Agronomy Study Group

In the two last issues, TJI 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.

Photo: BAT

Small-scale tobacco growing in Zambia.

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. Not-withstanding 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 disciplines, from the genetics and physiology 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 production.

In simple terms, agronomists translate complex science into an economically feasible and environmentally sound system of growing crops. This includes developing a productive relationship with farmers by providing a wealth of information, 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 agricultural practices and sustainability by providing scientific information and facilitating communication.

For similar reasons, there is also a need to define reference terms and standards. The Study Group is an important contributor in this regard, running Task Forces (Curing Technologies; Sustainability 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 exchange ideas.

Task Forces normally have specific goals and are result-driven with defined timelines. Sub-Groups are long-term collaborative 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 TSNA level after cure and storage depends on many factors, including seed type, the genetics 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 TSNA levels involves constant scrutiny throughout the leaf production process. It also explains why a key objective of the Sub-Group is to review the scientific literature on TSNA and curing to provide useful information to agronomists and farmers.

The Sub-Group also aims to define standards and references. Sample handling of post-cure tobacco before TSNA analysis is examined. Furthermore, a collaborative study that relates curing conditions and TSNA levels for tobaccos of diverse origins has recently been started.

Curing Technologies Task Force

This Task Force aims to provide references to better assess the energy efficiency 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 various systems in terms of energy consumption per unit weight of cured tobacco.

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 sustainability levels of tobacco leaf production systems.

Agrochemical Residue Field Trials Sub-Group

This new Sub-Group is also in an advanced developmental phase. It will aim to generate agrochemical residue data from supervised trials on different tobacco types from many countries, following a defined protocol. This information, combined with data from many other studies, is required by ACAC for setting Guidance Residue Levels. There are numerous agrochemicals that have limited documentation on residue data, particularly concerning good agricultural practice and proper use. The scope of this Sub-Group is massive both in scale and cost, and so ongoing discussions continue at all levels of CORESTA.

Guidance on Tobacco Supply Chain Sampling Task Force

The Agronomy Study Group is considering a re-launch of an earlier Task Force, Guidance on Tobacco Supply Chain Sampling, which was disbanded several years ago after drafting a comprehensive 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 Agronomy 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