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Farmers’ and academia’s views”

Not all about resistance - conclusions from ten years of potato late blight field research in Kenya

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Abstract

Late blight caused by *Phytophthora infestans* is still one of the most yield limiting factor in with potato farming in Africa. Varietal resistance and chemical control with Mancozeb and Metalxyl products are the most common tactics farmers consider. However, often smallholder farmers are not trained in the right and safe use of fungicides, causing limited protection, environmental pollution and potential health issues.

In this context the International Potato Center conducted intensive research on late blight management. The research presented combines data from different field trials from multiple sites in the period from 2009 to 2018. All trials focussed on research questions in respect to late blight management.

In all trials the variety Asante was used as a check allowing for a comparison across years and sites. Disease pressure for the respective trials have been clustered into low, medium, high and very high disease pressure using the relative area under disease progress curve (RAUDPC) of Asante as reference. This allowed for the comparison across years and sites. More than 30 varieties and advanced potato clones have been included with the condition that those have been tested for more than three seasons, respectively. Other agronomic treatments included were plant nutrition level, seed quality and alternative disease treatments with less harmful phosphonate fungicides.

The results clearly show that the resistance level of varieties became more important at high disease pressure. However, resistance levels alone didn't explain the yield-loss relationship. Early maturing moderately resistant varieties had less yield loss than late maturing resistant varieties. Hence, the combination of earliness and resistance caused the least yield loss.

The disease control with phosphonate varied significantly between the products, the best product however achieved similar control and yield levels as the standard chemical fungicides. Therefore, phosphonates can be considered as an environmentally safe alternative.

Keywords: Host plant resistance, Kenya, phosphonates, potato late blight