History of Broadleaf Tobacco Production in Connecticut

James LaMondia
CAES Valley Laboratory, Windsor

Tobacco in Connecticut?

Tobacco past and present:

CT River Valley = ‘Tobacco Valley’
Historical: 30,000 acres; 10,000 shade.

Currently two types: Shade grown & Broadleaf natural leaf cigar wrapper.

~ 300 diversified growers: 2,500 to 3,000 acres ~$60 million value.

Shade-grown primed wrapper


Field-grown
Broadleaf stalk-cut wrapper

Two types of tobacco in the Americas: naturally occurring allotetraploids (amphidiploid) (~2×10^5 years ago)

Nicotiana tabacum

2n = 4× = 48 ***N. sylvestris*** **♀ ×** ***N. tomentosiformis*** **♂ (Andes)**

Second natural allotetraploid

N. rustica **2n = 4× = 48**

N. paniculata **♀ × *N. undulata* ♂**

(Central America thru N. America)

N. rustica **(10× nicotine), often mixed with plant material, smoked in pipes**

Evidence for domestication ~ 6,000 - 8,000 yrs ago, southern US 3,500 and NE 2,000 yrs ago.

***N. rustica* was widespread in North America and *N. tabacum* in Central and South America until European contact.**

- **Early French, English and Spanish explorers noted tobacco use as a stimulant, herbal medicine or spiritual drug based on dose.**

