

Growing Grapes in Connecticut's Ever-Changing Climate

Francis J. Ferrandino

Department of Plant
Pathology and Ecology

The Connecticut
Agricultural Experiment
Station



The Farm Wine Act (1978)

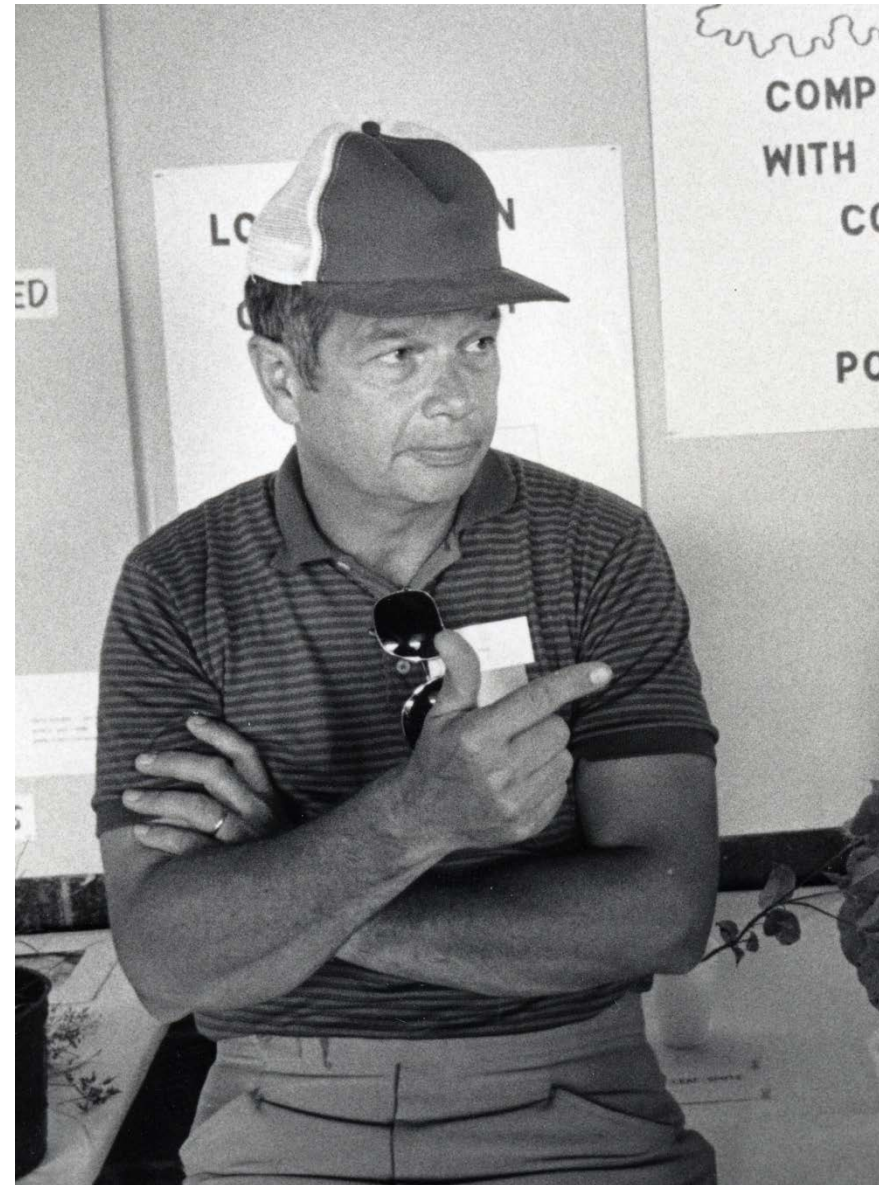
- The CT State Legislature establishes the legal right of Farm Wineries to make and sell wine.

The first CT vineyards were planted!



1978 Research Vineyards Established By CAES

Dr. Gerald Walton planted 7 cultivars of winegrapes at Lockwood Farm in Hamden CT. The following year a second vineyard was planted at the Valley Laboratory in Windsor CT with 8 more cultivars.



Testing table and wine grape varieties for hardiness and disease susceptibility

By Gerald S. Walton

Grapes, both table and wine, have been grown in Connecticut for many years. The acreage of wine grapes increased dramatically with the enactment of the Farm Winery Act in 1978, and the interest in table grapes has increased, both for personal consumption as well as sale at roadside markets. In response to this interest and to assist vineyardists encouraged by the law, I began experiments in 1978 to investigate the winter hardiness and disease susceptibility of grape varieties.

I started with eight varieties in 1978 and added seven more in 1979. In 1982 and each subsequent year, some varieties have been removed and replaced by new varieties. Including the 1986 plantings, 12 table and 24 wine grape varieties have been planted.

Vines were planted in the spring and all flowers were removed for 2 years. Plants were trained using the four-arm Kniffen method with two wires about 3 and 6 feet from the ground. In the third year, a few flowers were left on each vine. During the first 3 years, pesticides were applied sparingly to allow assessment of disease susceptibility. Later, pesticides were applied only when a problem occurred. This procedure was followed so that I could

measure yield in addition to observing the occurrence of disease problems.

During each season the vines were evaluated several times for disease, winter injury and ozone injury. If less than 5% of the plant was affected, a particular disorder was rated slight. A moderate rating indicated that between 5 and 40% was affected. A severe rating was given if greater than 40% was affected.

During the 8 years that I have grown grapes at Lock-

Table 1. Disease susceptibility and winter hardiness of table grape varieties at Lockwood Farm (1979-86).

Disease or Injury	Susceptibility	Variety
Black rot	Slight	Buffalo, Concord, Concord seedless, Einset, Remaily
	Moderate	Himrod, Interlaken
	Severe	Suffolk red
Powdery mildew	Slight	Einset
Downy mildew		No varieties affected
Crown gall		No varieties affected
Winter injury	Slight	Himrod, Interlaken, Suffolk red
Ozone injury		No varieties affected

Dr. Walton studied disease susceptibility and winter hardiness of the various cultivars over the next decade.

These results were made available to growers in the CAES publication:

FRONTIERS OF PLANT SCIENCE

It had few disease and insect problems and was winter hardy. The fruit is sweet and flavorful. Einset, a new

Table 2. Disease susceptibility and winter hardiness of wine grape varieties at Lockwood Farm (1979-86).

