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

Coordinator: Andy Bailey, Univ. of KY, USA

Izmir - 2015

Objectives

Coordinator: Andy BAILEY, University of Kentucky, U.S.A.

Liaison: Marcos LUSSO, Altria Client Services, U.S.A.

Revised Objectives:

1. To determine proper placement of data loggers in curing barns to best represent the true curing conditions within the barn.
2. To review the issues of post cure tobacco storage and ventilation parameters.
3. Sampling
   - (a) To define proper sampling method of post-cure tobacco for TSNA determination.
   - (b) To determine the optimal method for sample preparation for TSNA determination.
4. To collect available TSNA presentations and papers and publish them on the CORESTA website.

Objective 1

- **Analysis of correlation between curing conditions and corresponding TSNA levels at various locations within curing barns**
  - M.S. project for Mitchell Richmond
  - Supported by CORESTA study grant
- **Experiment conducted in 2012 and 2013**
  - Project completed, final report submitted and approved by CORESTA Board
  - Manuscript nearing completion for submission to *Tobacco Science* journal
- **Effects of within-barn position and conditions cannot be easily predicted**
  - Negative correlation between temperature and TSNA
  - Positive correlation between RH and TSNA

Objective 1

- Draft on use of data loggers and methods for data logger calibration.
- Draft recommendations for placement of data loggers in curing structures
  - distributed to subgroup members for review Oct 2014.

Objective 2

- **Review issues of post-cure storage and ventilation parameters**
  - Experiments and manuscripts
    - Significant TSNA responses to high temperature and nitrate
      - Shi, H. *et al.* 2013. Changes in TSNA contents during tobacco storage and the effect of temperature and nitrate level on TSNA formation. J. Agric. Food Chem. 61:11588-11594.
    - Other research needed?

Objective 3

Sampling:

(a) To define proper sampling method of post-cure tobacco for TSNA determination

(b) To determine the optimal method for sample preparation for TSNA determination

Objective 3a

3a. Sampling method:

Evaluate bale sampling procedure

- University of Kentucky, 2015 & 2016
- Funding:
  - Analysis: Altria, KTRDC, PMI, RJR
  - Sample bales supplied by AO
- Two bale sizes:
  - 6 large (200 kg) – 36 core samples
  - 6 small (40 kg) – 120 core, hand grab, individual leaves
- Stemmed, freeze dried
- Results:
  - TSNA range 0.17 – 43 μg g^{-1}
  - Currently with Applied Statistics Laboratory, Kristen McQuerry

Objective 3b

3b. Sample preparation

Draft protocol was developed but re-evaluated

- University of Kentucky test:
  - Air dry
  - Freeze dry
  - Oven dry temperature
- Funding: Council for Burley Tobacco

2 revisions developed and reviewed by members

- Protocol submitted to Scientific Commission

Objective 4

- **Available TSNA publications being published on CORESTA website**