



# **Introduction to CORESTA Work Related to Premium Cigars**

**Committee on Health Effects and Patterns of Use of Premium Cigars**

**23rd of April 2021**



- ❖ **Introduction to CORESTA**
- ❖ **Relevant Sub Groups under the Product Technology Study Group**
  - TTPA (Tobacco and Tobacco Product Analysis)
  - CSM (Cigar Smoking Methods)
  - Summary of relevant methodologies
- ❖ **Research published at CORESTA conferences**
- ❖ **Summary**
- ❖ **Questions**



**STATUTES &  
RULES ARE  
PUBLICLY  
AVAILABLE**

# CORESTA

Cooperation Centre for Scientific Research Relative to Tobacco

**A non-profit organisation created in 1956  
governed by French law**

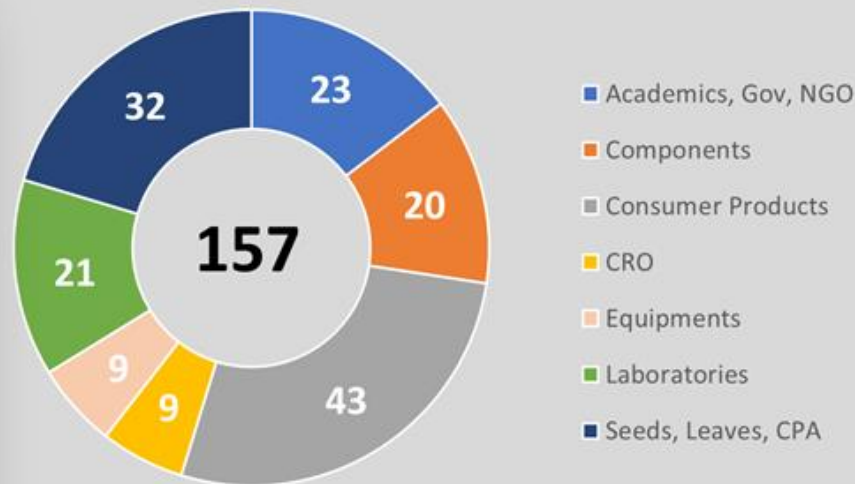
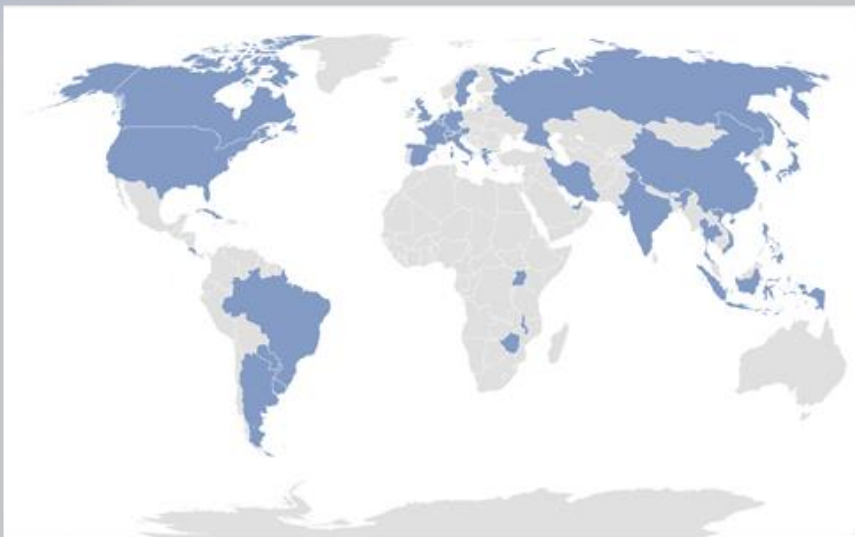
## **Purpose**

To promote cooperation in scientific research relative to tobacco and  
its derived products

[www.coresta.org](http://www.coresta.org)



## 157 organisation members from 36 countries (February 2021)



[www.coresta.org](http://www.coresta.org)



# CORESTA Cooperation

- **Since 1972** Agrochemicals Analysis
- **1993** Pest and Sanitation Management in Stored Tobacco
  - **2004** Proficiency Testing for Detection of Transgenic Tobacco
- **2006** TSNA in Air-cured and Fire-cured Tobacco
  - **2012** Agrochemical Residue Field Trials
  - **2019** Collaborative Study of Low Nicotine Tobacco Agronomic Production Practices

