

Dark Tobacco Variety Evaluations for Susceptibility to Angular Leaf Spot

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Angular leaf spot

Bacteria – *Pseudomonas syringae* pv. *tabaci*

- Overwinters in crop debris
 - Can be seedborne
 - Weeds can harbor disease
- Severity increases following storms & wet periods



Reason for study

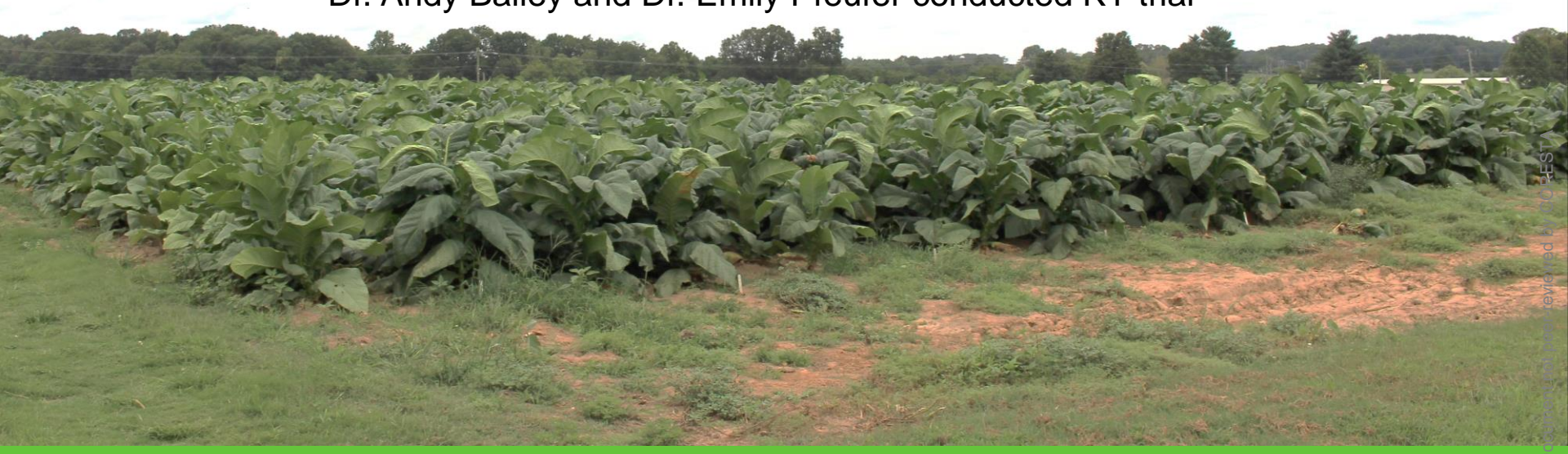
- ALS is not well controlled with pesticides
 - Agricultural streptomycin only marginally effective
- ALS becoming increasingly prevalent in dark tobacco production
- Dark tobacco remains an important crop in TN & KY
 - 2020 fire & air-cured stats
 - TN: 24 M lbs, \$70 M
 - KY: 34 M lbs, \$91 M



Dark tobacco angular leaf spot variety trials

Three trials over two years completed with Altria's support (pictured: Springfield, TN 2020)