- **The Spanish were first to commercialize it ~mid-late 1500's**

1606 – Spain: sale of tobacco seed: punished by death penalty

Royal monopoly: All Spanish tobacco controlled thru Seville

1610-12 – John Rolfe, Jamestown

N. rustica* then *N. tabacum

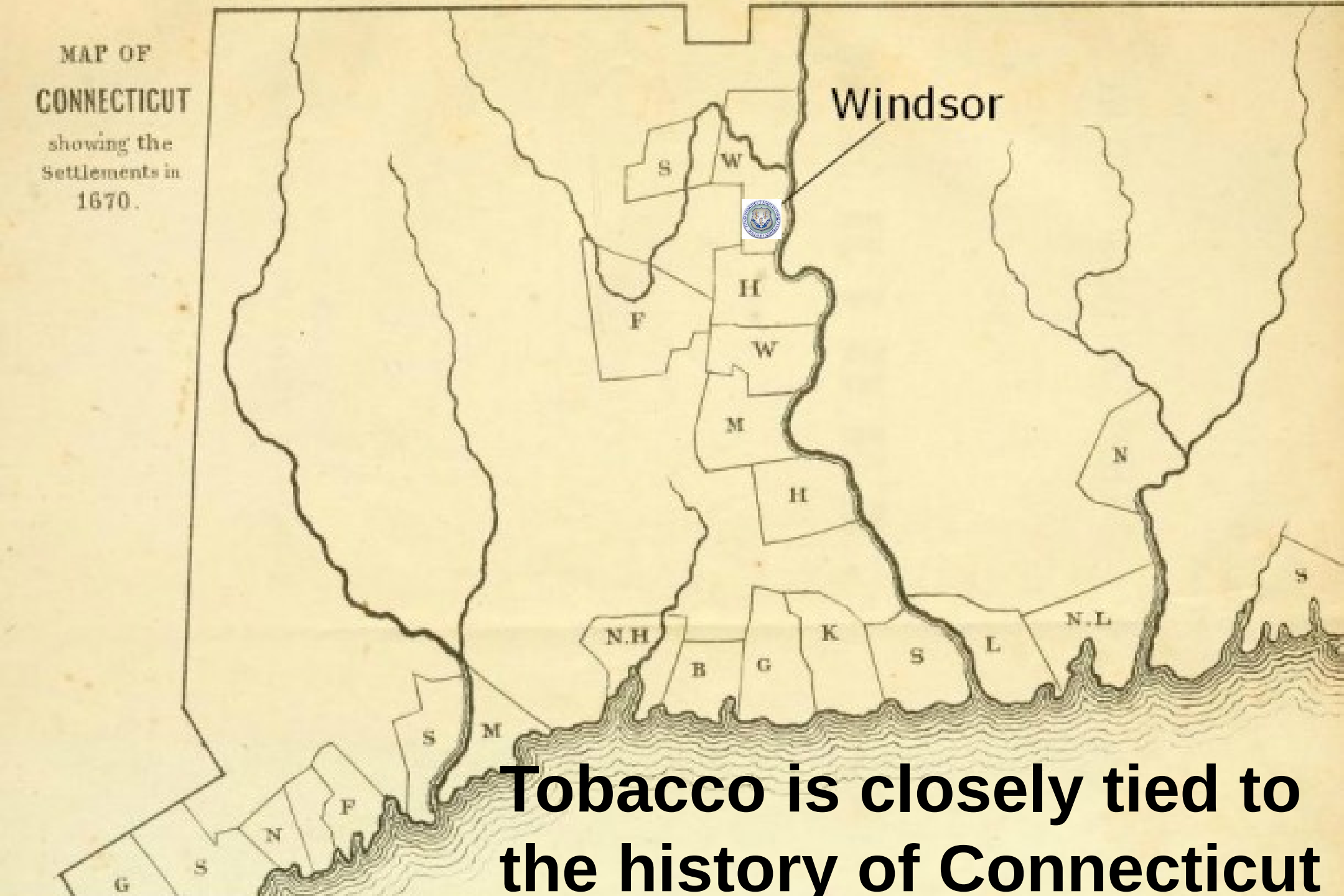
Techniques - Indigenous peoples

- **1616 – Rolfe, Pocohontas - England**
- **1619 – branded as ‘Orinoco’**
- **1624 – VA Co dissolved, new Royal monopoly, import duty, English grown tobacco outlawed**
- **1627 – 500,000 lbs;**
- **by 1629 – 1.5 million lbs**

- **1634 – Maryland was founded ‘to promote the culture of tobacco’.**
- **1700 – VA exported 38 million lbs**
  1750 – tobacco half of all colonial exports
- **Colonial economies were based on tobacco; Tobacco financed the American revolution**

Windsor CT: settled in 1633 by Puritans - Massachusetts & England

Why Windsor? CT River Valley – Glacial lake, good location for agriculture. Trading location & control of area, alliance with tribes, the first important trade crop was tobacco.