Agronomy &  
Leaf Integrity

Phytopathology  
& Genetics

- **2005** Integrated Pest Management
- **2013** Extended Diagnostic Expert System
- **2015** Efficacy of Biological & Eco-Friendly Crop Protection Agents
  - **2015** Collaborative Study Black Shank
  - **2017** Tobacco Alkaloid Genetics
- **2017** Tobacco Biotechnology and Omics
- **2021** *Nicotiana* Germplasm Collection

~ 600 experts  
cooperating in  
25 working groups

- **1996** Product Use Behaviour
- **2002** *In Vitro* Toxicity Testing
  - **2009** Biomarkers
- **2018** Consumer Reported Outcome Measures Consortium
- **2019** 21<sup>st</sup> Century Toxicology for Next Generation Tobacco and Nicotine Products
  - **2020** Smoke Analysis

Smoke  
Science

Product  
Technology

- **2005** Physical Test Methods
- **2006** **Cigar Smoking Methods**
- **2008** Tobacco and Tobacco Products Analysis
  - **2013** E-Vapour
  - **2014** Cigarette Variability
- **2019** Heated Tobacco Products

# Thousands of publicly available documents





# 2021 Conferences

## Announcement AP2021

**4-8 October**  
Virtual Conference

**Call for Papers published.**  
**Abstract submission open.**



## Announcement SSPT2021

**18-22 October**  
Virtual Conference

**Call for Papers published.**  
**Abstract submission open.**



- **Open public sessions**
- **Abstracts can be submitted until 14 May 2021**

[www.coresta.org](http://www.coresta.org)



# Relevant Sub Groups

## ❖ Product Technology:

### ➤ TTPA – Tobacco and Tobacco Product Analysis

- Objectives

- To propose and maintain CORESTA Recommended Methods (CRMs) and related documents for the analysis of tobacco and unburned tobacco products.
- To organise interlaboratory testing related to Objective 1.
- To organise the manufacture of and maintain smokeless tobacco reference products.





# TTPA – Tobacco and Tobacco Product Analysis

## ❖ CORESTA Recommended Methods Relevant to Cigar Tobacco:

Constituent	CRM
Water	No. 56 - Determination of Water in Tobacco and Tobacco Products by Karl Fischer Method
	No. 57 - Determination of Water in Tobacco and Tobacco Products by Gas Chromatographic Analysis
Nicotine	No. 62 - Determination of Nicotine in Tobacco and Tobacco Products by Gas Chromatographic Analysis
	No. 87 - Determination of Nicotine in Tobacco Products by GC-MS
pH	No. 69 - Determination of pH in Tobacco and Tobacco Products
TSNAs	No. 72 - Determination of Tobacco Specific Nitrosamines in Tobacco and Tobacco Products by LC-MS/MS
Moisture (OV)	No. 76 - Determination of Moisture Content (Oven Volatiles) of Tobacco and Tobacco Products
Ammonia	No. 79 - Determination of Ammonia in Tobacco and Tobacco Products by Ion Chromatographic Analysis
B[a]P	No. 82 - Determination of Benzo[a]pyrene in Tobacco Products by GC-MS
Water Activity	No. 88 - Determination of Water Activity of Tobacco and Tobacco Products
Expanded list of PAHs	No. 91 - Determination of 15 PAHs in Tobacco and Tobacco Products by GC-MS/MS or GC-MS
Metals	No. 93 - Determination of Selected Metals in Tobacco Products by ICP-MS



# Relevant Sub Groups

## ❖ Product Technology:

### ➤ CSM – Cigar Smoking Methods

- Objectives
- To develop and update CORESTA Recommended Methods by investigating the technical problems associated with the mechanical smoking of cigars.
- To conduct periodical collaborative studies in order to improve repeatability and reproducibility in different cigar sizes and types.
- To establish confidence intervals for the smoke yields of all different cigar sizes.



# Cigar Smoking Methods

## ❖ CORESTA Recommended Methods Relevant to Cigars :

### CRM

No. 68 - Determination of Carbon Monoxide in the Mainstream Smoke of Cigars by Non-Dispersive Infrared Analysis

No. 67 - Determination of Water in the Mainstream Smoke of Cigars by Gas Chromatographic Analysis

No. 66 - Determination of Nicotine in the Mainstream Smoke of Cigars by Gas Chromatographic Analysis

No. 65 - Determination of Total and Nicotine-Free Dry Particulate Matter using a Routine Analytical Cigar-Smoking Machine – Determination of Total Particulate Matter and Preparation for Water and Nicotine Measurements

No. 69 - Determination of pH in Tobacco and Tobacco Products

No. 46 - Atmosphere for Conditioning and Testing Cigars of all Sizes and Shapes

No. 64 - Routine Analytical Cigar-Smoking Machine - Specifications, Definitions and Standard Conditions

