

Using Additional Insulation to Improve Curing Efficiency in Flue-cured Barns

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Objectives

- Improve curing efficiency by adding additional insulation to curing barns.
- Measure improvements by:
 - Gallons of fuel used
 - Lbs of cured leaf per gallon of fuel used

Methods

- In 2008 additional insulation was added to flue-cured tobacco barns at 4 different locations in South Carolina.
- At locations A and D, insulation was blown into walls of old barns with no side wall insulation. (Holes were cut into the plywood sidewalls, insulation blown in and plywood piece was replaced.)
- At location B, a newer barn with insulated sidewalls was used. Attempts were made to apply additional batt insulation to the side walls.

Methods cont'd

- At location C, a barn with insulated sidewalls was used. Batt insulation was applied to the roof and back wall adjacent to the burner and the insulation was covered with plywood.
- In 2011 the insulated barn at location C was equipped with an automatic damper control.
- In 2011 Location E was added (an old barn with no insulation in sidewalls).
- At all location the insulated barn was compared to a similar conventional barn.
- At all locations barns were filled with similar tobacco.





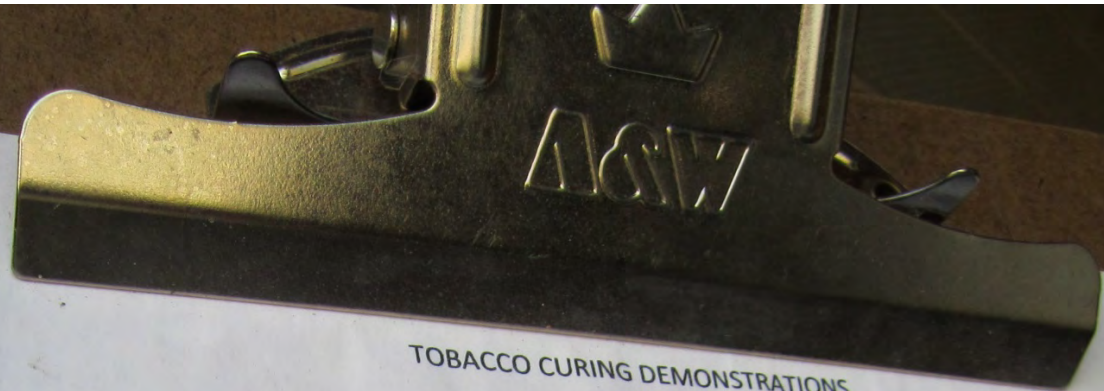
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TOBACCO CURING DEMONSTRATIONS

YEAR 2011

GROWERS NAME David Owens

COUNTY Marion

VARIETY _____

FIELD NAME _____

TYPE OF DEMONSTRATION Insulated with damper control

BARN NUMBER 15

Cure #	Stalk Position	Date Cure Began	Date Cure Ended	Tobacco Cured -lbs	Fuel Reading - Beginning -lbs	Fuel Reading - End -lbs	Fuel Used - -lbs	Gallons Fuel Used
1	lugs			2100	883	949	66	
2	cutter's			2250	949	1064	67	
				2700	1000			

10/18/2011



10/18/2011



10/18/2011



12/22/2011

Effects of Additional Insulation on Curing Efficiency- 2008- SC

Location	Check Barn	Check Barn	Check Barn	Insul. Barn	Insul. Barn	Insul. Barn	% Savings
	Gal Fuel	Lbs Cured Leaf	Lbs/Gal	Gal Fuel	Lbs Cured Leaf	Lbs/Gal	
A	506	2871	5.7	381	2827	7.4	30
B	447	2594	5.8	471	2539	5.4	-7
C	363	2300	6.3	361	2413	6.7	6
D	393	2643	6.7	333	2913	8.7	30

2011 Curing Efficiency Studies

Location C

Barn #	# Cures	Insulate	Damper Control	Gal Propane	Lbs Cured Leaf	Lbs/Gal	% Increase
14	3	N	N	328	2250	6.9	
15*	3	Y	Y	275	2250	8.2	18.8

Curing Efficiency Studies-Location E - Additional Insulation and Automatic Damper Controls- 2011

Barn #	# Cures	Add Insul	Damp Control	Gal Prop	Lbs Cured Leaf	Lbs/ Gal	% Imp	Barn Type
14	3	-	-	319	2896	9.1		Long-8
24	3	+	+	233	2377	10.0	10	Taylor-8

Conclusions

- Locations A and D showed the greatest curing efficiency improvement when insulation was blown into sidewalls of old barns with no sidewall insulation.
- Location C which had insulation added to the roof and back wall in a barn with sidewall insulation showed some improvement in curing efficiency.
- Location B which had only insulation added to sidewalls of a barn that already had sidewall insulation showed no curing efficiency improvement.

Conclusions Cont'd

- Location E found that an old barn with no sidewall insulation or automatic damper controls performed 10% less efficient than a similar barn with sidewall insulation and an automatic damper control (cannot separate insulation and damper controls).