

Developing plant disease management strategies for smallholder vegetable farmers in the Limpopo province, South Africa

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Statement of the Problem: Vegetable production forms major agricultural activity for small holder farmers in the Limpopo province, South Africa. However, production is normally compromised by various factors including poor production practices and diseases and pest infestation.

Methodology & Theoretical Orientation: Survey studies were carried out during 2014-2016 by University of Limpopo to: Study and record the types of diseases which are more prevalent in vegetables (tomatoes and indigenous vegetables) production under small-scale farming in the Limpopo province and; determine farmers' knowledge on their identification and management. The study went to develop and evaluate alternative management strategies suitable for use under small-holder farming systems.

Findings: More than 80% of small-scale farmers included in the study had poor knowledge of diseases affecting vegetable crops. Though some farmers have a general knowledge on which chemicals are appropriate for specific diseases, few (15%) had monetary resources to buy them. Regarding disease prevalence, results showed that over 50% of crop losses were due to diseases, especially where no control measures were applied. The two most destructive diseases in tomato production were early blight and fusarium wilt occurring in all surveyed areas and resulting in 100% and 60% yield loss respectively. *Cercospora* leaf spot and other fungal leaf spots were more prevalent on indigenous vegetables such as *Amaranthus* spp. Alternative management strategies evaluated include use of biological control agents and plant-based technologies such as application of plant extracts and soil amendments. Application of these methods resulted in significant reduction in disease occurrence and severity and improved seedling vigor. Treatments were used as seed treatment and soil amendment.

Conclusion & Significance: Indigenous vegetables play an important role in food security for small-holder farmers in Limpopo. However, yield is compromised by diseases and poor knowledge by farmers to identify and manage them. Development of alternative of control measures that are cheap and easily accessible will improve crop yield and reduce food insecurity among rural farmers.

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