No. 47 - Cigars - Sampling

➤ **These methods are however not directly applicable to Premium Cigars**



# Cigar Smoking Methods

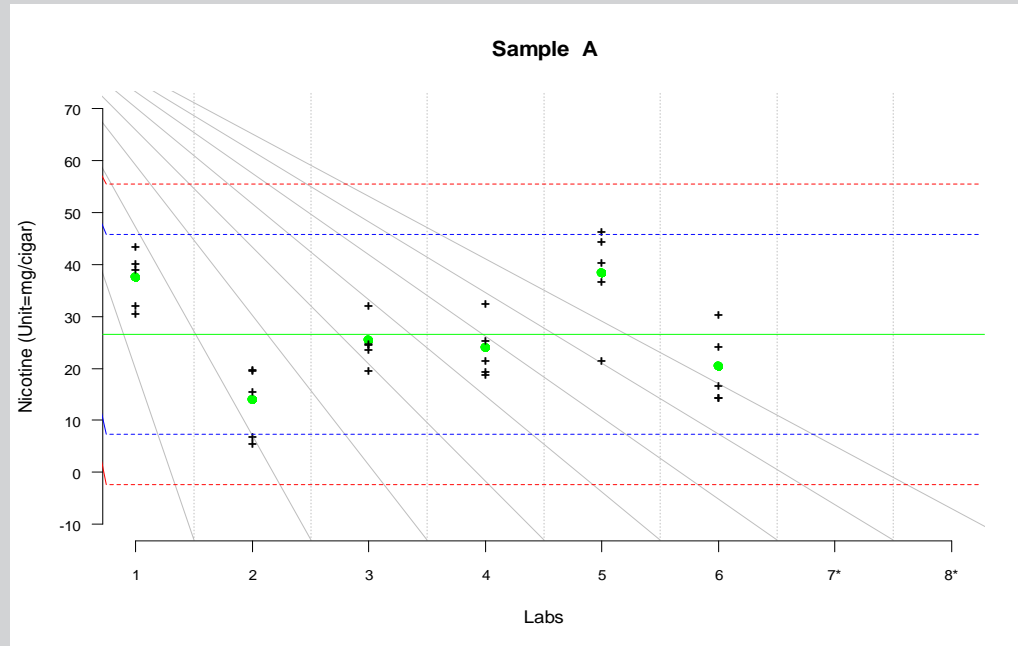
## ❖ **New Work Item 148: Smoking Method for Hand-Made Cigars**

- The purpose of this work item is to identify and resolve technical limitations and challenges within smoke collection experienced with handmade long filler cigars.
- Status: A technical guide has been developed and a collaborative study conducted.
- **IMPORTANT:** Analytical smoking results **DO NOT** provide an estimate of human exposure during smoking.