Disease or injury	Susceptibility	Variety
FRENCH HYBRID		
Black rot	Slight	Baco noir, Chambourcin, Chancellor, DeChaunac, Foch, Ravat 51, Seyval, Seibel 10868, Verdelet, Villard blanc, Villard noir
	Severe	Aurore
Powdery mildew		No varieties affected
Downy mildew	Severe	Chancellor
Crown gall		No varieties affected
Winter injury	Slight	Foch
Ozone injury	Moderate	Seyval
VINIFERA HYBRID		
Black rot	Slight	Chardonay, Gamay beaujolais, Gewurztraminer, Pinot noir, Riesling
	Slight	Chardonay, Gewurztraminer
	Moderate	Gamay beaujolais, Pinot noir
	Severe	Riesling
Downy mildew		No varieties affected
Crown gall	Severe	Riesling
Winter injury	Moderate	Riesling
	Severe	Gamay beaujolais, Pinot noir
Ozone injury		No varieties affected
OTHER VARIETIES		
Black rot	Slight	Catawba, Cayuga white, Horizon, Niagara
		Niagara
Powdery mildew	Slight	Niagara
Downy mildew	Moderate	Niagara
Crown gall		No varieties affected
Winter injury	Slight	Niagara
Ozone injury		No varieties affected

Winegrapes are becoming an increasingly important crop in CT

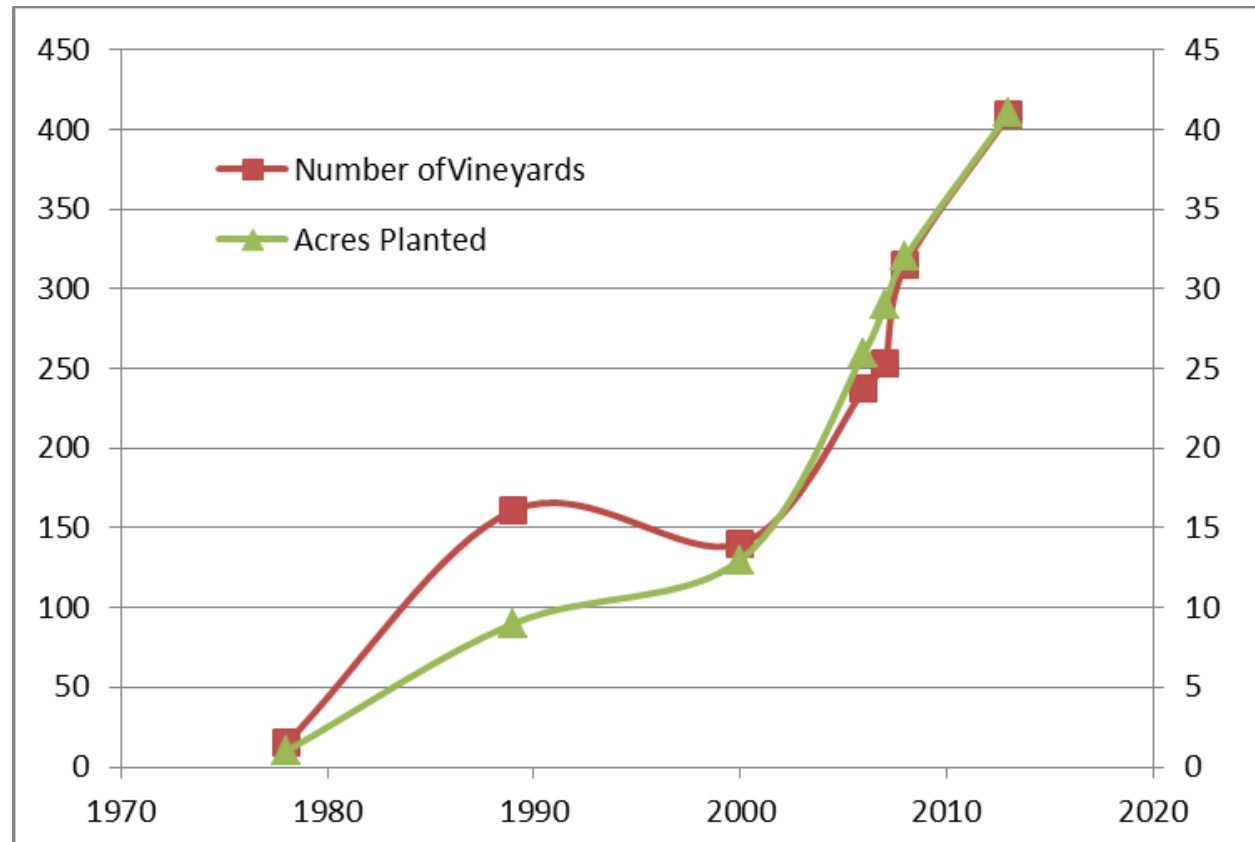
In 2015 the 39 CT wineries produced:

