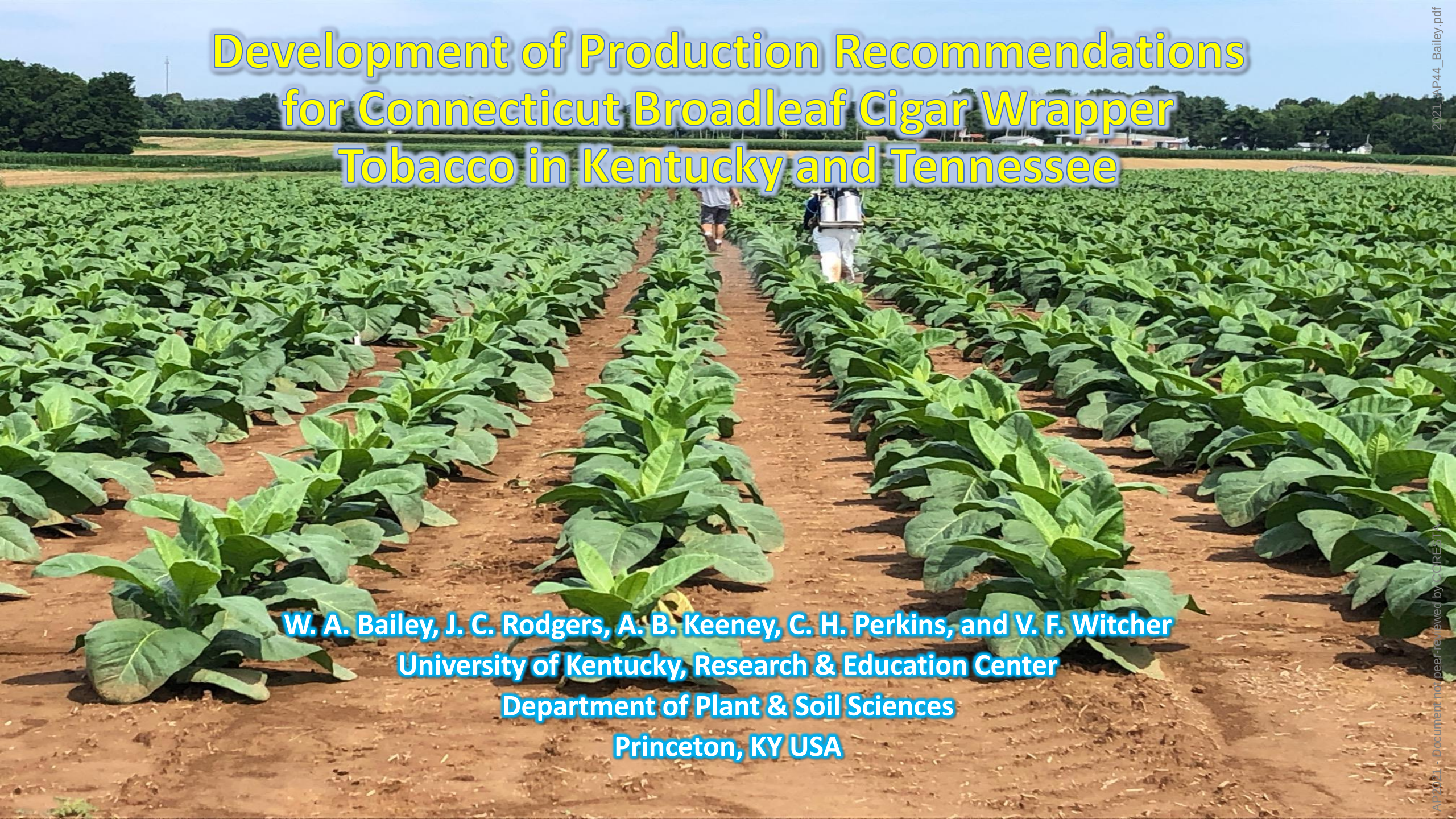
Development of Production Recommendations for Connecticut Broadleaf Cigar Wrapper Tobacco in Kentucky and Tennessee