MAP OF
CONNECTICUT
showing the
Settlements in
1670.
Windsor
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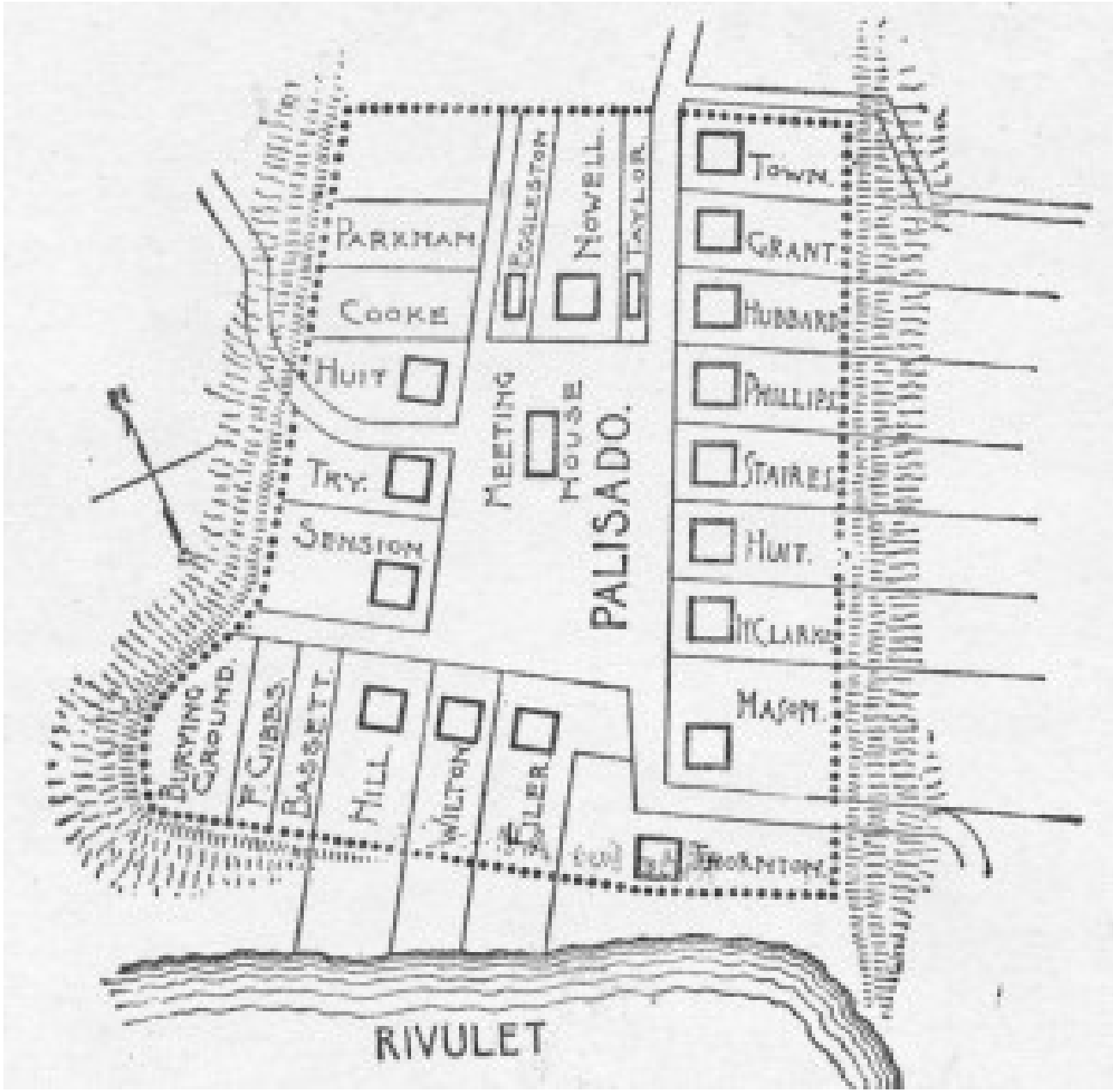
Tobacco is closely tied to
the history of Connecticut



By 1636 - Dorchester (Windsor); Newtowne (Hartford) & Watertowne (Wethersfield) allied, became the Colony of Connecticut.

Nicotiana rustica **was grown first. Hot pepper taste.**

Replaced by *N. tabacum* from Virginia (1640) and Barbados that became CT type ‘shoestring’.

1640 Early protectionist legislation:

enacted by the CT General Court

‘No persons… shall smoake any other tobacco but such as is or shall be planted within these districts except they have license from the Courte’.

- **1650 – first duty on New England tobacco shipped to England.**
- **1660 – Navigation Acts: tobacco could only be sold to England and only carried in English ships.**

Tobacco was the most important export from the Americas in the 1600's & 1700's (used as currency)

1730 – Virginia regulated packing inspection and export quality

1753 – Connecticut followed suit

Shoestring tobacco was smoked in pipes or rolled into cigars

General Israel Putnam was credited with increasing the popularity of cigars when he returned from Cuba in 1762 with thousands of Havana cigars.

CT shoestring cigars were ‘good enough for local use’ and export.

Cigar production became a cottage industry in Connecticut

Connecticut shoestring was similar to an historic Maryland narrowleaf type.

1810- Cuban rollers hired to improve cigar quality.

In 1833 an East Windsor grower brought in a Maryland broadleaf strain, selected over time to become Connecticut broadleaf.

Connecticut Broadleaf

Havana Seed was documented in CT ~ 1870.

