

## CUCUMBER MOSAIC CUCUMOVIRUS INFECTION IN TOMATOES IN THE ABSENCE / PRESENCE OF ITS SATELLITE RNA

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### Introduction

Tomato (*Lycopersicon esculentum* Mill), universally cultivated as one of the most important solanaceous vegetable crops, is being grown as an annual plant worldwide. Cucumber mosaic cucumovirus (CMV) is one of the more common of tomato viruses (Smith, 1972). CMV is among 26 plant viruses which support satellite RNAs (Frisch and Mayo, 1988). These satellite RNAs occur naturally with certain strains of CMV. They are dependent on CMV for replication and may either cause attenuating or aggravating effects on the infectivity of CMV. Various combinations of different CMV strains and different satellite RNAs gave various effects ranging from lethal necrosis, to white chlorosis to disease attenuation. In this project, experiments were carried out to study the effect of CMV infection in the presence and absence of satellite RNA in eight varieties of tomatoes under glasshouse conditions with the possibility of using satellites as biological control agents.

### Materials and Methods

CMV isolate and its satellite RNA used were as described by El-Sanousi (1997). The experiments were carried out under glasshouse conditions and the plants were grown under drip irrigation system. The tomato plants were mechanically inoculated at the three-leaf stage with CMV and CMV plus

satellite RNA. Symptoms expressed were graded and calculated as percentage values based on the disease index. Infections by CMV were assayed by double antibody sandwich enzyme-linked immunosorbent assay (DAS-ELISA) (Clark and Adam, 1977).

### Results and Discussion

In general, the eight varieties of tomatoes studied with CMV and its combination with the satellite RNA showed a wide range of variations. For the disease index, five of the varieties tested showed much less severe symptoms in combination with the satellite RNA as compared to those inoculated with CMV only. There was a decrease in the DAS-ELISA absorbance values indicating a significant reduction in viral concentration of the helper CMV. The other three varieties showed an exacerbation of symptoms when inoculated with CMV in combination with the satellite RNA. The DAS-ELISA readings correlated well with the disease index evaluations.

### Conclusion

The presence of satellite RNA with the helper virus, CMV, showed mixed reactions in the tomato varieties tested.

### References

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