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Connecticut Broadleaf Cigar Wrapper

- Air-cured cigar wrapper type
- High demand by leaf dealers
  - 600 hectares (1,500 acres) grown in 2019
  - 1,200 hectares (3,000 acres) in 2020
  - <600 hectares in 2021
- Short-season: 9-10 weeks in field
  - 7 weeks from seed to transplant
  - 7 weeks from transplant to topping
  - 2-3 weeks from topping to harvest
- Profitability is in % wrapper tobacco
  - Need to average >$6.60/kg ($3.00/lb) or wrapper grades on >40 % of the crop

Connecticut Broadleaf Research

- Need to develop recommendations for this new type
  - Variety trials: 2019-2020
    - Six varieties tested, but no variety choice for growers
    - ‘C33’ = ‘heirloom’ type open-pollinated variety from CT
  - Nitrogen Rate Trials: 2019-2020
    - 84, 112, 140, **168, 196**, 224, 252 kg N/Ha
  - Fungicide Trials: 2019-2021
    - Evaluate fungicides on effectiveness against late-season frogeye leafspot

2019-2020 CT Broadleaf Variety Trials

‘SPX’ and ‘PAB’ selections

No disease resistance

Fusarium wilt, TMV

Fusarium wilt, TMV

Fusarium wilt, TMV, black root rot, blue mold

Male Sterile Hybrid

Fusarium wilt, TMV, black root rot

Fusarium wilt, TMV, black root rot, cyst nematode

Connecticut Broadleaf Variety Trials

Variety	Disease Resistance	2019 Yield (kg/ha)	2019 % Wrapper	2020 Yield (kg/ha)	2020 % Wrapper
A1	Fusarium Wilt, TMV	2523	27	1714	<1
B1	Fusarium Wilt, TMV	2464	26	1885	3
B2	Fusarium Wilt, Black Root Rot, Blue Mold	2964	28	1930	3
D1	Fusarium Wilt, TMV, Black Root Rot	2419	27	1952	1
D2	Fusarium Wilt, TMV, Black Root Rot, Nematode	2807	29	1916	3
C33 'SPX'	None	2793	33	1726	4
C33 'PAB'	None	-	-	1849	1
PA-41 'Welks Pride'	None	-	-	2013	2
LSD (0.10) =		*302*	*10*	*245*	*3*

Nitrogen Rates for CT Broadleaf

- Thin leaf and short season means CTB should need lower N
- 168 to 196 kg N/Ha seems optimal based on N rate trials
  - About half the N rate normally used for dark tobacco in KY
- Can put out all N before transplanting with no sidedress N
  - Short time window for sidedressing (first 3-4 weeks)
  - Wet periods may prevent sidedressing before tobacco is too big

Connecticut Broadleaf Nitrogen Rate Trials - 2019

Total N Kg N/Ha	Preplant N Kg N/Ha	Sidedress N Kg N/Ha	Total Yield Kg/Ha	% Wrapper
84	84	0	2128	23
112	84	28	2242	34
140	84	56	2462	32
168	**84**	**84**	**2298**	**36**
196	**84**	**112**	**2532**	**37**
224	84	140	2402	29
252	84	168	2620	29
	LSD(0.10)=		*374*	*9*

*Nitrogen source was ammonium nitrate (34-0-0).