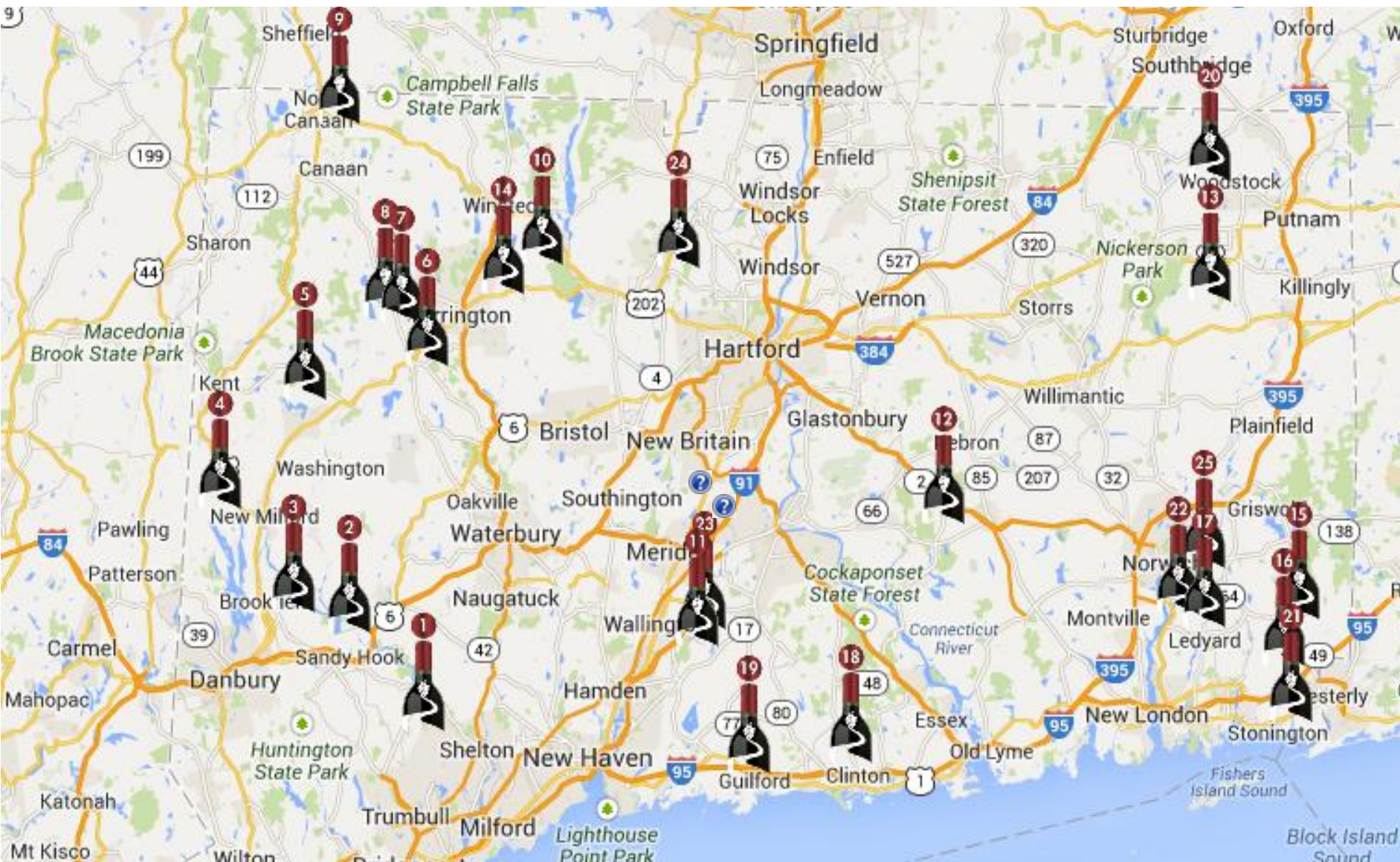
500,000

gallons of wine

Valued at

\$15 million





1990 - 2000

Dr. Richard Kyomoto continues the winegrape work

- 15 new cultivars planted
- Various pruning/training methods tested
- Regular site visits to growers (disease diagnoses)



In 2000
Dr. Kyomoto retires from
CAES.

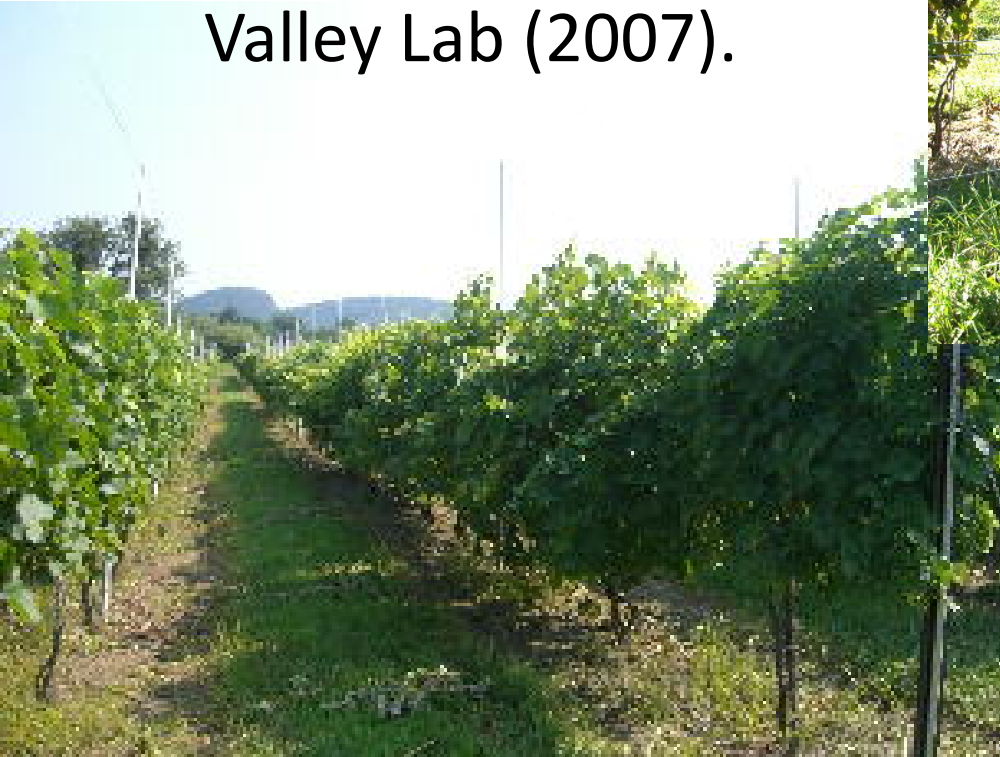
Dr. Kyomoto goes on
to work with the
UCONN Grape IPM
Program.



2004

Dr. William Nail directs the CAES Grape project.

Two new acres of vineyards comprised of 34 cultivars are planted at Lockwood Farm and the Valley Lab (2007).



Bill writes a number of informative pamphlets for grape growers.

