

# Towards managing virus infection of field vegetables in Kenya

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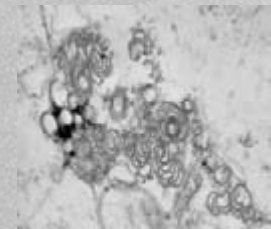
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**Virus diseases are considered the most important constraint facing smallholder farmers supplying Cabbage and Kale to the peri-urban markets of Nairobi, Kenya.**

**Turnip mosaic virus (TuMV) and Cauliflower mosaic virus (CaMV) have been identified as the two major virus disease problems. TuMV and CaMV cause chlorosis, distortion and stunting, severely reducing yield and marketability of crops.**

**Current expensive chemical control methods are ineffective at controlling virus diseases. New sustainable, low-input methods must be developed. To do this effectively the variability of the viruses, their economic impact on crops and the occurrence of natural resistance in crops have to be assessed.**



TuMV cylindrical inclusion bodies

## Virus variability

Pathotypic studies have revealed that the TuMV isolates can be grouped into one pathotype (pathotype 1) using the system described by Jenner & Walsh (1996). Serotypic analysis revealed two serotypic groups, using the system described by Jenner *et al.* (2000).



Pathotype 1 interaction on differentials

## Economic Impact

Trials to determine the effects of virus infection on yield of cabbage were carried out in purpose-built screenhouses. CaMV had little effect on cabbage yield. TuMV singly and TuMV plus CaMV caused a 40% reduction in yield.

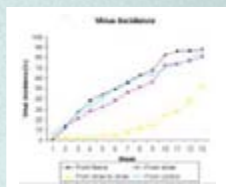
## Disease Management



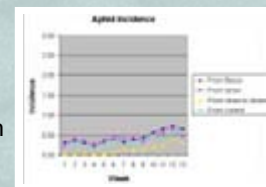
Plant resistance is an effective control method, especially for TuMV. Farmers collect their own kale seed for use the following year. Seed has been collected and is being screened for resistance to pests and diseases at KARI. The lack of variation in TuMV isolates suggests that the use of resistant cultivars with one or two resistance genes may be feasible.



Sustainable, low-input control methods are also effective control methods for virus diseases. Trials were carried out where three treatments were applied to seedbeds: fleece, straw mulch and no treatment. The fleece and untreated control seedlings were transplanted into untreated field whereas straw mulch seedlings were transplanted into untreated fields and fields treated with straw mulch.



The seedlings treated with straw mulch transplanted into fields treated with straw mulch had much lower virus incidence than the other treatments. Aphid populations were also lower. This experiment has been taken on-farm at Athi River and Karigu-ini and has been met with enthusiasm from farmers.



## Farmer Perceptions

Identifying farmer perceptions of virus diseases and their control practices will lead to more effective control. Regular PRA are held to disseminate information from farmers to researchers and vice versa.



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## References

Jenner & Walsh (1996) *Plant Pathology* **45**, 848-856

Jenner *et al.* (1999) *Plant Pathology* **48**, 101-108