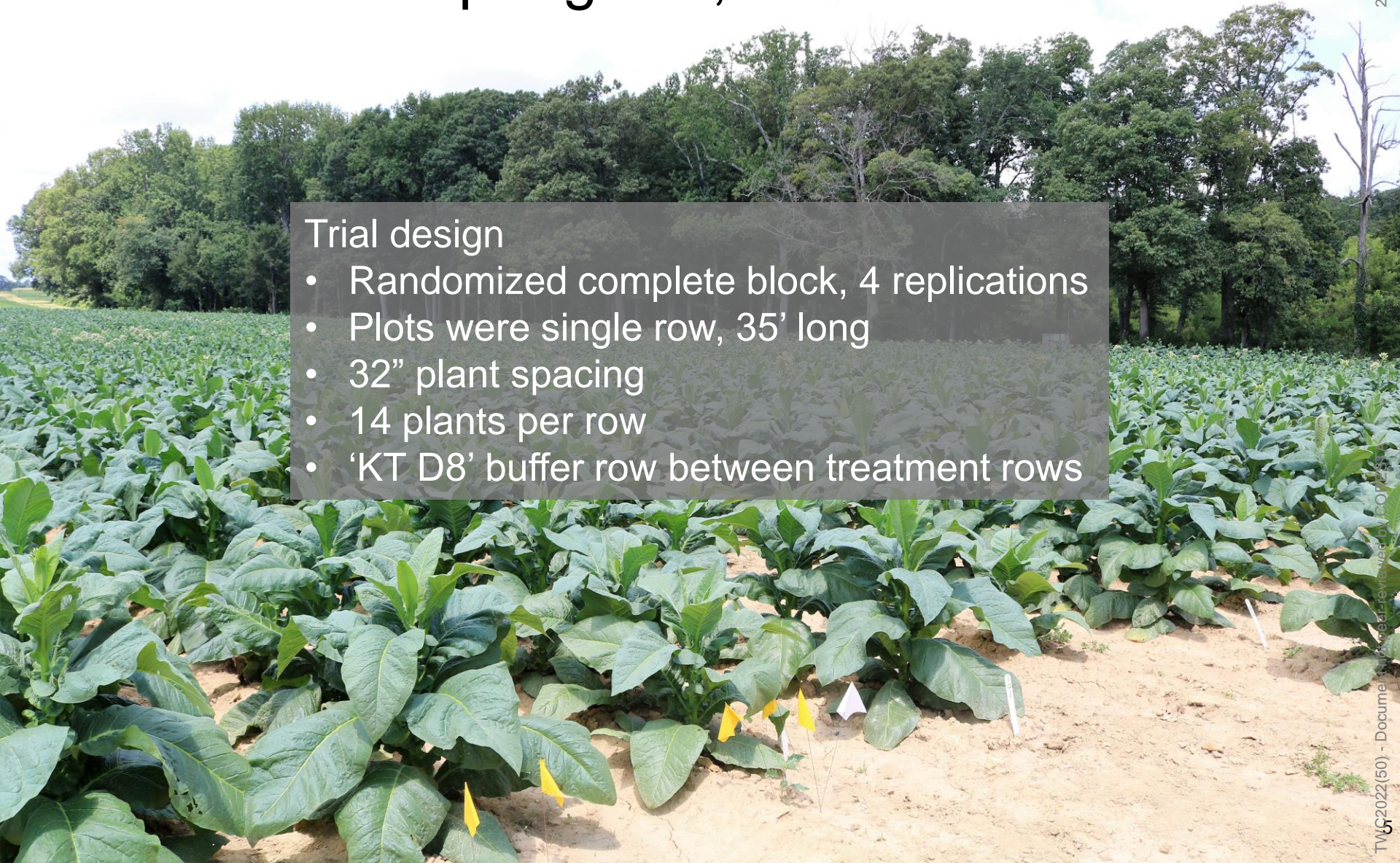
- 2019, University of Tennessee Highland Rim REC, Springfield, TN
 - 19 varieties included
- 2020, University of Tennessee Highland Rim REC, Springfield, TN
 - 14 varieties included
- 2020, University of Kentucky Princeton REC, Princeton, KY
 - 10 varieties included
 - Dr. Andy Bailey and Dr. Emily Pfeufer conducted KY trial



Dark tobacco angular leaf spot variety trial Springfield, TN 2019

Trial design

- Randomized complete block, 4 replications
- Plots were single row, 35' long
- 32" plant spacing
- 14 plants per row
- 'KT D8' buffer row between treatment rows



Dark tobacco angular leaf spot variety trials

Up to 19 varieties included in inoculated tests – assessing varietal susceptibility

- NL Madole
- TR Madole
- Lit Crit
- KY 171
- VA 309
- TN D950
- KT D6
- KT D8
- KT D14
- KT D17
- DT 538
- DT 558
- PD 7305
- PD 7309
- PD 7312
- PD 7318
- PD 7319
- DF 1404
- Shiree



Dark tobacco angular leaf spot variety trials

- Trials inoculated with *Pst* bacterial suspension
- Plots rated for % disease (ALS) 3 weeks after inoculation