*The
Connecticut
Agricultural
Experiment*

The

*The
Connecticut
Agricultural
Experiment
Station,
New Haven*

**Effects of Fruit
Thinning on Yield,
Fruit Quality, and
Vine Performance
of Red Bordeaux
Winegrape
Cultivars**

WILLIAM R. NAIL, Ph.D.
Department of Forestry and Horticulture



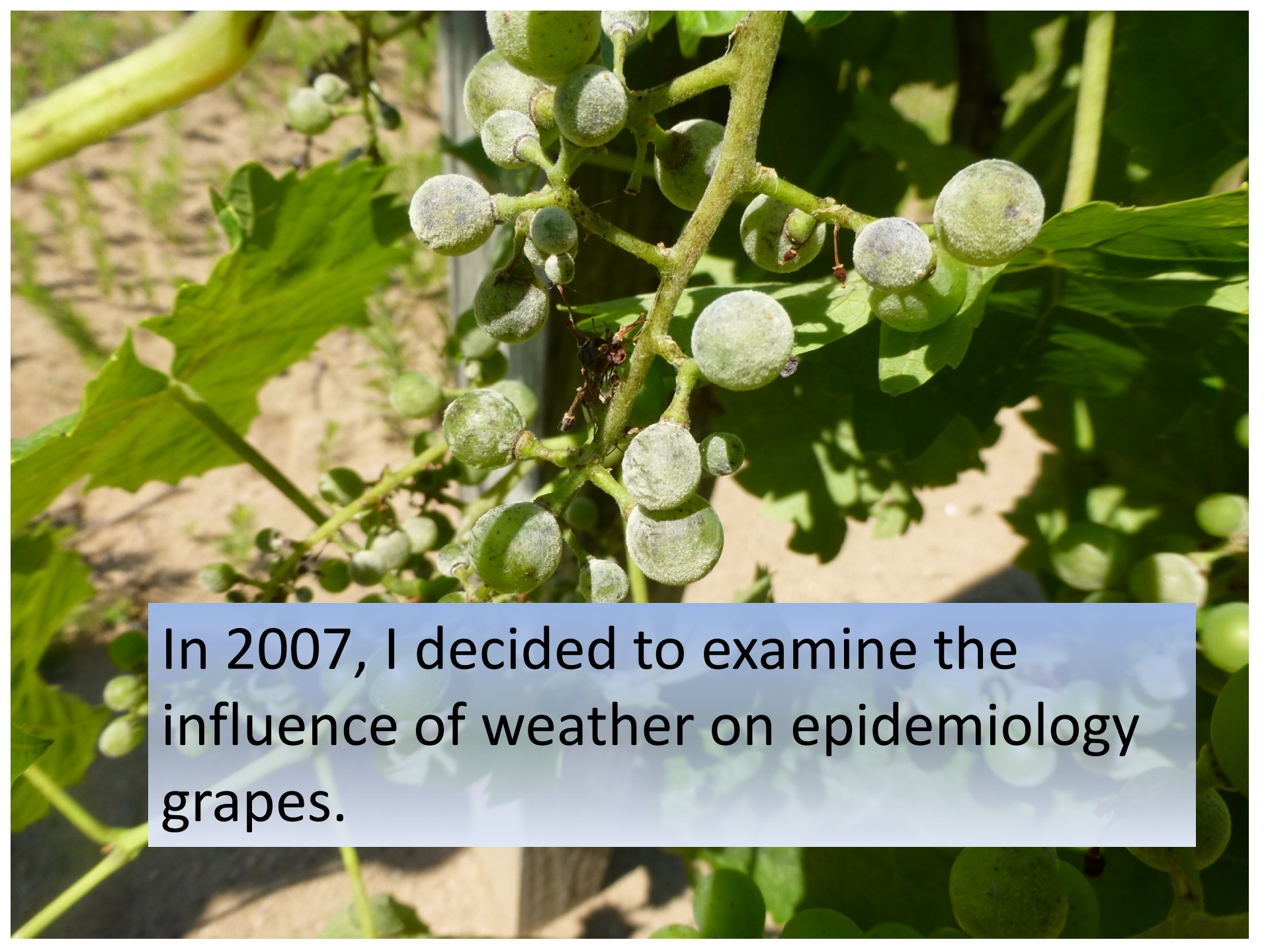
*Bulletin 1025
February 2010*

**Winegrape
Cultivar Trials in
Connecticut
2004-2006**

WILLIAM R. NAIL, PH.D.
Department of Forestry and Horticulture

**Grapevine
Cultivation in
Connecticut**

BY WILLIAM R. NAIL

A close-up photograph of a bunch of green grapes on a vine. The grapes are small and round, with a light green color. Some grapes show signs of mold or disease, with a white, fuzzy growth on their surface. The background is a blurred green, suggesting a vineyard setting.

In 2007, I decided to examine the influence of weather on epidemiology grapes.