No Cuban seed can be directly traced back as a source

From the 1630's to the 1870's: seeds were brought in from other areas, open pollinated and growers selected for adapted strains & favored traits.

The 1870's marked the start of CAES and 150 years of science.

1870’s: CAES & USDA scientists studied fertility, soils and plant selection.

1905: Shamel - First publication: Inbreds increased uniformity


Broadleaf and Havana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1880's: Wrapper leaf from Sumatra, light, thin & mild, gained favor. Tariffs did not solve growers problems

By 1900, CT scientists crossed Sumatra, Havana & Broadleaf and created an artificial shade-grown environment. The result was a superior cigar wrapper leaf.

Connecticut Shade Wrapper


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Wrapper leaves *must* be perfect!

CAES

The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

“Science should not only be good, it should be good for something”

J.G. Horsfall, Director

Role of Research

CAES 1875 – present

- Fertilizer studies, soils
- Curing and fermentation
- Developed shade tobacco
- Plant disease & insect control
- Plant breeding

CT Tobacco Breeders (*USDA)

1905 - 1910 – E.M. East, H.K. Hayes (*Shamel)

1915 to 1960 – D.F. Jones (*Beinhart)

1954 to 1964 – S.A. Sand

1953 to 1987 – G.S. Taylor

1986 to present – J.A. LaMondia

East, Hayes and DF Jones in collaboration with Beinhart released inbred ‘Connecticut Round Tip’ tobacco in 1921. Initial crosses made around 1909.

This tall rounded-leaf type was important in the development of modern shade tobacco.

1921: Tobacco Station, Windsor

1921 - State appropriated $10,000 for the Tobacco Research Station.

Growers purchased the land and transferred to the BOC for $1 plus the $5,000 mortgage.

- **Growers incorporated the CT Valley Tobacco Improvement Association and hired Dr. G. Chapman of the Univ. of Massachusetts as Director.**
- **1922 – CVTIA funds built the wooden laboratory building.**

- **1923 - C.M. Slagg, USDA in charge.**
- **1925 - Dr. P.J. Anderson (CAES) became Director of the Substation.**
- **1929 - CVTIA dissolved; CAES only**
- **1939-40 - New laboratory built.**

Crises Affecting CT Tobacco: cigar wrapper must be perfect!

1921 – Wildfire

1950s – fleck due to air pollutants

1960s – Tobacco mosaic virus

1970s – Black shank, blue mold

1980s – Fusarium wilt

Crises Affecting CT Tobacco

1990's – Blue mold, cyst nematode

2000's to current - target spot, black root rot, and PVY

Approach: quick fix, plant resistance

Conventional plant breeding

Resistance sources in breeding

Wildfire and TMV – *N. glutinosa*
single dominant genes

Black shank – *N. plumbaginifolia*
multiple genes

Fusarium wilt – *N. tabacum*
multiple genes

- **TCN – *N. longiflora* single dominant gene, other spp.**
- **BRR – *N. tabacum* multiple genes**

  ***N. debneyi* multiple genes**
- **Blue mold – *N. debneyi* multiple genes**

  ***N. longiflora* multiple genes**

Broadleaf Tobacco Breeding

1991: Inbred lines resistant to Wilt, TMV and Fleck: C8, C9, A1 and A7 (2001). C9= standard

Male-sterile hybrids with addt'l resistance: B1, B2, D1, D2, more in development.

