Characterisation of viruses that infect vegetables in Kenya

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Mainly smallholder farmers produce Cabbage, Kale and Spinach for the peri-urban markets of Nairobi, Kenya. In a survey in 2000 farmers considered viruses to be the most important disease constraint. However, 87% farmers did nothing to manage virus disease.

Analysis of Cabbage and Kale samples collected from regions around Nairobi identified *Turnip mosaic virus* (TuMV) and *Cauliflower mosaic virus* (CaMV) as the two major virus disease problems that farmers are faced with. TuMV and CaMV cause chlorosis, distortion and stunting, severely reducing yield and marketability of crops.

Virus variability

TuMV isolates have been grouped into one pathotypic group (pathotype 1) using the pathotyping system described by Jenner & Walsh (1996) and two serotypic groups using the system described by Jenner *et al.* (2000).

No classification systems are currently available to assess the variability of CaMV. We have developed a panel of five monoclonal antibodies and preliminary results suggest that there are two serotypic groups of CaMV isolates.

Economic Impact

Screenhouses were built at KARI in 2000 and have been used for trials to determine the effects of virus infection on yield of cabbage. CaMV had little effect on cabbage yield, TuMV singly and TuMV plus CaMV caused a 40% reduction in yield.

Disease Management

Expensive chemical treatments to control insect vectors have been largely unsuccessful in the control of viruses.

An integrated approach using sustainable, low input control methods and identifying farmer perceptions of virus diseases and their control practices will probably lead to more effective control. Seedlings grown in seedbeds treated with straw mulch which were transplanted into fields treated with straw mulch had a much lower virus incidence than untreated seedlings. Aphid populations were also affected. This experiment has been taken on-farm at Athi River and Karigu-ini and has been met with enthusiasm from farmers.

Plant resistance can also be used as a control method. Farmers collect their own kale seed for use the following year. Seed has been collected and is being screened for resistance to pests and diseases at NARL.

Spinach virus

Beet mosaic virus has been recently identified as an important constraint in spinach production for peri-urban markets. Work is in progress to examine the economic significance of this virus and identify appropriate disease management strategies.

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References

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