Tropentag, September 9-11, 2020, virtual conference

"Food and nutrition security and its resilience to global crises"

Assessment of Three Organic Technologies to Reduce Aflatoxin Contamination in Groundnut Production

Sera Jane Hostettler

Berne University of Applied Sciences, International Agricultural Sciences, Switzerland

Abstract

Aflatoxin contamination in Mozambican groundnut production is a major constraint in accessing international markets as importing countries stipulate stringent maximum tolerable levels. Due to the carcinogenicity of the mycotoxin, severe health implications of consumers are frequent.

The core objective of this study is to assess the effect of the three organic technologies BioSpray, SaltSolution and Aflasafe which are designed to reduce aflatoxin. Laboratorial analysis and findings of interviews with groundnut producers contribute to the assessment of the effectiveness, attractiveness and feasibility of the treatments. This information is used to propose a recommendation of the most adaptable solution for rural farmers. The study involves three districts located in the northern provinces Nampula and Cabo Delgado.

Groundnut was sampled and analysed at two post-harvest stages (drying and storage stage) in order to register the development of the mycotoxin over a period of eight weeks. A comparison of the newly introduced and resistant cultivar Nametil and the old and susceptible cultivar Txonca enables the visu-alisation of varietal differences regarding fungal infestation.

Two experimental trials were carried out.

Aflatoxin was measured in parts per billion (ppb). Median values of aflatoxin were low (Trial 1= 1.2ppb; Trial 2= 0.98ppb) but dispersion high (min. 0.2ppb, max. 181ppb).

Aflasafe, BioSpray and SaltSolution do not have the ability to significantly reduce aflatoxin contamination. However, BioSpray and Aflasafe show a reducing effect, while SaltSolution rather elevates the aflatoxin level. SaltSolution and BioSpray both require more resources such as time, labour and material. In terms of costs, BioSpray represents the cheapest option (719.56 $^{MZN}/_{ha}$), followed by SaltSolution (1027.20 $^{MZN}/_{ha}$). Although the price is high (1262.40 $^{MZN}/_{ha}$), Aflasafe is the most adaptable treatment for farmers as application is easy, no additional investment costs apply, water is not needed and the effect on aflatoxin is reducing.

Keywords: Aflatoxin – Tropical crop production - Fungal contamination – Groundnut – Mozambique – Organic solutions

Contact Address: Sera Jane Hostettler, Berne University of Applied Sciences, International Agricultural Sciences, Schlossstrasse 143, 3008 Berne, Switzerland, e-mail: serajane@bluewin.ch