B2 – Bdlf released in 2011

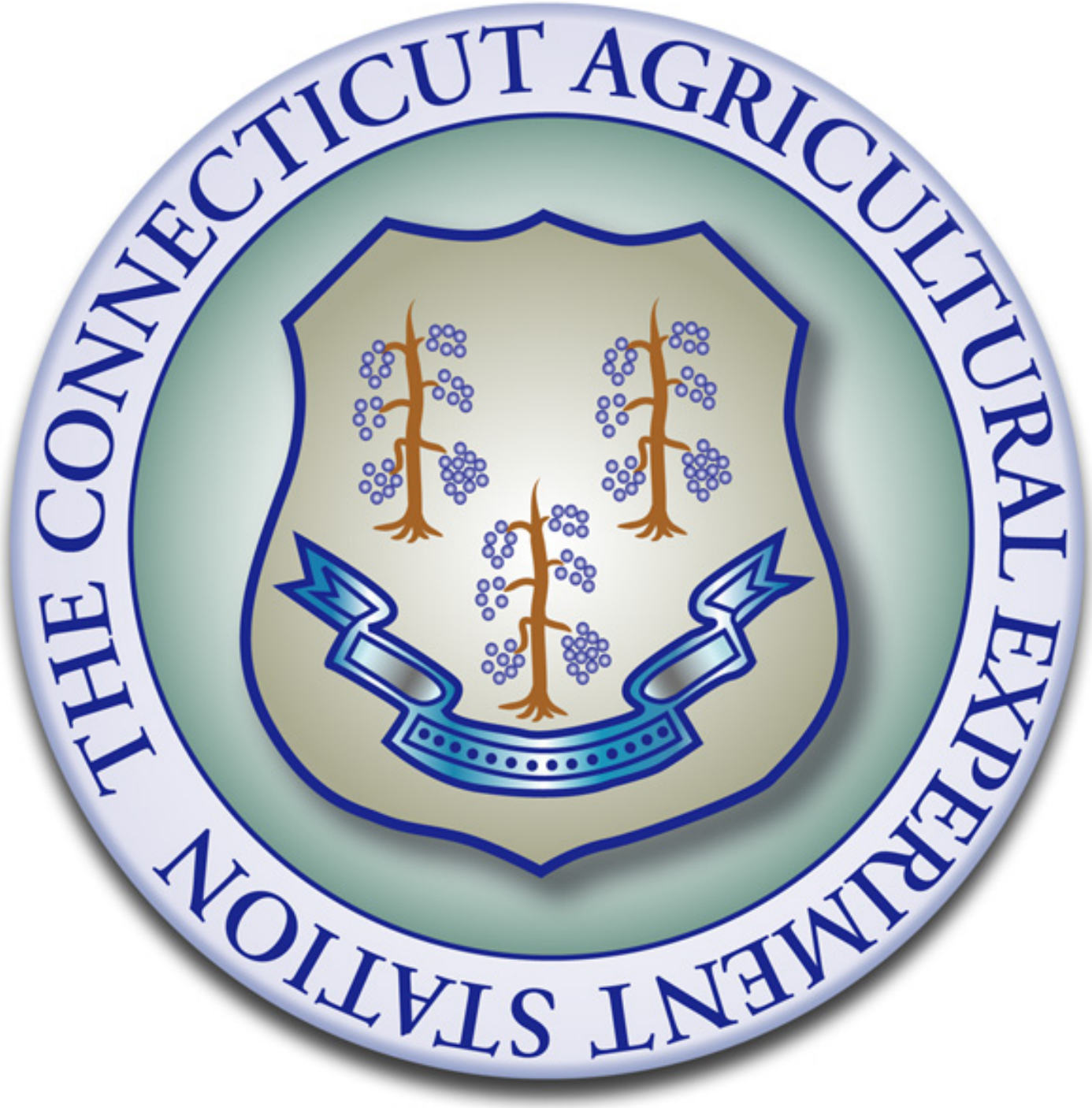
Wilt-R
TMV-R
Fleck
TCN-R
Moderate R:
Blue Mold
BRR

Shade Tobacco Breeding

Male-sterile hybrid lines with resistance to Fusarium wilt, TMV, black shank, fleck, cyst nematode, and blue mold are being evaluated.

Connecticut Wrapper Tobacco

For over 380 years, tobacco strains have been introduced, crossed (chance / intentionally) and selected for adaptation to our environment and for cigar characteristics.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James LaMondia
Valley Laboratory
153 Cook Hill Road
P. O. Box 248
Windsor, CT 06095

Phone: 860-683-4982
Email: James.LaMondia@ct.gov
Website: portal.ct.gov/caes