

CORESTA Sub-Group TSNA in Air-Cured and Fire-Cured Tobacco

Andy Bailey

Univ. of Kentucky / Univ. of Tennessee

CORESTA Sub-Group

TSNA in Air-Cured and Fire-Cured Tobacco

- 6 original objectives
 - Subcommittees assigned to address each objective
- 3 objectives completed or dropped
- 3 objectives near completion

Objectives Completed or Dropped

- Obj. 1: Survey of critical farmer practices – completed
- Obj. 2: Collaborative study to investigate standard deviation of moisture content of marketing packages – dropped
 - Initial moisture content of marketing package not as important as storage environment of marketing packages.
- Obj. 3: Develop standardized nornicotine screening protocol so that baseline levels of nornicotine are comparable in tobacco seed varieties used by investigators - completed
 - Agreed that Univ. of KY screening protocol could be used without adding “LC” to variety name, only include acknowledgement that this protocol was used. If “LC” is added to name, Univ. of KY protocol must be used.

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■ Objective 4:

Develop a collaborative study which uses HOBO data loggers or similar instruments to collect curing conditions and possible impact of TSNA levels for tobaccos of diverse origins and curing environments. Attempt to standardize placement of equipment.

Chair: Vacant

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- Objective 4 status: nearing completion
 - Cooperative study conducted in 2008 and 2009 by Virginia Tech and Univ. of TN:
 - directly compare the influence of growing and curing environments
 - compare environmental data from HOBO meters placed on tier rails between tobacco and within tobacco during air-curing of burley.

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Objective 4 Status

- Results of collaborative experiment:
 - indicated that growing environment also impacts TSNA formation
 - Suggested that at low temperatures, RH has lesser influence on TSNA
- When evaluating TSNA across many environments, too much variability to confirm that higher RH and higher temp always result in higher TSNA.

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Objective 4 Status

- Draft written on recommendations for placement of data logging instruments in curing structures and given to subgroup members for review.
 - Waiting for final comments on meter placement draft from all subgroup members
 - Dr. Lowell Bush (University of Kentucky) has additional information on meter placement that may also be added.

CORESTA Graduate Student Study Grant Project

Relative to Objective 4

(Placement of Meters in Barns)

- M.S. Graduate Student – Mitchell Richmond, Univ. of KY
- Project underway Fall 2012, will be repeated Fall 2013
- Spatial analysis of curing conditions and corresponding TSNA levels at various locations within curing barns
- 2 barns in KY (Princeton and Lexington) will be housed with dark air-cured tobacco and 27 data loggers to monitor curing conditions
 - screened and high-converter tobacco of the same variety (TR Madole)
 - Green leaf samples and soil samples collected prior to harvest
 - Nitrite and TSNA in green leaf, nitrate in soil
- Cured leaf samples of screened and high converter tobacco will be collected near each meter at takedown for TSNA analysis.
- Correlation between curing conditions (temp and RH) and corresponding TSNA levels across each barn will be evaluated.

CORESTA Graduate Student Study Grant Project

Relative to Objective 4

(Placement of Meters in Barns)

- Thanks to CORESTA Scientific Commission for providing study grant to support graduate student project.
- Will be providing additional progress reports at CORESTA meetings
- Project should be complete by Spring 2014

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- Objective 5:

Resolve sample handling of post-cure tobacco for TSNA analysis.

Chair: Marlene Adams, R.J. Reynolds Tob. Co.

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■ Objective 5 status: reevaluation

– Protocol developed but under reevaluation

- Protocol should address methods for sampling plants and for sampling bales.
- Concerns expressed over maximum temperature given on protocol for air-drying samples (35 C)
- Group agreed to review sampling protocols from various companies to find consensus in sampling methodology.
- 2 additional sampling protocols submitted to subgroup from ITB and JT

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- New revised protocol drafted based on review of additional protocols and input from subgroup
- Waiting on final comments from subgroup
- Final protocol will be submitted to scientific commission

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■ Objective 6:

Review issues of post-cure tobacco storage and ventilation parameters.

Chair: Lowell Bush, Univ. of KY

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■ Objective 6 status: near completion

Experiments have been conducted and data collected.
Report completed.

- Proposed that group should also evaluate post cure storage conditions in areas of Africa and develop a checklist of critical questions to help facilitate collection of information.
 - Suggested that representatives from Malawi be contacted to provide information on range of post cure storage conditions in Africa.
 - Waiting for responses from representatives from Malawi.

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- New initiatives of group:
 - Development of general guidelines/best production practices for reducing TSNA in air-cured tobacco
- TSNA SG reports available on TSNA SG website.
- TSNA documents will be made available on new CORESTA website