



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

Application of HACCP Principles to Local Drying Processes of *Capsicum* Species in Bolivia and Perú

ANA SALVATIERRA¹, MARCUS NAGLE¹, DIMITRIOS ARGYROPOULOS¹, EDWIN SERRANO², LLERMÉ RIOS LOBO³, CARLOS BEJARANO MARTINEZ⁴, MATTHIAS JÄGER⁵, JOACHIM MUELLER¹

¹University of Hohenheim, Institute of Agricultural Engineering, Tropics and Subtropics Group, Germany

²University of San Francisco Xavier de Chuquisaca, Institute of Food Technology (ITA), Bolivia

³National Institut of Agricultural Innovation (INIA), Peru

⁴Foundation PROINPA, Bolivia

⁵Bioversity International, Colombia

Abstract

Dried *Capsicum* products have high value in Bolivia and Perú, a centre of origin for *Capsicum*, and represent an opportunity for development in the region. Unfortunately, problems faced in postharvest handling of dried *Capsicum* have not been studied in these countries. Simple drying procedures, mainly open sun drying in the field, are still used due to low cost and easy management. The process is dependent on environmental conditions and final products vary widely in quality as a result, since extended drying times are required to reach the secure limit of moisture content and microbial contamination and development of mycotoxins are common. The production needs a standard and systematic control throughout the whole process in order to avoid losses, guarantee optimum quality and higher value on local and international markets. The aims of the proposed research were to identify and document species, production and uses, describe processing procedures for drying, evaluate drying conditions and practices and apply Hazard Analysis and Critical Control Point (HACCP) principles to identify the critical control points involved in drying processes. The study focused on cultivated species of capsicum in the areas around Chuquisaca, Bolivia and Lima, Perú under the guidance of local partners.

Farmer interviews were conducted to obtain information about current postharvest handling practices. In addition, drying procedures were evaluated at several sites. Parameters were documented, including drying conditions and behaviour of the product by placing climate sensors in the drying bulks and sampling and analysing the product at significant processing points. Based on this data, HACCP principles were applied, namely: product description, identification of intended uses, construction and confirmation of flow diagrams, list potential hazards, hazard analysis and consideration of control measures, establishment of critical control points based on Codex Alimentarius and establishment of critical limits. Recommendations are given as a baseline for the complete implementation HACCP standards corresponding to the monitoring of the production chain to ensure food safety. Corrective actions can now be implemented via verification procedures and documentation and record keeping will allow realisation of HACCP quality assurance for the production of dried *Capsicum* in Bolivia and Perú.

Keywords: *Capsicum*, codex alimentarius, drying, food safety, HACCP, South America