I started studying diseases of winegrapes



Francis J. Ferrandino



The impact on yield can be devastating



The Disease Triangle

SPORES

PLANT

Environment

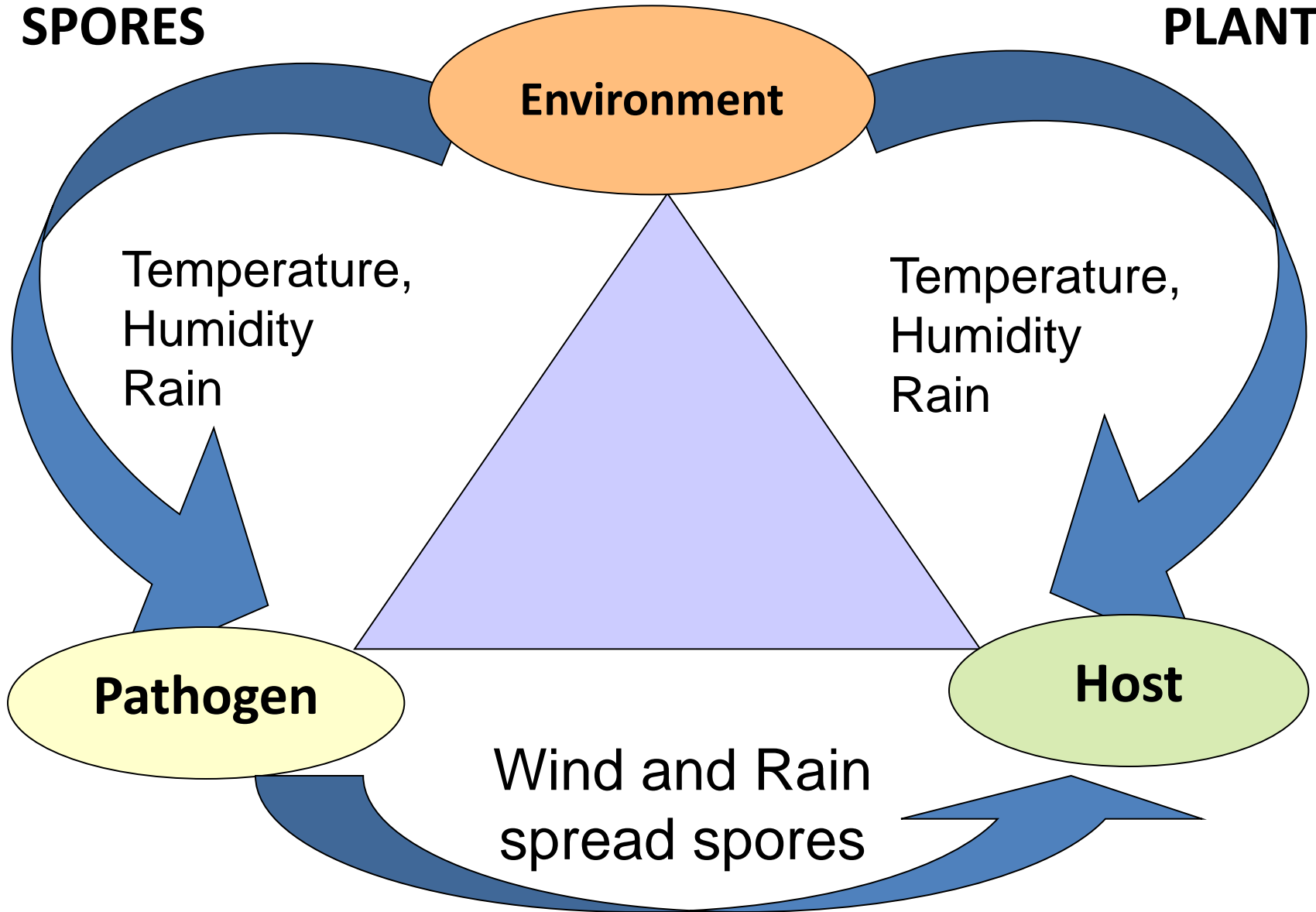
Temperature,
Humidity
Rain

Temperature,
Humidity
Rain

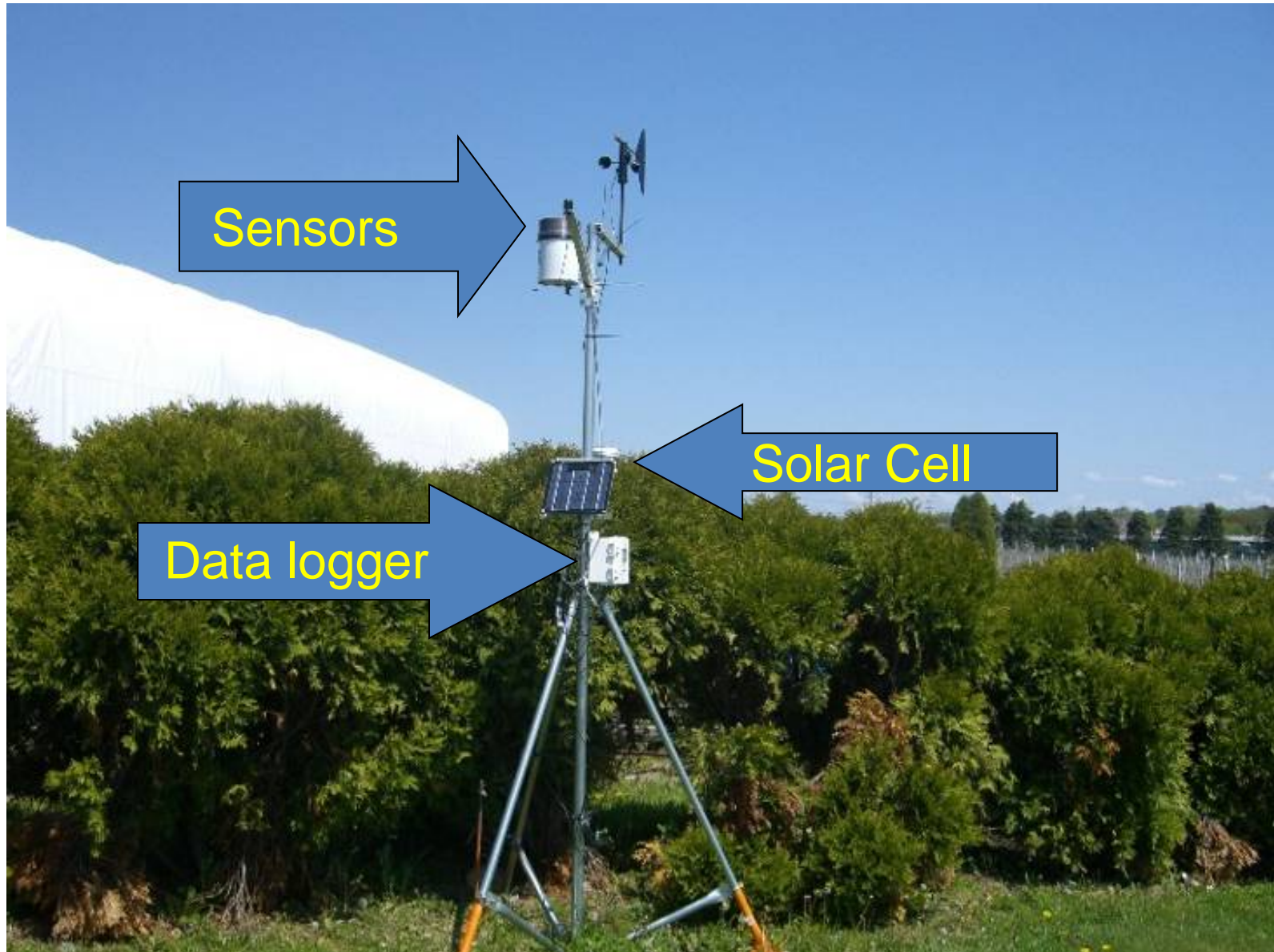
Pathogen

Host

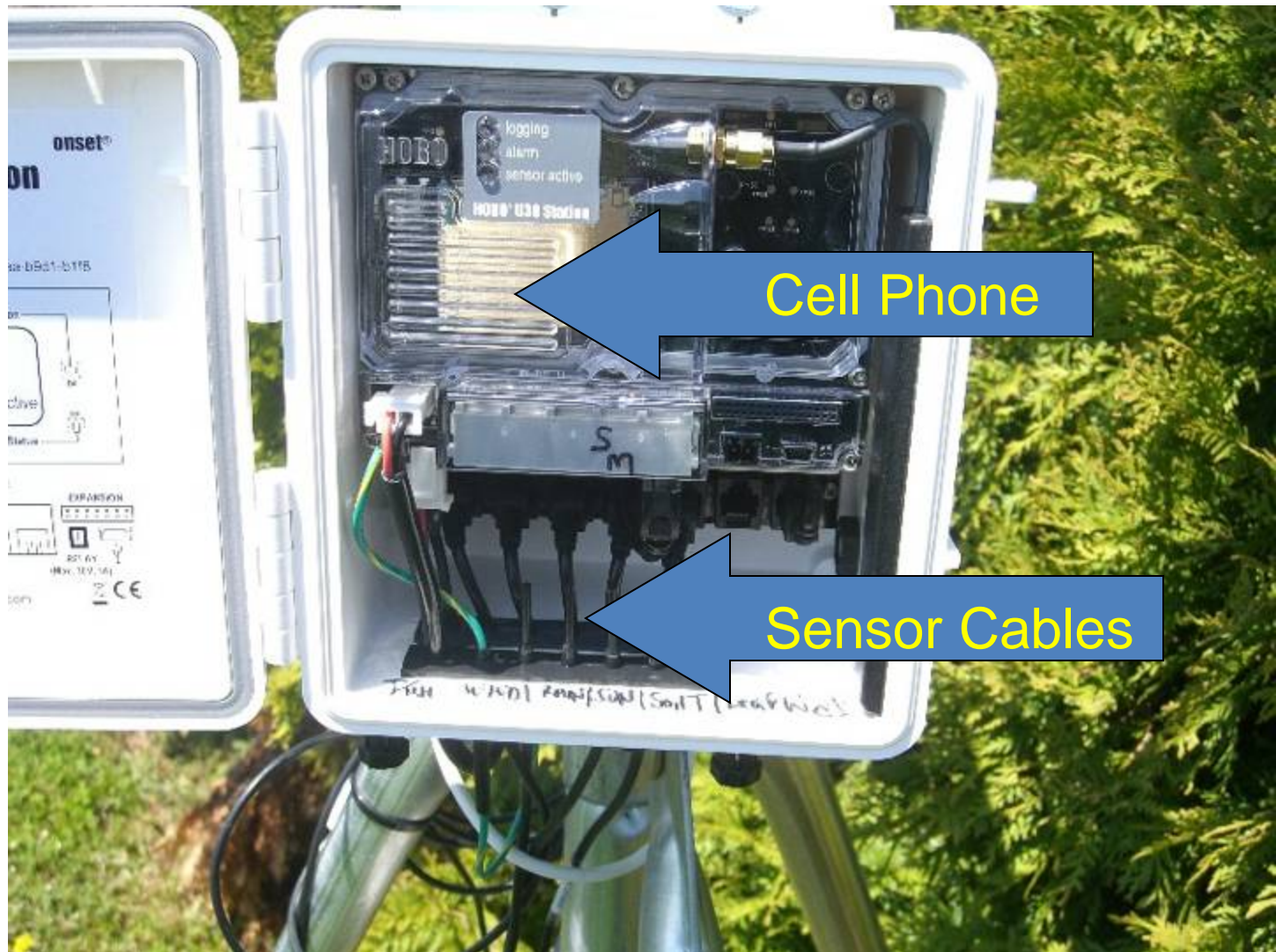
Wind and Rain
spread spores



Remote Weather Station



Cell Phone Based Datalogger



Weather data are web-accessible

The screenshot displays the HOBOLink web interface in a Mozilla Firefox browser window. The address bar shows the URL <https://www.hobolink.com/users/357/devices/354>. The page features a navigation menu with 'Devices', 'Data Files', 'Settings', and 'Support'. The user is logged in as 'SNEGIN'. The main content area is titled 'Newport_4' and shows data for the period '07/20/2009 08:45:00 - 07/21/2009 08:45:00 (EDT)'. Three line graphs are displayed: 'Rain (in)' showing a peak of 0.3 in, 'Wetness (%)' showing a peak of 100%, and 'Temp (°F)' showing a peak of approximately 75°F. A sidebar on the left lists 'Latest Conditions' including Relay State, Rain, Wetness, Temperature, Solar Radiation, Wind Speed, Gust Speed, Wind Direction, Air Temperature, RH, Dew Point, Battery, and Water Content. A 'Latest Connections' section indicates the next connection is expected in 25 minutes. The