Wide range of ALS disease severity in trials



Mild ALS



Moderate ALS



Severe ALS

ALS disease severity ratings

Variety	Springfield, TN 2019		Springfield, TN 2020		Princeton, KY 2020	
	Final ALS Severity (%)	Tukey's Mean separation	Final ALS Severity (%)	Tukey's Mean separation	Final ALS Severity (%)	Tukey's Mean separation
PD 7309	0.8	a	4.2	a	16.6	a
DT 538	0.8	a	4.3	ab	21.3	abc
KY 171	0.9	ab	7.7	abc	26.9	bcd
Lit Crit	0.9	ab			21.2	abc
TR Madole	1.1	ab				
PD 7318	1.1	ab	4.1	a		
NL Madole	1.2	ab	5.4	ab	18.6	ab
PD 7312	1.7	ab	6.6	abc		
Shiree	1.9	ab				
DT 558	1.9	ab	6.3	abc		
PD 7319	2.0	ab	4.9	ab		
PD 7305	2.2	ab	4.7	ab		
KT D8	2.2	ab			31.0	d
KT D6	2.5	ab	5.5	ab	26.4	bcd
KT D14	2.5	ab	8.4	abc		
DFH 1404	3.3	ab				
VA 309	5.8	ab	3.7	a	29.3	cd
KT D17	6.0	ab	12.3	c	31.0	d
TN D950	7.0	b	10.2	bc	23.4	abcd