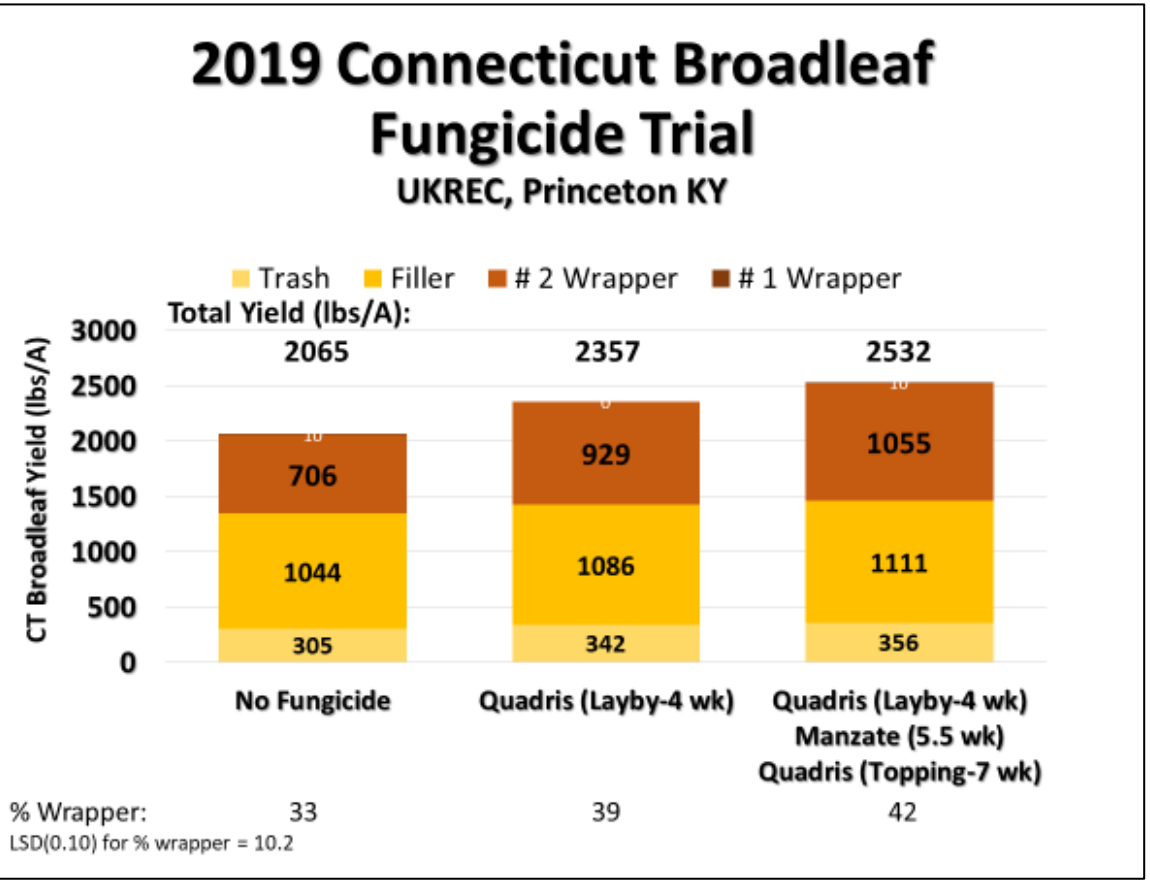
Connecticut Broadleaf Fungicide Research