bottom of the page has a navigation bar with icons for 'Device Configuration', 'Launch Configuration', 'Readout Configuration', and 'Go to Alarms'. The Windows taskbar at the bottom shows the Start button, several application icons, and the system tray with the time 9:35 AM.

Latest Conditions

- Relay State: Deactivated (Open)
- Rain: 0.01 in
- Wetness (LEAF): 100.0 %
- Temperature (Soil Temp 20 cm): 67.84 °F
- Solar Radiation: 69 W/m²
- Wind Speed: 5.4 mph
- Gust Speed: 13.6 mph
- Wind Direction: NE 35 °
- Temperature (Air Temp (2m)): 64.72 °F
- RH: 97.4 %
- Dew Point: 64.00 °F
- Battery: 4.36 V
- Water Content (SOIL): 0.0983 m³/m³

Latest Connections

- Next connection expected in 25 minutes
- Today at 08:59 EDT
- Today at 07:59 EDT
- Today at 07:00 EDT

Newport_4

Past Day | Past Week | Past Month

07/20/2009 08:45:00 - 07/21/2009 08:45:00 (EDT)

Rain (in)

Rain in Past Day: 0.3 in

Wetness (%)

LEAF

Temp (°F)

Soil Temp 20 cm

07/20/2009 08:45:00 - 07/21/2009 08:45:00 (EDT)

Device Configuration | Launch Configuration | Readout Configuration | Go to Alarms

Done

Start | Plant Science Day 2009 ... | idub209.ppt | Short Talk FT 2009.doc ... | SNEGIN | HOBOLink - Devices : ... | 9:35 AM

**2013: Dr. Nail left CAES
I took over the grape plots**



Over time, Ms. Joan Bravo has worked with all four of the CAES scientists working with grapes.



