



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:  
Socio-ecological transitions and bio-cultural shifts”

## Development of a Certification Program for Virus-Tested Plant Material in Colombia: A Collaborative Initiative

JOSEPH CUTLER<sup>1</sup>, CHRISTIAN LÜCHAU<sup>1</sup>, JULIANE LANGER<sup>1</sup>, SUSANNE VON BARGEN<sup>1</sup>, ORLANDO LOSADA ACOSTA<sup>2</sup>, FÁNOR CASIERRA POSADA<sup>3</sup>, ADRIANA CASTAÑEDA CÁRDENAS<sup>4</sup>, MÓNICA BETANCOURT VAQUEZ<sup>5</sup>, WILMER CUELLAR<sup>6</sup>, EDUARDO ARVYDAS STASIUKYNAS<sup>7</sup>, EMILIO AREVALO-PEÑARANDA<sup>8</sup>, CARMEN BÜTTNER<sup>1</sup>

<sup>1</sup>*Humboldt-Universität zu Berlin, Albrecht Daniel Thaer-Institute of Agricultural and Horticultural Sciences (ADTI), Germany*

<sup>2</sup>*National University of Colombia, Faculty of Medicine, Colombia*

<sup>3</sup>*Pedagogical and Technological University of Colombia, Fac. of Agricultural Sciences, Colombia*

<sup>4</sup>*Colombian Agricultural Institute (ICA), Technical Direction of Analysis and Agricultural Diagnostics, Colombia*

<sup>5</sup>*Corporación Colombiana de Investigación, Colombia*

<sup>6</sup>*International Center for Tropical Agriculture, Virology Laboratory, Colombia*

<sup>7</sup>*Hacienda Misiones, Mesitas del Colegio, Colombia*

<sup>8</sup>*Colombian Agricultural Institute (ICA), Direction of Epidemiology and Phytosanitary Vigilance, Colombia*

### Abstract

Crops grown for export in the tropics supplement economies by providing rural income and means of employment, and in certain countries there is a lack of information and continuity to control pathogens. Plant viruses severely affect Colombian crops, and studies indicate that economic losses caused by phytosanitary problems could be avoided with a standard procedure for preventive management. German and Colombian universities, the Colombian Agricultural Institute (ICA), the Colombian Corporation of Agricultural Investigation (CORPOICA), and the International Center for Tropical Agriculture (CIAT) are working together on the initiation of a national agricultural certification program. Three important exports from Colombia have been chosen as model plants for experimentation: ornamental rose (*Rosa* sp.), cape gooseberry (*Physalis peruviana* L.), and purple passion fruit (*Passiflora edulis* Sims). Tests for routine detection of plant viruses affecting these cultivars are being developed based on an inventory of known and novel viruses detected in large and small representative farms in 2016–17. Distribution of known plant viruses affecting rose (PNRSV, TSV), cape gooseberry (PVY), and purple passion fruit (SMV, PFYMV) were investigated by serological (ELISA) and molecular (RT-PCR) techniques. Novel viruses will be identified by application of Next Generation Sequencing (NGS) to pooled samples of diseased crops. Small national producers and larger exporters of horticultural and agricultural products can benefit from tools for controlling viral pathogens. The competitiveness of Colombian agriculture in international markets depends on the use of healthy domestic plant material and therefore, virus-free certification can improve quantity and quality of yields and contribute to better trade policy decision-making. The goal

---

**Contact Address:** Joseph Cutler, Humboldt-Universität zu Berlin, Albrecht Daniel Thaer-Institute of Agricultural and Horticultural Sciences (ADTI), Lentzeallee 55/57, 14195 Berlin, Germany, e-mail: joseph.cutler@agrar.hu-berlin.de

of this research is to develop a pilot protocol for routine diagnosis that can be applied in a certification programme for virus-tested plant material for several Colombian horticultural products.

**Keywords:** Certification, Colombia, plant viruses, quality yields, rural livelihoods