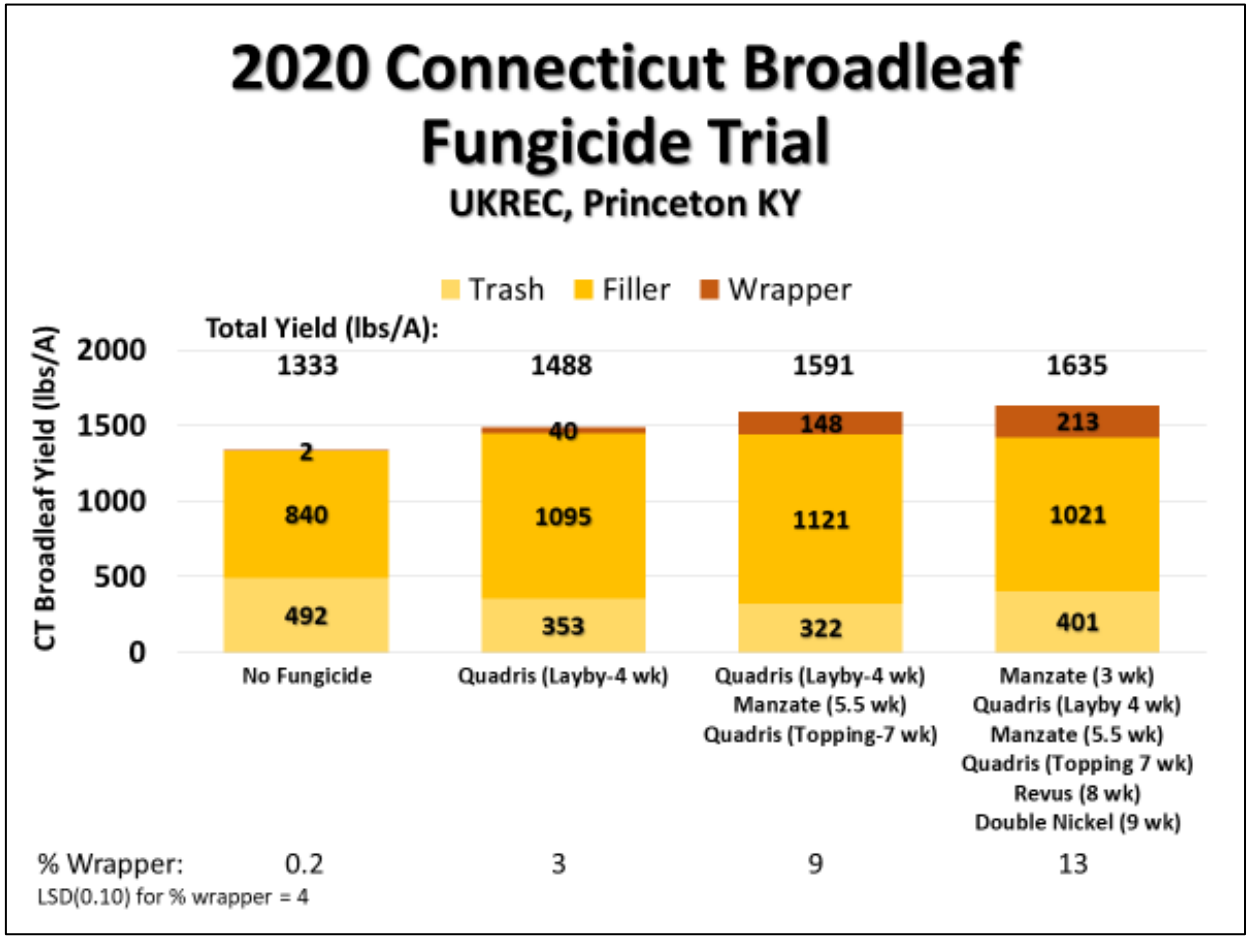
- ‘Greenspot’ is biggest problem in CTB

- Associated with late frogeye leafspot infections in last week before harvest
  - Research in collaboration with University of Arkansas (Bert Bluhm) has confirmed presence of cercosporin toxin in greenspots on CTB cured leaf.

- Research is focused on testing fungicides that are effective against frogeye that could be applied late-season

Connecticut Broadleaf Fungicide Trials





- Definite response to fungicide application
- More fungicide applications =
  Less greenspot, more wrapper leaf

