Agronomy Study Group

In the two last issues, TJ summarized the achievements of the CORESTA Smoke Science and Product Technology Study Groups, which deal directly with tobacco products. The remaining study groups — Agronomy and Phytopathology — are focused more on tobacco as an agricultural commodity.

The third article in this series on CORESTA study groups will give a general background to the two groups, Agronomy and Phytopathology, and to the Agrochemicals Advisory Committee (ACAC) before focusing on the activities of the Agronomy Study Group.

In addition to the issues surrounding tobacco products outlined in earlier articles of this series, there is an array of challenges associated with tobacco as an agricultural product; for example, how tobacco leaves are produced in the field, harvested and cured, and how they are stored and made into raw tobacco from which the finished products are finally derived.

This complex process is performed worldwide under various climatic, agricultural and economic conditions. Pests and disease can affect it at any stage, from seeding to storage. Finally, a huge diversity of tobacco types may be produced, including cigar wrappers, dark air-cured, flue-cured and oriental.

Clearer links to finished products

The chemical and physical traits of tobacco leaves depend on the production process, which in turn shapes the properties of the final tobacco products. Scientific studies over the last decade have indicated that the presence and concentration of some undesirable compounds, including Tobacco-Specific Nitrosamines (TSNAs) and heavy metals such as cadmium, are directly related to events during leaf production. In addition, it may still be necessary to apply agrochemicals to tobacco crops to protect them against pests and diseases. Notwithstanding the need to ensure worker safety when applying these products, as well as environmental protection, this may result in the presence of residues in leaves (and thus in the tobacco products).

Minimizing the presence of undesirable compounds as well as the use of agrochemicals (and consequently their residues in leaves) is a constant concern for CORESTA, and indeed for the whole leaf supply chain. CORESTA has therefore formed two Study Groups and a Committee: the Agronomy Study Group deals with the leaf production process as a whole, whereas its sister group, the Phytopathology Study Group, is devoted more specifically to studying pests and diseases that affect tobacco and identifying the best ways to combat them. ACAC, which reports directly to the Scientific Commission (in common with all the CORESTA Study Groups), devotes its activities to issues around agrochemicals applied to tobacco. There are, of course, significant interactions between these entities.

What is Agronomy?

Agronomy — the science and technology of plant production — is arguably one of the oldest fields of study, dating back to when humans ended their nomadic ways and started growing their own food. Yet today, agronomy is not widely known or well-understood outside agriculture. It is a multidisciplinary approach incor-
porating critical elements of many disci-
plines, from the genetics and physiol-
ogy of plants to meteorology and soil
science. Agronomists today, however,
are not just concerned with producing
commodities; they must also consider
the environmental impact of agriculture
and promote sustainability in crop pro-
duction.

In simple terms, agronomists translate
complex science into an economically feasible and environmentally sound sys-
tem of growing crops. This includes de-
vloping a productive relationship with
farmers by providing a wealth of in-
formation, with technical assistance
and training as key elements.

The Study Group

Given the breadth and pace of advances
in agronomy, there is an obvious benefit
in sharing knowledge and ideas between
field tobacco agronomists and research
centres (both universities and private
R&D facilities). The Agronomy Study
Group focuses on all aspects of tobacco
growing and exists to promote good ag-
ricultural practices and sustainability by
providing scientific information and fa-
cilitating communication.

For similar reasons, there is also a need
to define reference terms and standards.
The Study Group is an important con-
tributor in this regard, running Task
Forces (Curing Technologies; Sustain-
ability in Tobacco Growing; Guidance
on Tobacco Supply Chain Sampling)
and Sub-Groups (TSNAs in Air-Cured
and Fire-Cured Tobacco; Agrochemical
Residue Field Trials), and by organizing
regular meetings and workshops where
stakeholders may communicate and ex-
change ideas.

Task Forces normally have specific
goals and are result-driven with defined
timelines. Sub-Groups are long-term col-
laborative initiatives that are created
when an initiative has multiple related
objectives, and it is anticipated that the
work will be considerable and evolve
over time. As agronomy is focused more
on applied science and dissemination of
results, the Agronomy Study Group is
driven primarily by Task Forces.

