



Tropentag, September 17-19, 2014, Prague, Czech Republic

“Bridging the gap between increasing knowledge and decreasing resources”

## Cocoa Yield in Bolivian On-Farm Trials 2010–2013: Monitoring Outstanding Farmers and Comparing Clones and Sites

CHRISTIAN ANDRES<sup>1</sup>, EUCEBIO PEREZ<sup>2</sup>, FREDDY ALCON<sup>3</sup>, ROMERO CHOQUE<sup>4</sup>, GERMÁN TRUJILLO<sup>3</sup>, JOACHIM MILZ<sup>3</sup>, MONIKA SCHNEIDER<sup>1</sup>

<sup>1</sup>Research Institute of Organic Agriculture (FiBL), Dept. of International Cooperation, Switzerland

<sup>2</sup>PIAF - El Ceibo Foundation, Bolivia

<sup>3</sup>ECOTOP, Consulting on Successional Agroforestry, Bolivia

<sup>4</sup>Catholic University Carmen Pampa, Bolivia

### Abstract

Cocoa (*Theobroma cacao* L.) trees have a lifespan of up to 100 years in their natural environment, the lower strata of tropical alluvial forests. Sustainability of global cocoa production is at stake due to the deterioration of soil fertility, high losses due to pests and diseases (P&D) and old tree stock. Producing cocoa in shaded, low-input agroforestry systems offers a potential solution for achieving long-term productivity and sustainability. However, shade-tolerant cocoa clones are needed which are productive and resistant to P&D, as well as meeting the quality standards requested by the industry. In Bolivia, the cocoa mirid (*Monalonion dissimulatum*) and the novel disease frosty pod rot (“Monilia” *Moniliophthora roreri*) are among the most devastating P&D. The Research Institute of Organic Agriculture (FiBL) and its local partners have been conducting cocoa production systems research in the Alto Beni region of Bolivia since 2008. A participatory rural appraisal revealed that indeed, how to reduce incidences of the cocoa mirid and frosty pod rot was the top priority of cocoa farmers. Furthermore, a need for evaluating the productivity of different cocoa clones and for the documentation of best practices was expressed. In order to address these points, several research activities were carried out:

1. 16 cocoa clones have been evaluated for productivity and susceptibility to P&D for four consecutive years (2010–13) in on-farm trials at multiple locations.

2. The yield development and prevalence of P&D in the fields of four outstanding farmers was assessed for two years (2012–13)

Data analysis revealed that some locally selected clones (elite tree selection program) were not only among the most productive, but also showed earliest maturation and some degree of resistance to Monilia (i.e. with lower incidences of the disease). Thus these clones hold the potential to escape attacks by P&D which occur later on in the season and may serve as a basis for further germplasm development towards clones with resistance to Monilia. However, before disseminating information to farmers and farmers’ organisations, sound scientific data from at least five years is required.

**Keywords:** Cocoa, diseases, pests, production system, yield development