2021 CT Broadleaf Fungicide Research: Focus on Frogeye Control in Late Season

Trt	Fungicide/Fungicide Program	Chemical Name	Classification	Number of Applications	Timing of Final Spray
1	Manzate/Quadris	mancozeb/axozystrobin	Fungicide	2	21 d
2	Manzate/Quadris/Revus	mancozeb/azoxystrobin/ mandipropamide	Fungicide	5	7 d
3	Presidio	fluopicolide	Fungicide	2	7 d
4	Orondis Ultra	oxathiapiprolin/mefenoxam	Fungicide	2	7 d
5	Cueva	copper octanoate	Copper	5	3 d
6	Double Nickel	*Bacillus amyloliquefaciens* strain D747	Biological	5	3 d
7	Regalia	*Reynoutria sachalinensis*	Biological	5	3 d
8	Velum Prime	fluopyram	Fungicide	2	30 d
9	EXPERIMENTAL A (Topsin)	thiophanate-methyl	Fungicide	4	14 d
10	EXPERIMENTAL B (Topguard)	flutriafol	Fungicide	3	14 d
11	EXPERIMENTAL C (Miravis Top)	Pydiflumetofen+difenoconazole	Fungicide	3	14 d

2021 Topping Height and Lower Leaf Removal

- Frogeye leafspot is starting at bottom of plant from soil and crop residue
- Infections that cause greenspot are occurring in last 7-10 days before harvest
- Could removing bottom 4 leaves at topping reduce infection of wrapper leaves?
- Compare topping heights:
  - **10-**, 12-, or 14-leaf topping
- 4 lower leaves plus trash leaves removed at topping
- What about only harvesting top 6 leaves on stalk?

Curing Research for CT Broadleaf

2020 Curing Experiment:

- Tobacco harvested August 5
- Housed in a small fire-cured barn
- Heat not used until wet period began August 27
- Charcoal heat used for 4-6 hours/day for 10 days
  - 35-40 °C
- Compared to tobacco in adjacent air-cured barn:
  - Heat did not improve tobacco
  - Likely only prevented major problem with mold/houseburn

2021 Curing Experiment:

- Begin heating earlier regardless of outside conditions
  - Start at 1-2 days after housing
  - 4-10 hours of heat/day with propane
  - Continue heat for 21 days to aid in yellowing and early curing

