. It was the most-watched "NFL on CBS" week six game in 15 years . In Germany NFL fever is high.

SnapDragon in US and in other Regions

Trajectory in US



This fierce variety of apple has demonstrated success among consumers and retailers alike, selling out every season since its limited release in 2014.

Based on the study with Category Partners of the top 10 retailers who carried SnapDragon apples during the 2020 crop year (October 2020 to June 2021) and reported Nielsen data:



SnapDragon was ranked the sixth most popular premium apple variety nationwide and the top premium apple grown on the East Coast.



SnapDragon generated year-over-year volume growth in all of the top 10 retailers and was the only apple that showed growth across all retailers in the study.



SnapDragon posted double-digit sales growth year-over-year in the East Coast market.

+7%

SnapDragon grew seven percent overall in volume year-over-year across all markets.

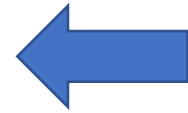


In terms of dollar growth, SnapDragon generated the 10th strongest performance among the 26 identified premium apple varieties.

Exklusive Hofsorten GmbH



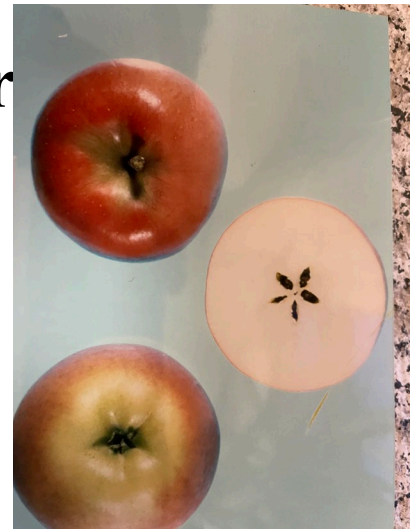
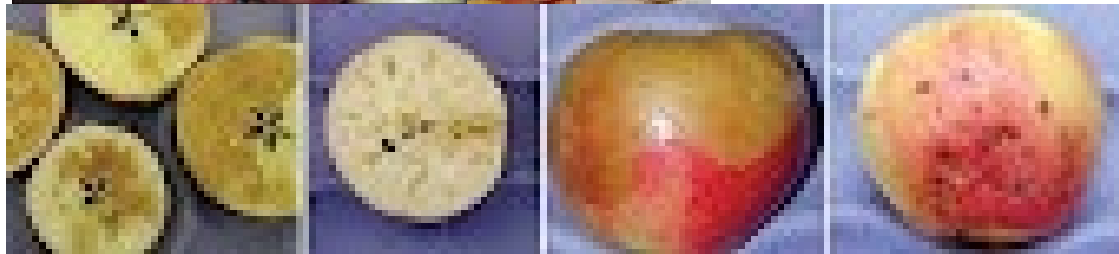
Honeycrisp X NY 752 = 'SnapDragon'



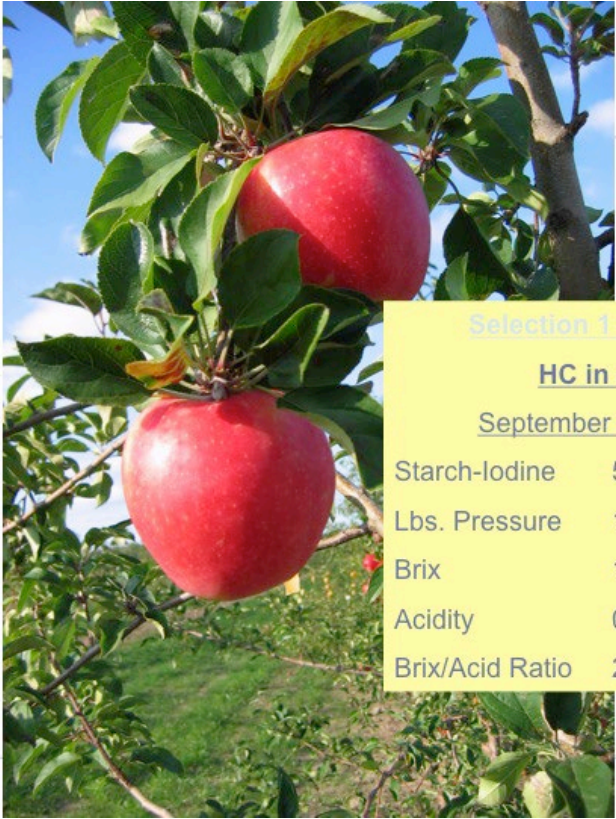
'Honeycrisp' is prone to bitter pit, soft scald, too big apples, fire blight, every other year production