Joan pruning hybrid grapes at Lockwood Farm



Vitis riparia





Vitis

Labrusca

Vitis labrusca

Dipartimento di Scienze della Vita, Università di Trieste - Progetto Dryades
- Picture by Andrea Moro - Comune di Trieste, Campus Universitario., TS,
Friuli Venezia-Giulia, Italia, - Image licensed under a Creative Commons
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Results were presented in a station bulletin.

The

Connecticut

Agricultural

Experiment

Station,

New Haven

Winegrape
Cultivar Trials in
Connecticut:
2012 - 2015

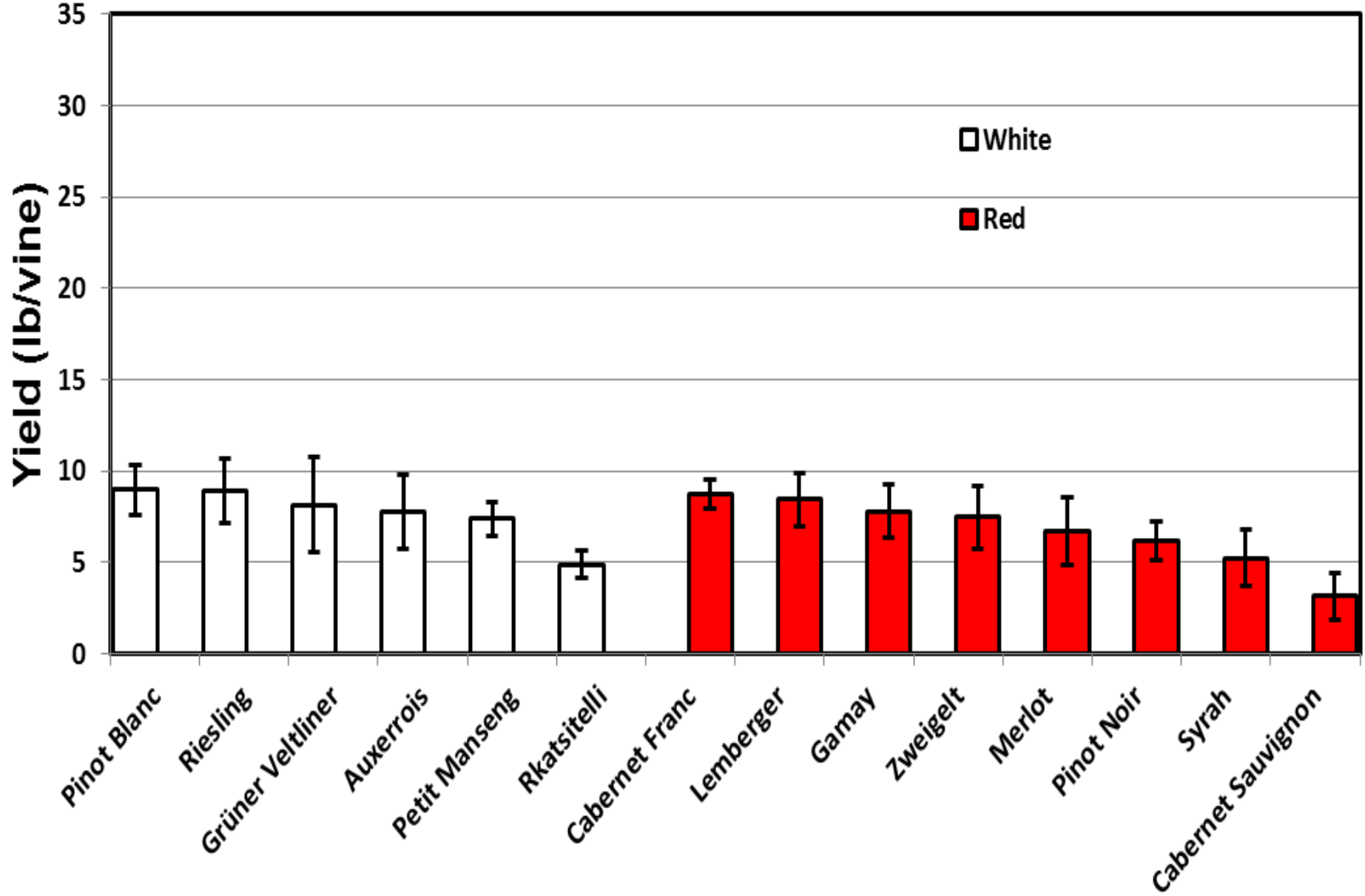
Francis J. Ferrandino Ph. D.