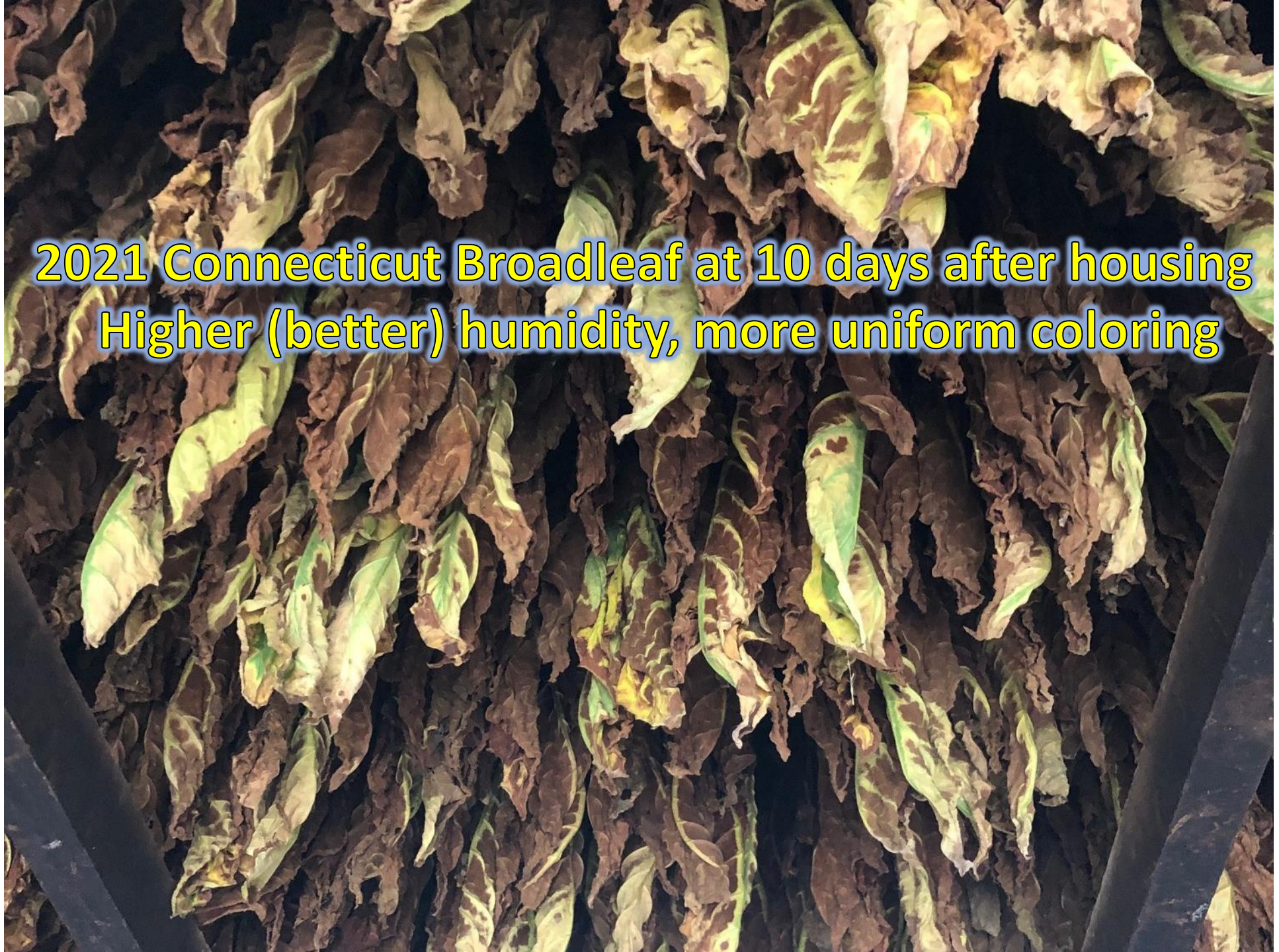
2020 Curing Experiment

2021 Curing Experiment

Connecticut Broadleaf Curing Conditions

2021 - Barn with Supplemental Heat vs. Air-Curing Only

Average Barn Temperature and Relative Humidity during 21-day period from August 3 to August 24		
Barn	**Mean Temperature (°C)**	**Mean Relative Humidity (%)**
Air-Curing only	**25.2**	**79.0**
Supplemental Heat	**28.1**	**73.3**