- **Mild in taste but amazing texture**

- **NY 752 has Spicy flavor and is not not prone to all these disorders.**



Original Tree and Test planting



Selection 1 you tried

HC in mix

September 15, 2008

Starch-Iodine	5.6
Lbs. Pressure	17.6
Brix	13.0
Acidity	0.65
Brix/Acid Ratio	20.0

New York 1 Tree Vigor is Low, Like 'HoneyCrisp'

- NY-1 'SnapDragon[®]' is a weak growing cultivar with a tendency to over crop and produce small apples.
- M.9 was initially tested and proved to be inefficient due to slow growth and susceptibility to fire blight.
- Rootstocks G.935, G.969 and CG.5257 were chosen to grow this cultivar because of their increased vigor, disease resistance and in the case of CG.5257 influence on fruit size.



Bloom time- will it be late in NZ as it is in Australia?

Pollination: NY 1 has the self (S) incompatibility alleles S2 S20. S2 is a common allele, while S20 is less common (Orcheski and Brown, 2012). NY 1 blooms with 'Golden Delicious' but is very late blooming in Australia. NY 1 appears to be finished blooming and then a flush of late flowering can be observed, mostly on one-year old wood.

Crop Load Management:

NY1 sets a large crop annually and requires aggressive thinning.

Harvest Time

- However, NY1 is a hard variety, and harvesting a lower-than-normal firmness should still be acceptable. Target firmness is 15-18 pounds. Again, we will definitely be on the low side this year. You are shooting for a minimum of 2/3 red color. The target color should be a dark red, however, fruit harvested earlier for CA may not have perfect color. Target brix for NY-1 is 13-15%.
- Stem clipping recommended,

10 untreated NY1 (no preharvest PGRs) + 3 Retain-treated samples tested in Western NY on September 25-26, 2023

Index	Sept. 25 & 26, 2023 n= 10 untreated		Sept. 18 & 19, 2023 n= 11 untreated		Sept. 26 & 27, <u>2022</u> n= 9 untreated		Sept. 27 & 28, <u>2021</u> n= 4 untreated	
	AVG.	Range	AVG.	Range	AVG.	Range	AVG.	Range
Firmness (lb.)	16.2	14.2-17.4	17.5	15.9-19.2	15.5	14.6-17.1	16.2	14.9-17.3
Soluble Solids (%)	12.5	10.5-15.8	12.5	11.0-15.4	12.5	10.5-13.9	11.4	10.4-13.2
Starch Pattern Index	4.9	3.6-6.0	2.9	2.2-4.5	5.0	3.6-6.7	5.6	3.9-6.6
Producing > 0.5 ppm ethylene	65/100 (65%)		24/110 (22%)		52/90 (58%)		24/40 (60%)	
DA Meter *	0.71 (0.19-1.16)		0.92 (0.57-1.38)		0.76 (0.28-1.19)		NA	

Storage

- Harvest as early as possible to minimize browning risk, especially in CA.
- Store at 38°F.
- 1-MCP application is questionable for this variety – it does not always cause problems, but overall tends to enhance browning disorders. (Less of an issue in short term storage?)
- Conditioning provides variable responses.
- Low oxygen –DCA –may have promise but not for all disorders.
- Use of DPA is worth considering, especially in normal CA (tentative recommendation)
- Storage length is a major factor, although limited information.