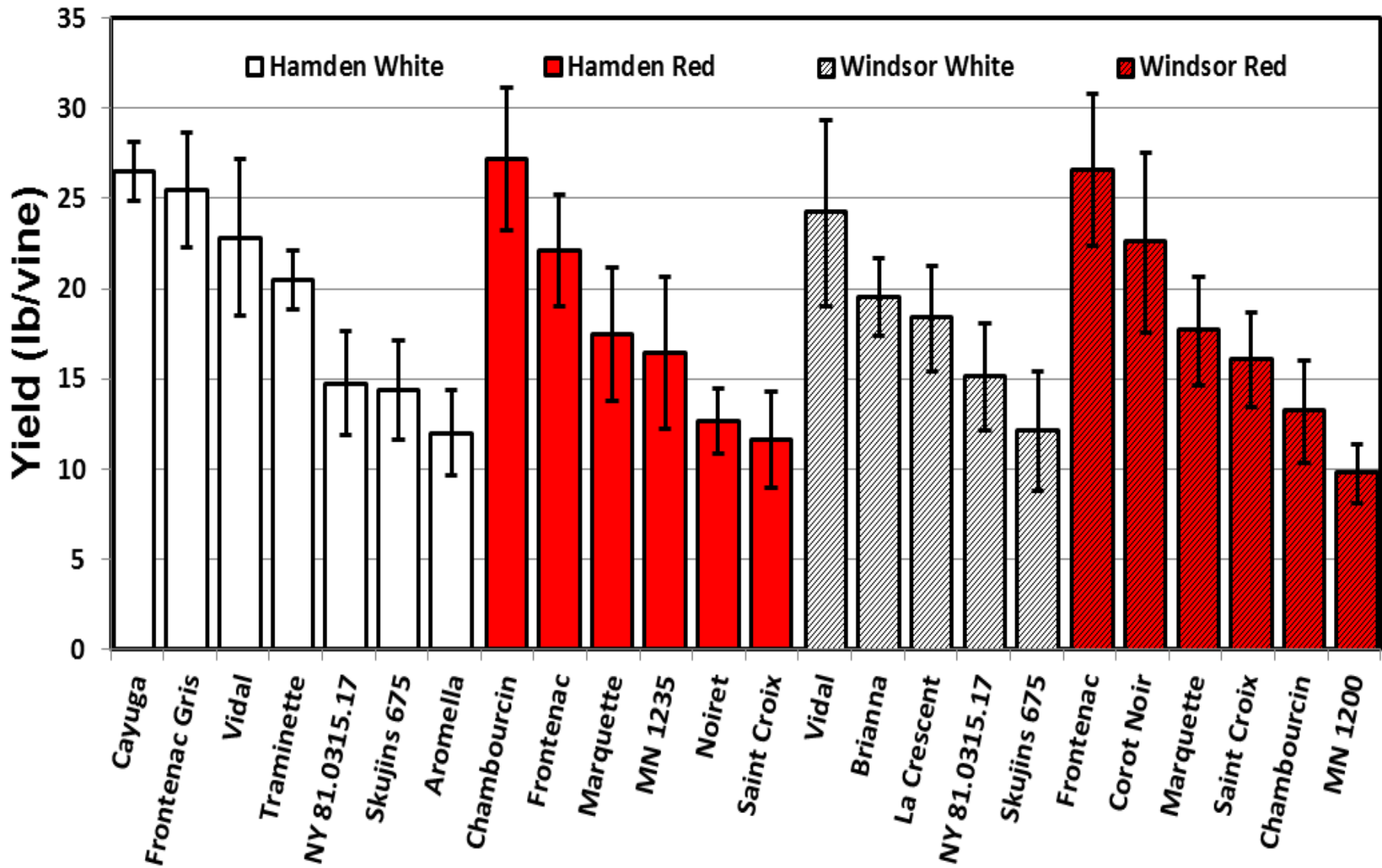
Department of Plant Pathology and Ecology

and

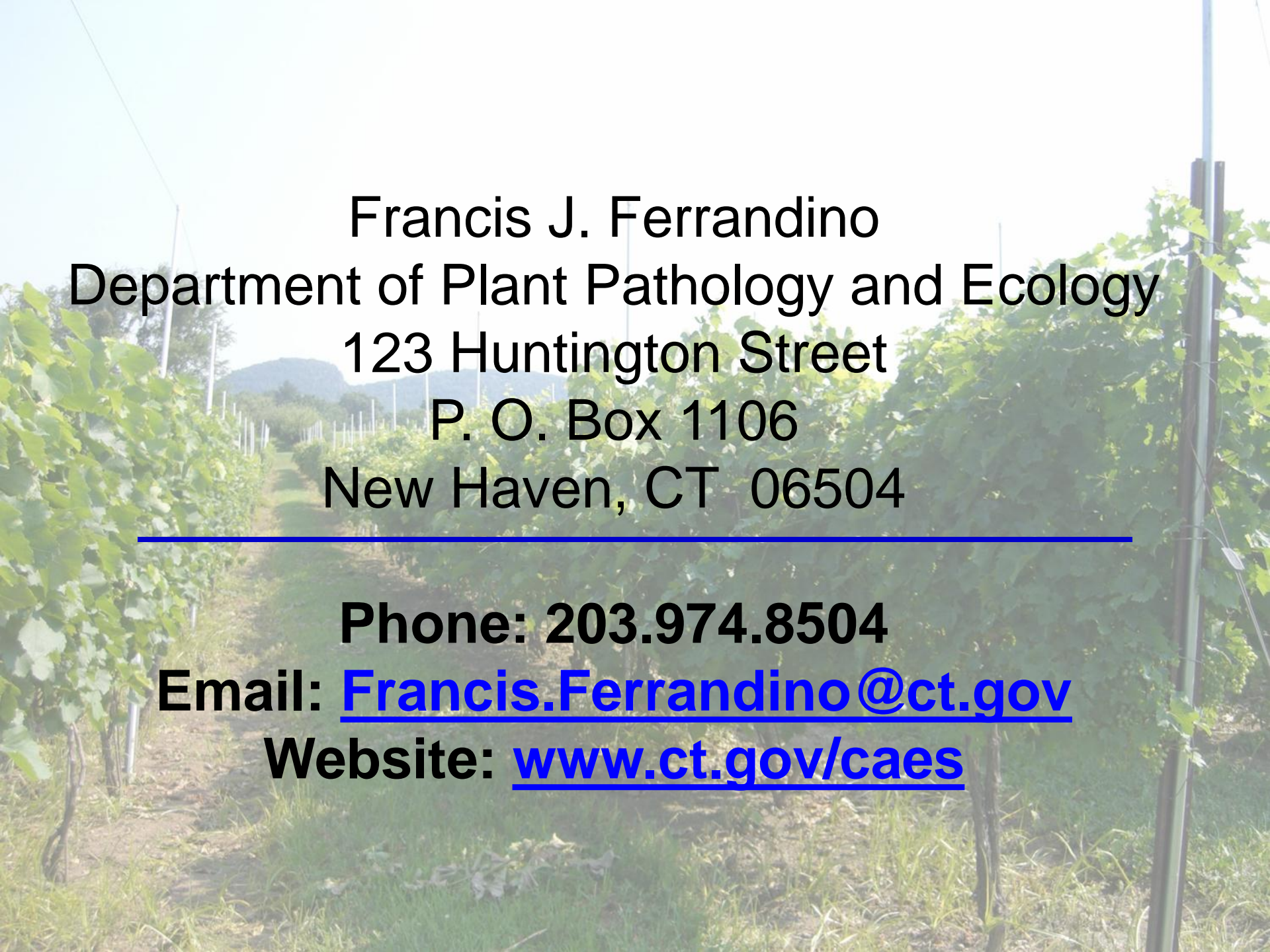
Joan Bravo M. S.

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