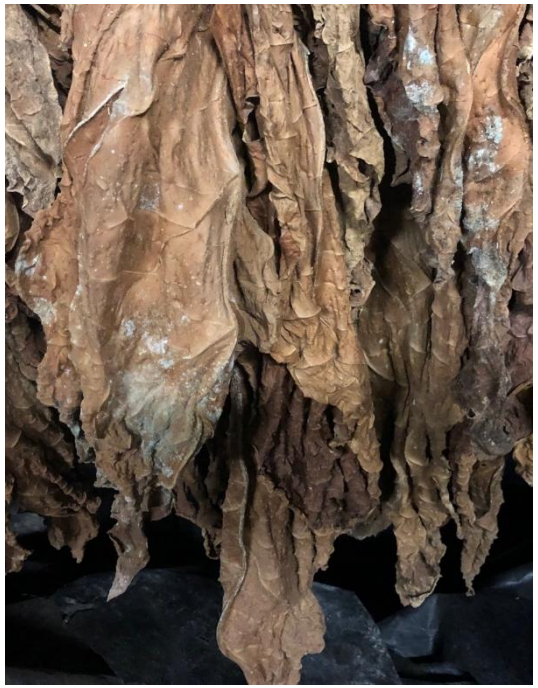
Connecticut Broadleaf Curing Conditions

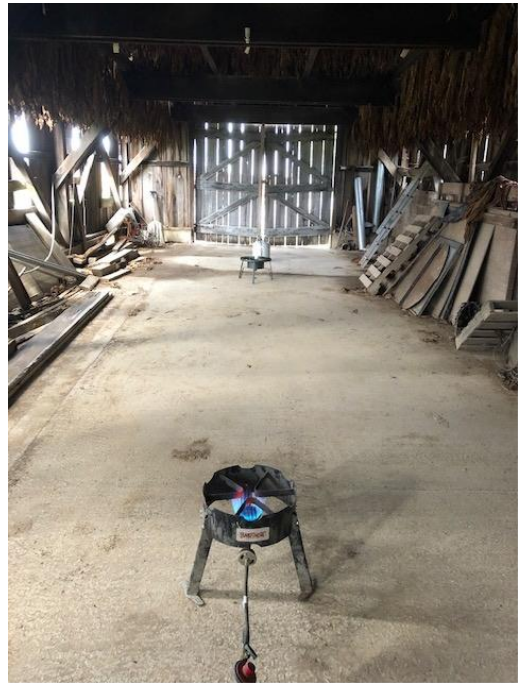
Harvested early August (2019 and 2020), or late July (2021)

Average Barn Temperature and Relative Humidity during 6-week period from mid-August to October 1		
Year	**Mean Temperature (°C)**	**Mean Relative Humidity (%)**
2019	**24.2**	**68.4**
2020	**21.6**	**77.4**
2021	**22.7**	**75.6**

Curing Concerns in Kentucky

- Air-cured tobacco harvested late July/early August, curing will be complete while temperatures and RH are still high
- Mold will be a concern
- Add heat to lower RH to prevent mold growth at end of cure
- Some buyers are allowing use of denatured alcohol or vinegar to remove mold





Emerging Recommendations for Connecticut Broadleaf Cigar Wrapper

AGR-258

University of Kentucky
College of Agriculture, Food and Environment
Cooperative Extension Service

Production of Connecticut Broadleaf Cigar Wrapper Tobacco in Kentucky and Tennessee

Andy Bailey and Bob Pearce, Plant and Soil Sciences

Tobacco dealers have recently taken an interest in purchasing Connecticut Broadleaf tobacco produced in Kentucky and Tennessee. Connecticut Broadleaf has traditionally been grown in areas of the Connecticut River Valley in Connecticut and Massachusetts. However, decreased production in this area along with increased demand for natural leaf cigar wrappers has caused tobacco dealers to pursue other tobacco-producing areas for this type. At first glance, Connecticut Broadleaf tobacco resembles dark air-cured tobacco, but it has enhanced leaf quality characteristics that can increase its potential value for use as cigar binders and wrappers.

Figure 1. Area of wrapper "cut" in relation to cured leaf of Connecticut Broadleaf tobacco. Premium (#1) wrapper requires at least six wrapper cuts per leaf while #2 wrapper/binder requires at least two.

Leaf Grades, Characteristics, and Projected Prices

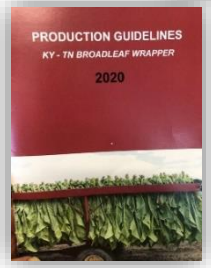
Wrapper is the term used to describe very high-quality tobacco leaf that is used for the outer layer of a cigar, which is the most visible portion. Depending on leaf quality, two to eight wrappers may be cut from a single leaf of tobacco. Binder is used just inside the outer wrapper leaf of a cigar, while the remainder of the cigar inside the binder is known as filler. Prices offered for cigar wrapper and binder

profitable, growers producing Connecticut Broadleaf tobacco should strive for at least 50% wrapper/binder grades.