Pseudomonas- Blister spot



photo 2-39 - T. van der Zwet

Scarf Skin-Air trapped under the skin

- Buckeye Gala



**Scarf skin on
NY 1. Is
Captan or
thinning
sprays part
of the
problem?**

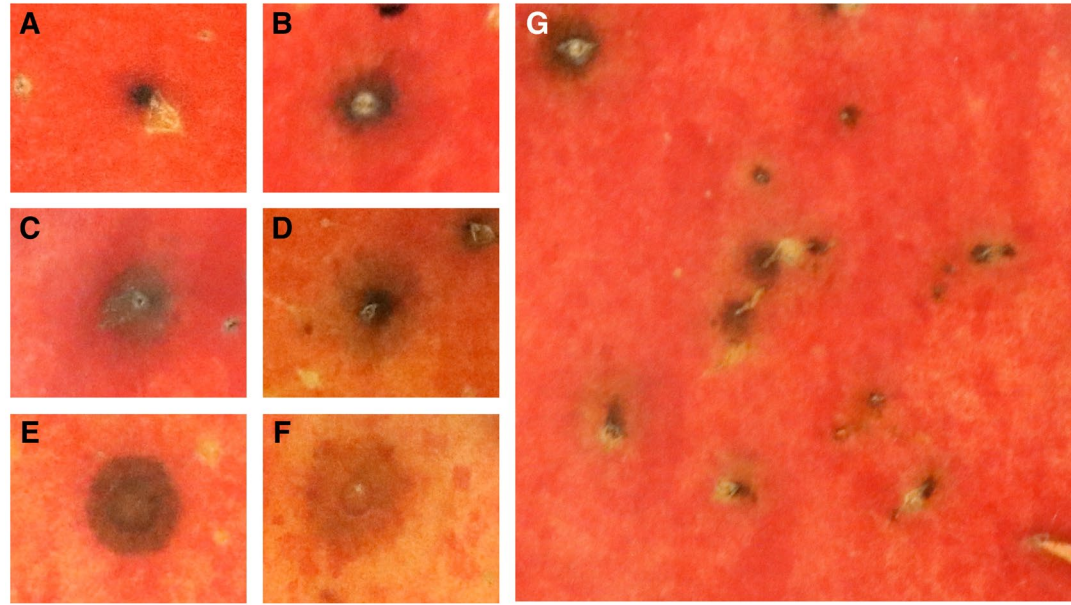


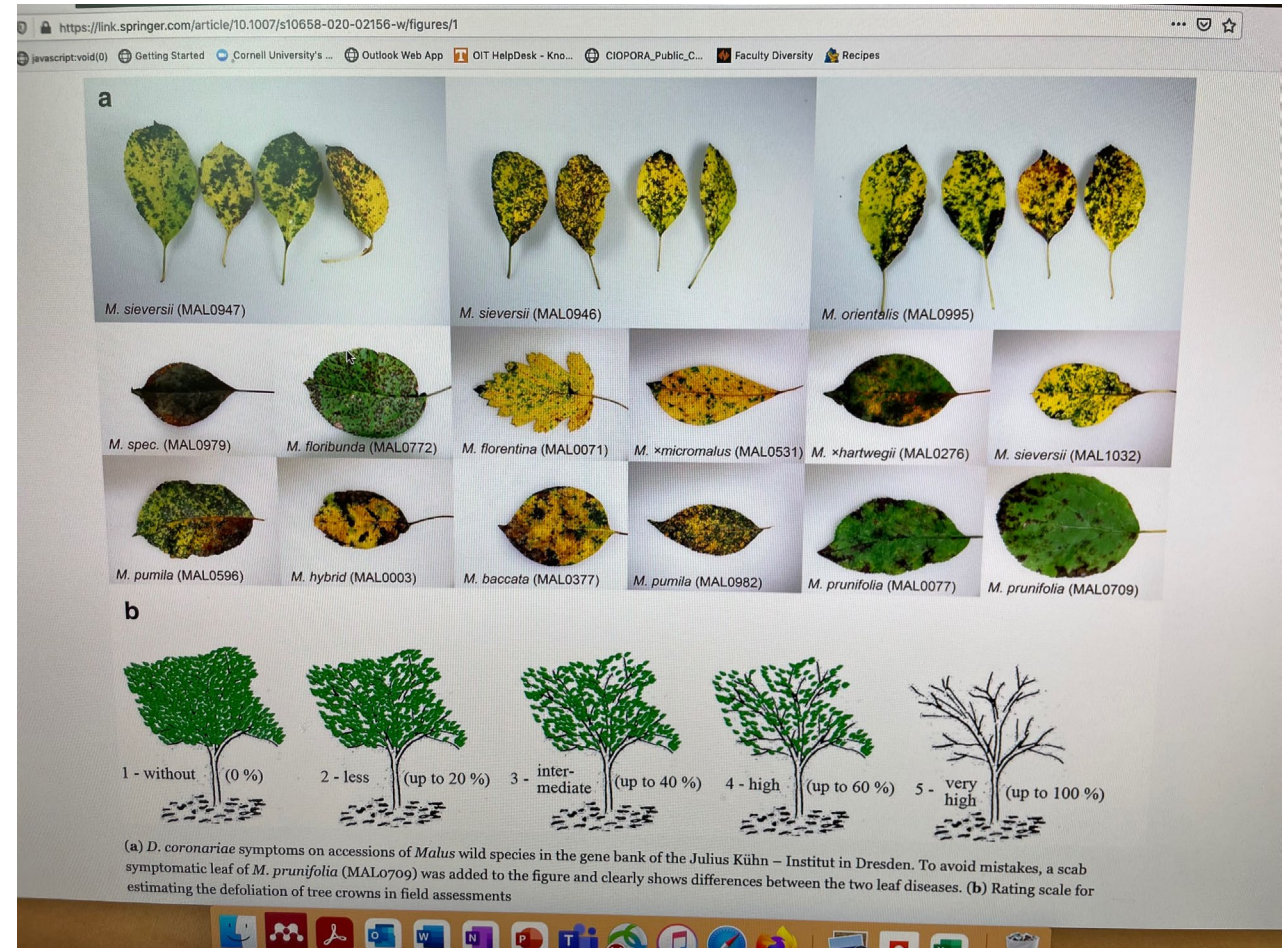
FIGURE 1 Examples of dark-colored spots (DCSs) found on Fuji apple fruits several weeks after harvest. *Botryosphaeria dothidea*, *Phlyctema vagabunda*, and *Diplocarpon mali* were detected in lesions **A** and **B**; **E**, **F**, and **G**; and **D**, respectively. **C** was not examined. Bar indicates 5 mm.

Russeting- Often in Sectors like in 'Honeycrisp'



A New Challenge: *Marssonina coronaria*/ Diplocarpin *coronariae*

- Wohner et al. (2020) found 15 accessions from 9 different *Malus* species in the Dresden Germany collection that were highly resistant. However, resistance is complex, involving several different genes and pathways. Resistant species are very small fruited.
- Maia-1 ('Evercrisp'®), 'Rome' 'Gala' and 'Honeycrisp' very susceptible. NY 1 and 2 were infected in the Hudson Valley.



Extend-Day or Reflective Films to Enhance Color



Effect of different reflective ground covers on the coloring of apples at harvest.

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Keywords: Apple, Extenday, Mylar, fruit color, fruit quality, light interception

This research was supported by the New York Apple Research and Development Program

We evaluated different reflective ground covers used to improve fruit color near harvest. Extenday 90%, had the highest percent reflection followed by Mylar in the herbicide strip and Extenday 80% and, finally, Mylar between the tree rows. Additionally, our works suggest that the light reflection and interception was different between training systems. Reflection of light was greater under vertical systems compared to V systems. All reflective ground covers increased red blush area and increased the profitability of the orchard.

Reflective ground covers were designed to reflect incoming solar radiation back up into the canopy thereby increasing light penetration into the inner part of the tree canopy (Mupambi *et al.*, 2021). The deployment of reflective covers several weeks before harvest can improve fruit color in red or partially red apple cultivars (Schmidt, 2010) thereby mitigating potential fruit coloration issues.