## ❖ Collaborative Study



## ❖ Collaborative Study – Sample A, Nicotine in smoke, 6 laboratories

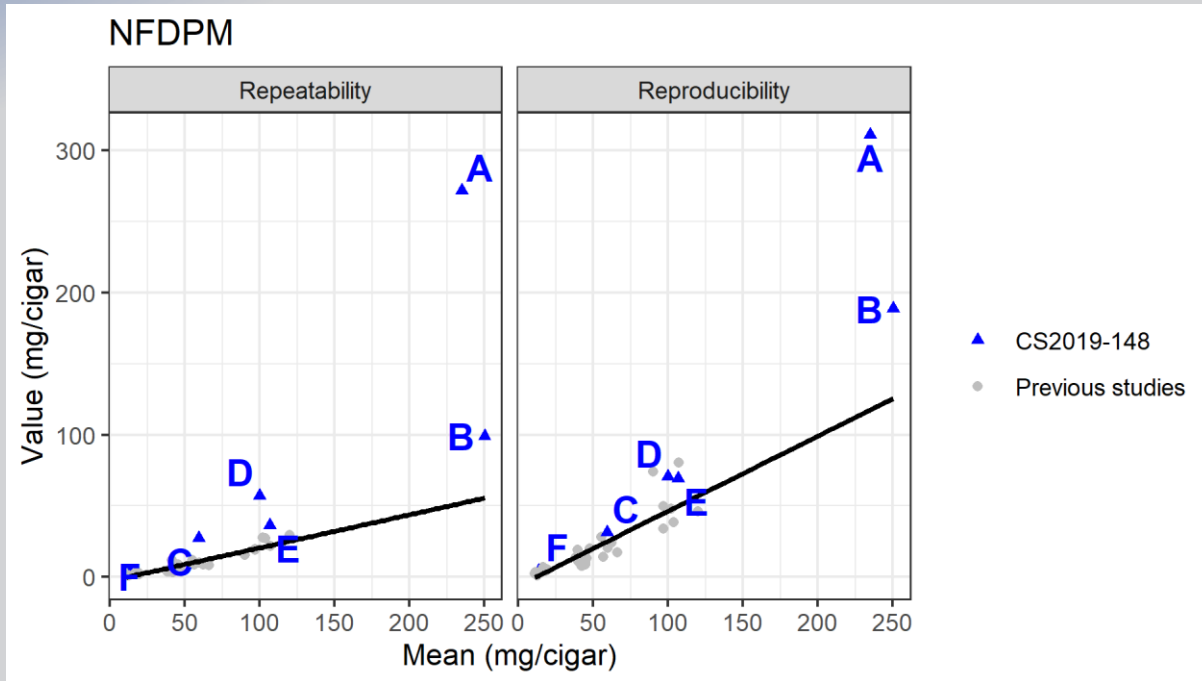




# Collaborative Study – Results – r&R

- **The coefficients of variation of the repeatability CVr (r expressed as a percentage of the overall mean) are in the range:**
  - From 54.2 % to 80.3 % for nicotine
  - From 34.2 % to 115.7 % for NFDPM (Tar)
  - From 29.4 % to 59.4 % for CO
  
- **The coefficients of variation of the reproducibility CVR (R expressed as a percentage of the overall mean) are in the range:**
  - From 56.5 % to 121.1 % for nicotine
  - From 52.4 % to 132.4 % for NFDPM
  - From 41.4 % to 68.0 % for CO.

## ❖ r&R are significantly above what is seen for machine-made cigars







## Collaborative Study – Comments and Conclusion

- ❖ ...This study cannot explain the factors driving the variability from cigar to cigar, but this inherent variability of hand-made cigars makes it impossible to discriminate the smoke results of two different cigars unless they are considerably different in weight, probably by a factor of 2.
- ❖ Implication: Smoke analysis has significant limitation and challenges when attempting to use results as a comparative tool.



## Research published at CORESTA conferences

- ❖ **Many years of scientific presentations are available on CORESTA.org**
  - **154 abstracts contain the term « Cigar »**
    - Most are concerned with machine made cigars, but many studies related to cigar tobacco are available.
  - **Only 2 unique abstracts contain the terms « Premium AND Cigar » or « Hand-made AND Cigar »**

49th TWC, Tob. Work. Conf., 2020, abstr. 11

**Early experiences with Connecticut broadleaf cigar wrapper tobacco in Kentucky and Tennessee**

**BAILEY A.; RODGERS C.; KEENEY A.; WITCHER V.**

University of Kentucky, Princeton, KY USA



## Examples of Research published at CORESTA.org

### Early experiences with Connecticut broadleaf cigar wrapper tobacco in Kentucky and Tennessee

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49th TWC, Tob. Work. Conf., 2020, abstr. 11

### Simulated curing and fermentation of green cigar binder tobacco by chemical oxidation

**ZUCKER M.; BRYAN W.H.**

*Department of Plant Pathology and Botany, The Connecticut Agricultural Experiment Station, New Haven, Connecticut USA*

*Tob. Sci., 1957, 1-27, p. 114-117, ISSN.0082-4523*



## Examples of Research published at CORESTA.org

**Handmade premium cigars smoke emissions - limitations related to TNCO determination variability**

**TEILLET B.(1); SCHULZ C.(2); COLARD S.(1)**

*(1) SEITA-Imperial Tobacco Limited, Fleury-les-Aubrais, France; (2) Reemtsma Cigarettenfabriken GmbH (an Imperial Brands PLC Company), Hamburg, Germany*

*CORESTA Meeting, Smoke Science/Product Technology, 2017, Kitzbühel, STPOST 29 (also presented at TSRC 2017)*



- ❖ **CORESTA is a non-profit scientific organisation striving to be recognised as an authoritative source of publically available, credible science and best practices related to tobacco and its derived products**
- ❖ **CORESTA study groups have developed and published many recommended methods relevant for testing of cigar tobacco**
- ❖ **Work related to analytical smoking of premium hand-made cigars have shown significant variability in the results, limiting the possibilities for using smoke yield to discriminate between different products**
- ❖ **Scientific work related to cigars are available on CORESTA.org, however only very limited studies have been conducted specifically on premium cigar**



**THANK YOU**