To be considered cigar wrapper, leaves must possess certain qualities:

- at least 9 inches wide
- uniform brown color
- excellent elasticity (stretch)
- relatively thin
- free of flaws (holes, bruises, disease spots, flecking, watermarks, mixed

cut Broadleaf like we are accustomed to with burley and dark tobacco. Up to this point, the dealer offering the contract supplies seed of one variety to the grower. This seed is the dealer's selection of a standard variety that has been grown in the traditional production area for many



New UK Extension Publication AGR-258

Assistance with industry production guides

Cigar Wrapper Tobacco Production

Andy Bailey, Bob Pearce, and Matthew Vann

Introduction

There has always been a niche market for cigar wrapper leaf from dark fire-cured and, to a lesser extent, dark air-cured tobacco in the Kentucky/Tennessee dark tobacco production area. Major counties for dark tobacco cigar wrapper production include Robertson, Montgomery, and Cheatham counties in Tennessee, and Logan and Todd counties in Kentucky. Recently, there has also been a major interest from tobacco dealers in purchasing Connecticut Broadleaf cigar wrapper tobacco produced in Kentucky and Tennessee. Connecticut Broadleaf is an air-cured type that has traditionally been grown in areas of the Connecticut River Valley in Connecticut and Massachusetts. However, decreased production in that area along with increased demand for natural leaf cigar wrappers has caused tobacco dealers to pursue other tobacco-producing areas for this type. At first glance, Connecticut Broadleaf tobacco resembles dark air-cured tobacco, but generally has enhanced leaf quality characteristics that can increase its potential value for use as cigar binders and wrappers. In this chapter, we will focus primarily on Connecticut Broadleaf cigar wrapper tobacco, although many of the production principles discussed would also apply to dark cigar wrapper crops.

Figure 1. Area of wrapper 'cut' in relation to cured leaf of Connecticut Broadleaf tobacco. Premium (#1) wrapper requires at least six wrapper cuts per leaf while #2 wrapper/binder requires at least two.

Leaf grades, characteristics, and projected prices

Wrapper is the term used to describe very high-quality tobacco leaf that is used for the outer layer of a cigar, which is the most visible portion. Depending on leaf quality, two to eight wrappers may be cut from a single leaf of tobacco. Binder leaf may also include a small number of wrappers but is primarily used just inside the outer wrapper leaf of a cigar, while the remainder of the cigar inside the binder is known as filler. Prices offered for cigar wrapper and binder grades are quite high ($4 to $6/lb) compared to current prices offered for dark and burley tobacco. However, prices offered for cigar filler are considerably less than current prices for dark and burley tobacco ($1.75/lb or less). Premium (#1) wrapper will contain six to eight wrapper "cuts" per leaf, while #2 wrapper/binder will contain two to five wrapper cuts per leaf. See Figure 1 for illustration of area of a wrapper cut on a leaf. Total yields of Connecticut Broadleaf

General Production Guidelines

Varieties

Although Connecticut Broadleaf variety trials have been conducted in Kentucky and North Carolina in 2019 and 2020, there is currently little or no variety selection in Connecticut Broadleaf like we are accustomed to with burley and dark tobacco. Up to this point, the dealer offering the contract supplies seed of one variety to the grower. This seed is usually the dealer's selection of a standard variety that has been grown in the traditional production area for many years. No Connecticut Broadleaf variety has any resistance to black shank. Therefore, Connecticut Broadleaf should only be grown in fields that have absolutely no known history of black shank. The current seed being provided is a selection of a variety known as '33', which only has disease resistance to tobacco mosaic virus (TMV).

Transplant Production

Production of Connecticut Broadleaf transplants in the

New cigar wrapper chapter in 2021-2022 Burley & Dark Tobacco Production Guide

Other Research Ideas

- CT Broadleaf is very susceptible to lodging, which compromises yield and wrapper potential.
  - Could putting CT Broadleaf on a ridge before transplanting, or ridging around plant after transplanting help keep tobacco straighter?

- Biggest need for production in KY and TN is black shank (*Phytophthora* root rot) resistance.

Thanks to Sponsors of Connecticut Broadleaf Research:

- ITG Brands
- Lancaster Leaf Tobacco Company of Pennsylvania
- Hail & Cotton, Inc.
- Gallatin Redrying and Storage Co.

QUESTIONS?