Currently, apple growers are using different types of reflective ground covers. The most common two reflective ground covers used are a woven white polyethylene fabric (Extenday) and a Metallic Film (Mylar). In general, the configuration of the covers is between the tree rows. However, the covers can also be set up in the herbicide zone.

The aim of this study was to evaluate the light interception and light reflection with and without Mylar and Extenday with different configurations on common apple varieties ('Evercrisp', 'Honeycrisp', 'NY1' and 'NY2'). The second objective was to evaluate the effect of the reflective ground covers on fruit red coloration.

Material and methods

Experiment 1 was carried out in mature 'Evercrisp' apple trees in 2020. The field trial was at Cherry Lawn Fruit Farms (Sodus, New York State). The training system was tall spindle and spaced at 4 m x 1 m (2500 trees/ha). The study compare the effect of Extenday with untreated control plots. The Extenday was deployed

between the tree rows at 3 weeks before harvest.

Experiment 2 was carried out in 2021 in a systems trial planted in 2017 with 'Honeycrisp' at Cornell's Agritech Campus in Geneva, New York State with 5 training systems (tall spindle (TS), fruiting Wall (FW), bifaum (Bi), V-Trellis and planar cordon). The tree spacing for TS was 0.9m x 3.3m (3367trees/ha), for FW 0.9m x 3m (3704trees/ha), for Bi 1.2m x 3.3m (2525trees/ha), for V-trellis 0.45m x 3.5m (6349trees/ha) and for Cordon 3m x 2m (1667trees/ha). The study compared three strategies: untreated control, Extenday and Mylar. The Extenday and Mylar were installed between the tree rows 3 weeks before harvest.

Experiment 3 was carried out on mature 'NY1' and 'NY2' apple trees at Cornell's AgriTech Campus in Geneva, New York State in 2021. The orchard was planted in 2015 and the spacing was 1m x 3.5m (2857tree/ha). The training system was tall spindle. The study compare five strategies: untreated control, Extenday

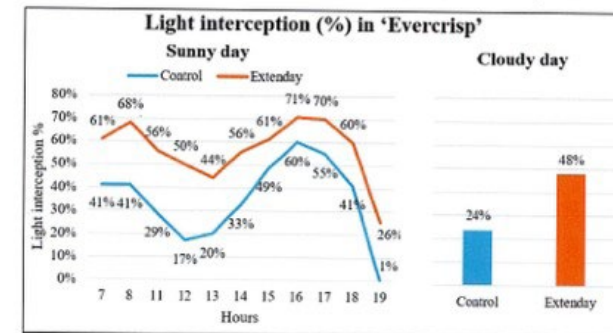


Figure 1. Canopy light interception at different hours during the day with and without Extenday on a sunny and cloudy day with mature Tall Spindle 'Evercrisp' in North-South oriented rows in 2020 at Alton NY (Experiment 1). Cloudy day was evaluated only at 12pm.