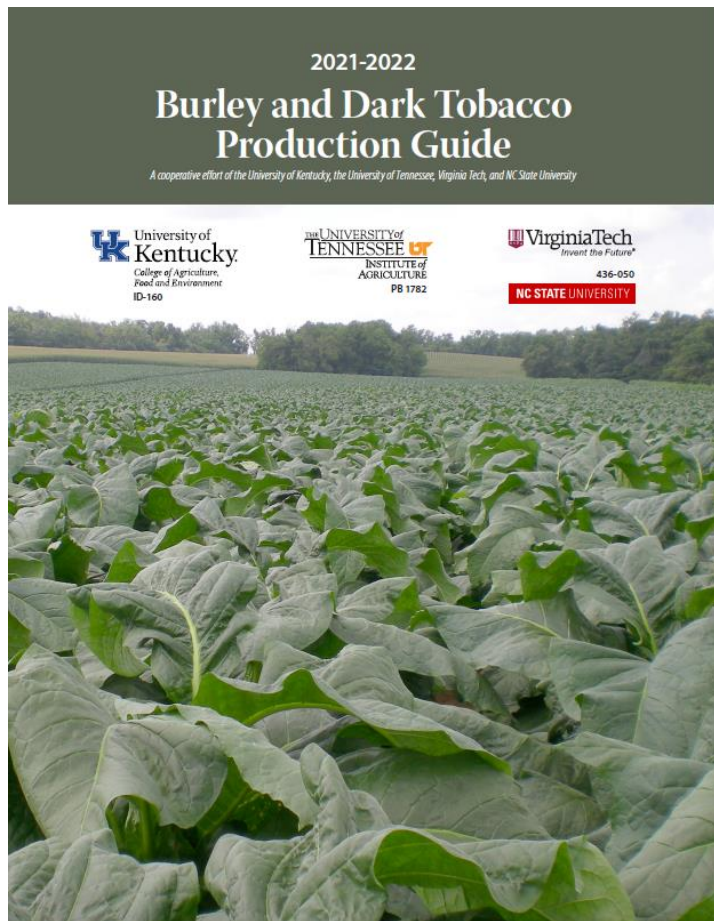
Less disease



More disease

Chemical control and variety selections

2020-2021 Burley and Dark Tobacco Production Guide



Available for free download:
www2.ca.uky.edu/agcomm/pubs/ID/ID160/ID160.pdf

Selecting Dark Tobacco Varieties

Andy Bailey and Bob Miller

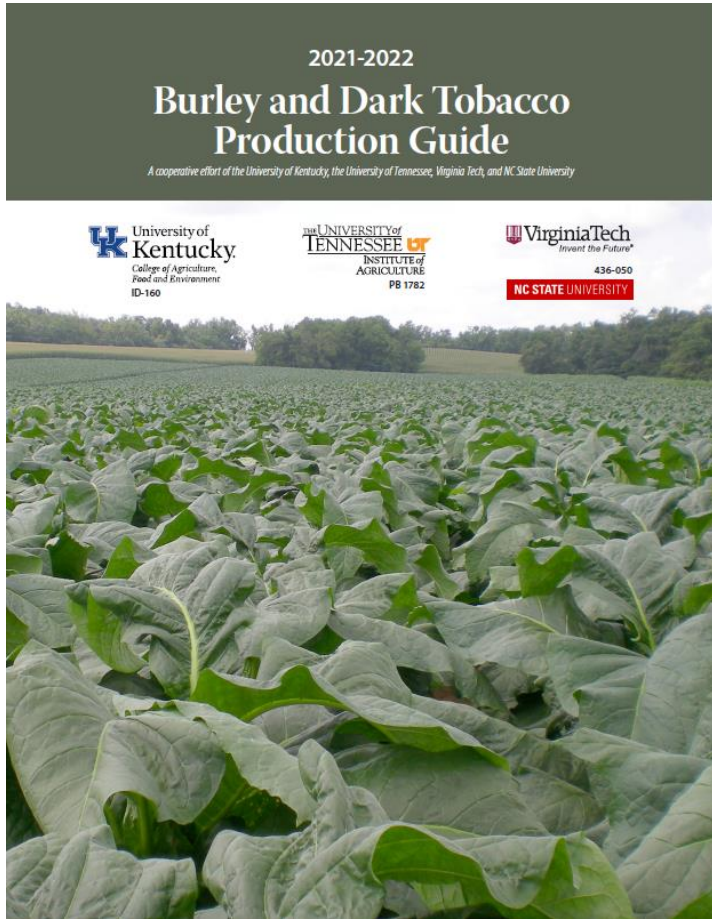


Table 1. Characteristics of dark tobacco varieties.

Variety	Maturity	Black Shank (0-10) ^a		Use ^b	Relative Yield Score ^c	Relative Quality Score ^c	Black Root Rot ^d	TMV	Wildfire	Angular leaf spot ^e
		Race 0	Race 1							
NL Mad LC	Med-Late	0	0	F/A	7	9	S	S	S	S
TR Madole	Early-Med	0	0	F	6	6	S	S	S	S
Lit Crit	Med-Late	0	0	A/F	5	9	S	S	S	LS
KY 160	Medium	0	0	A	3	9	S	R	S	-
KY 171 ^f	Medium	0	0	A/F	7	7	R	R	S	S
DF 911	Medium	0	0	F	8	6	R	R	R	-
VA 309	Early-Med	2	2	A/F	6	7	S	S	-	S
VA 359	Medium	1	1	A/F	6	7	S	S	-	-
TN D950	Early	3	3	F	8	6	R	R	R	HS
KT D6LC	Early-Med	3	3	F	8	7	R	R	R	S
KT D8LC	Medium	4	4	F/A	9	5	S	S	S	S
KT D14LC	Medium	10	5	F/A	8	6	R	R	R	S
KT D17LC	Medium	10	6	F/A	9	7	R	S	R	HS
DT 538 LC	Medium	4	4	F/A	8	6	M	-	-	LS
DT 558LC	Medium	4	4	F/A	8	7	M	S	-	S
PD 7302LC ^g	Medium	10	0	F/A	6	7	R	R	-	-
PD 7305LC	Early	10	3	F	8	6	R	R	R	S
PD 7309LC	Medium	10	0	F/A	7	8	S	S	-	LS
PD 7312LC ^f	Medium	0	0	A/F	7	8	R	R	S	S
PD 7318LC	Medium	10	0	F/A	8	7	R	R	-	LS
PD 7319LC	Medium	10	1	F/A	8	7	-	R	-	S

Less susceptible →

Highly susceptible →

Highly susceptible →

Less susceptible →

Less susceptible →

Less susceptible →

^a Black shank resistance levels are based on a limited number of field tests and subject to change.

^b F or A refers to use as a fire-cured or air-cured variety. F/A indicates either use with predominant use given first.

^c Relative yield scores based on performance under disease-free conditions. Relative yield and quality scores given on a 0-10 scale, with 10 being best for the predominant use.

^d R = highly resistant; M = medium resistance; S = susceptible.

^e Dash (-) means that resistance level is unknown or not rated at present.

^f LS = less susceptible; S = susceptible; HS = highly susceptible

^g KY 171, PD 7302LC, and PD 7312LC have medium resistance to Fusarium wilt.



Keys to disease management

Cultural practices to reduce disease pressure

- Crop rotation (3-5 years)
 - Improves disease management
 - Decreases development of fungicide/antibiotic resistance
- Avoid working with plants when wet
- Variety selection
 - Very important for black shank
 - Possible consideration for angular leaf spot
- Fungicides
 - Limited efficacy for other diseases (ALS)
 - Effective for some diseases (black shank)

Acknowledgements



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