TSNAs in Air-Cured and
Fire-Cured Tobacco Sub-Group

TSNAs occur in air-cured and fire-cured
tobaccos after leaf harvest, during the
cure — the process of turning freshly
harvested, green and water-rich leaves
into raw tobacco. The final TSNAs level
after cure and storage depends on many
factors, including seed type, the gen-
etics of the tobacco cultivar and the way
in which its seeds have been produced,
the soil type and how it was fertilized,
the curing process, and even the storage
conditions.

Thus, it is clear that minimizing TSNAs le-
vels involves constant scrutiny through-
out the leaf production process. It also
explains why a key objective of the Sub-
Group is to review the scientific liter-
ature on TSNA and curing to provide
useful information to agronomists and
farmers.

The Sub-Group also aims to define stan-
dards and references. Sample handling
of post-cure tobacco before TSNA analy-
sis is examined. Furthermore, a collabor-
ative study that relates curing con-
ditions and TSNAs levels for tobaccos of
diverse origins has recently been
started.

Curing Technologies Task Force

This Task Force aims to provide refer-
ences to better assess the energy effi-
ciency of curing systems. Ultimately,
this is relevant for sustainability, one of
the main elements of which is the way
consumed energy can be renewed. It
was established in 2008, beginning with
a survey of the various curing systems
used worldwide. The next step will be
to evaluate the efficiency of these vari-
ous systems in terms of energy con-
sumption per unit weight of cured to-
bacco.

Sustainability in Tobacco
Growing Task Force

The principle of this new Task Force has
been recently approved by CORESTA. A
take-off workshop will be held during
the next CORESTA Agro-Phyto meeting
(Santiago, Chile, November 2011). The
main focus will be to identify and define
the key elements of sustainability, as
well as measurable items that could
help monitor and improve the sustain-
ability levels of tobacco leaf production
systems.

Agrochemical Residue Field Trials
Sub-Group

This new Sub-Group is also in an ad-
vanced developmental phase. It will aim
to generate agrochemical residue data
from supervised trials on different to-
bacco types from many countries, follow-
ing a defined protocol. This information,
combined with data from many other
studies, is required by ACAC for setting
Guidance Residue Levels. There are nu-
erous agrochemicals that have limited
documentation on residue data, particu-
larly concerning good agricultural prac-
tice and proper use. The scope of this
Sub-Group is massive both in scale and
cost, and so ongoing discussions con-
tinue at all levels of CORESTA.

Guidance on Tobacco Supply
Chain Sampling Task Force

The Agronomy Study Group is consider-
ing a re-launch of an earlier Task Force,
Guidance on Tobacco Supply Chain
Sampling, which was disbanded several
years ago after drafting a comprehen-
sive guide on sampling tobacco material
across the entire supply chain. The data
was not released as a CORESTA Guide at
the time, owing to concerns over the
statistical validity of the various outlined
sampling methods. However, renewed
interest in tobacco material sampling
has highlighted a need to re-evaluate
and update the report with additional
statistical analysis.

Achievements

Previous work conducted by the Agron-
omy Study Group has been central to
the definition of international reference
terms and standards, and can be found on the CORESTA website (www.coresta.org). Notable examples include:

- **CORESTA Guide No. 3: Good Agricultural Practices (GAP) Guidelines** (provides guiding principles that an organization can consider using to develop or enhance a sustainable production programme);
- **CORESTA Guide No. 7 Scale for Coding Growth Stages in Tobacco Crops** (the only standardized international nomenclature to identify the different growth stages of tobacco);
- **Task Force Report – Harvest to Market Sanitation Practices Including Non-Tobacco Related Material (NTRM)** (provides guidance on the description, sources of contamination, inspection points, and prevention of NTRM along the supply chain).

**Collaboration**

The valuable work performed by the CORESTA Sub-Groups and Task Forces is only possible because members are willing to contribute their time and expertise. For agronomy-related fields in particular, there is a general decline in the number of tobacco experts, funds available for agronomic research, number of tobacco research facilities, and overall funds available within the tobacco industry; however agronomic problems continue to impact growers, new issues arise, and knowledge of agronomy is sometimes seen as a competitive advantage. Therefore it is increasingly important for those involved in agronomic research and the Extension Service (the transmission of the results from the applied science researchers to the growers) to interact in a neutral and collective forum such as CORESTA. The industry has benefited greatly from the work done by the organisation and its members, and it is vital that it continues to support CORESTA and work together on critical non-competitive issues. In the next article of the series, we will focus on the activities of the Phytopathology Study Group.

**TJI report**