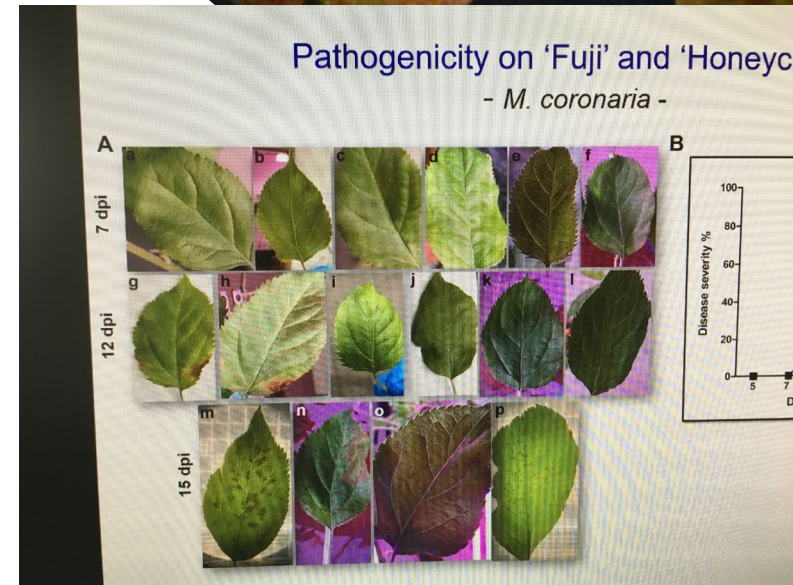
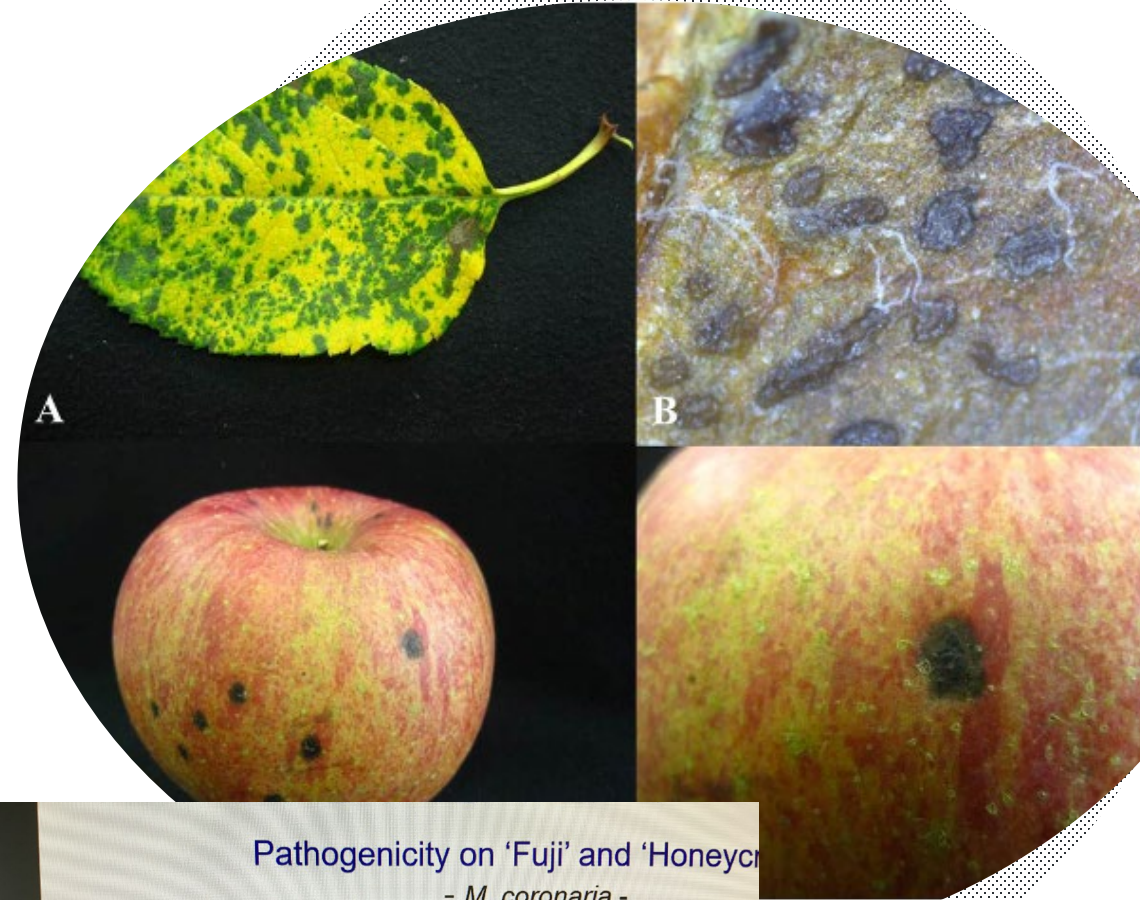
Diplocarpon coronariae (syn.
Marssonina coronaria):

Catastrophic in organic plantings and copper sprays may not control it sufficiently

Spreading and increasing in North America and in Europe

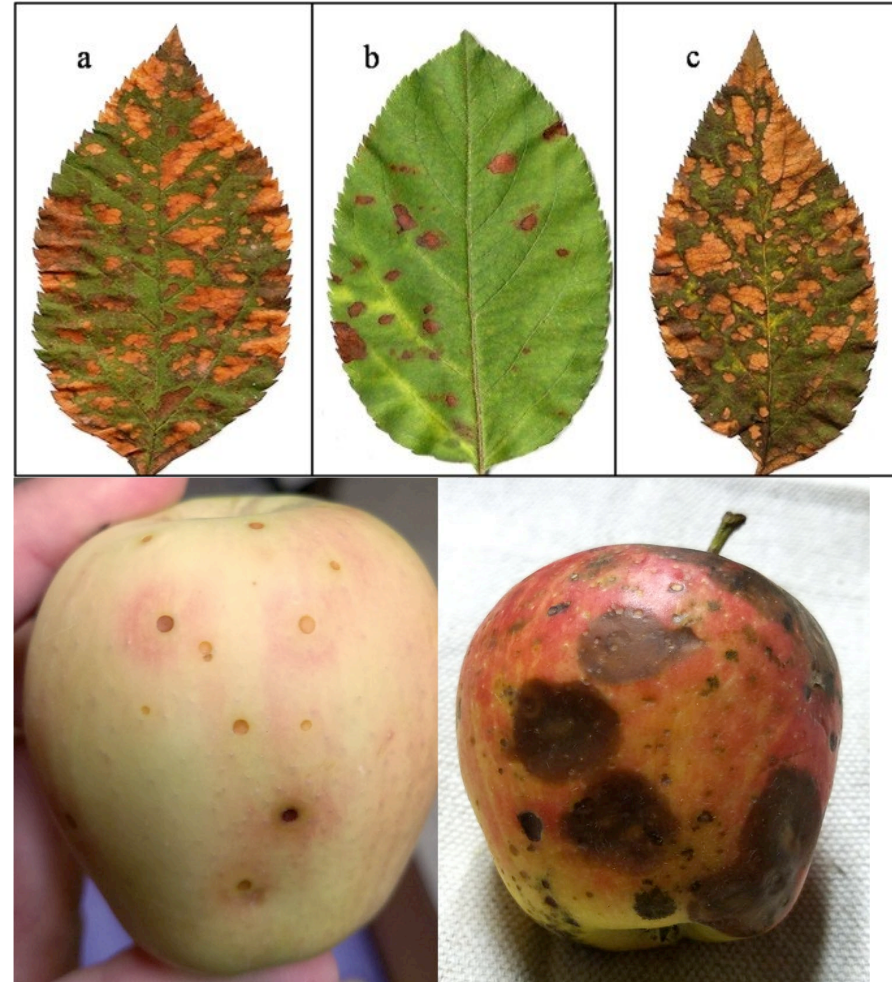
Defoliation and fruit damage

Leaf litter must be shredded/sprayed



Colletotrichum Complex (*Glomerella* leaf spot and bitter rot)

- Cultivar differences in foliage infection. 'Gala' on right and left and 'Eva' in the middle
- Fruit Figures, 'Gala' inoculated with a *Glomerella* strain versus a bitter rot strain.
- Cornell expertise is bolstered by former Cornell students (S. Villani) and faculty (S. Acimov).



Credit:
Moreira, R.R., Zielinski,
E.C., Castellar, C. *et al.*
Study of infection
process of five species
of *Colletotrichum*
comparing symptoms
of glomerella leaf spot
and bitter rot in two
apple cultivars. *Eur J*
Plant Pathol **159**, 37–
53 (2021).

Credit S.
Villani,
North
Carolina
State
University

Interpoma: 60 varieties on display, and we visited regional farm stands. My observations on these varieties will be detailed in the Fruit Quarterly



Value Added: Hard Cider, Sliced Apples



Thank you!