STUDIES ON SOME VIRUSES AFFECTING TOMATO.

BY

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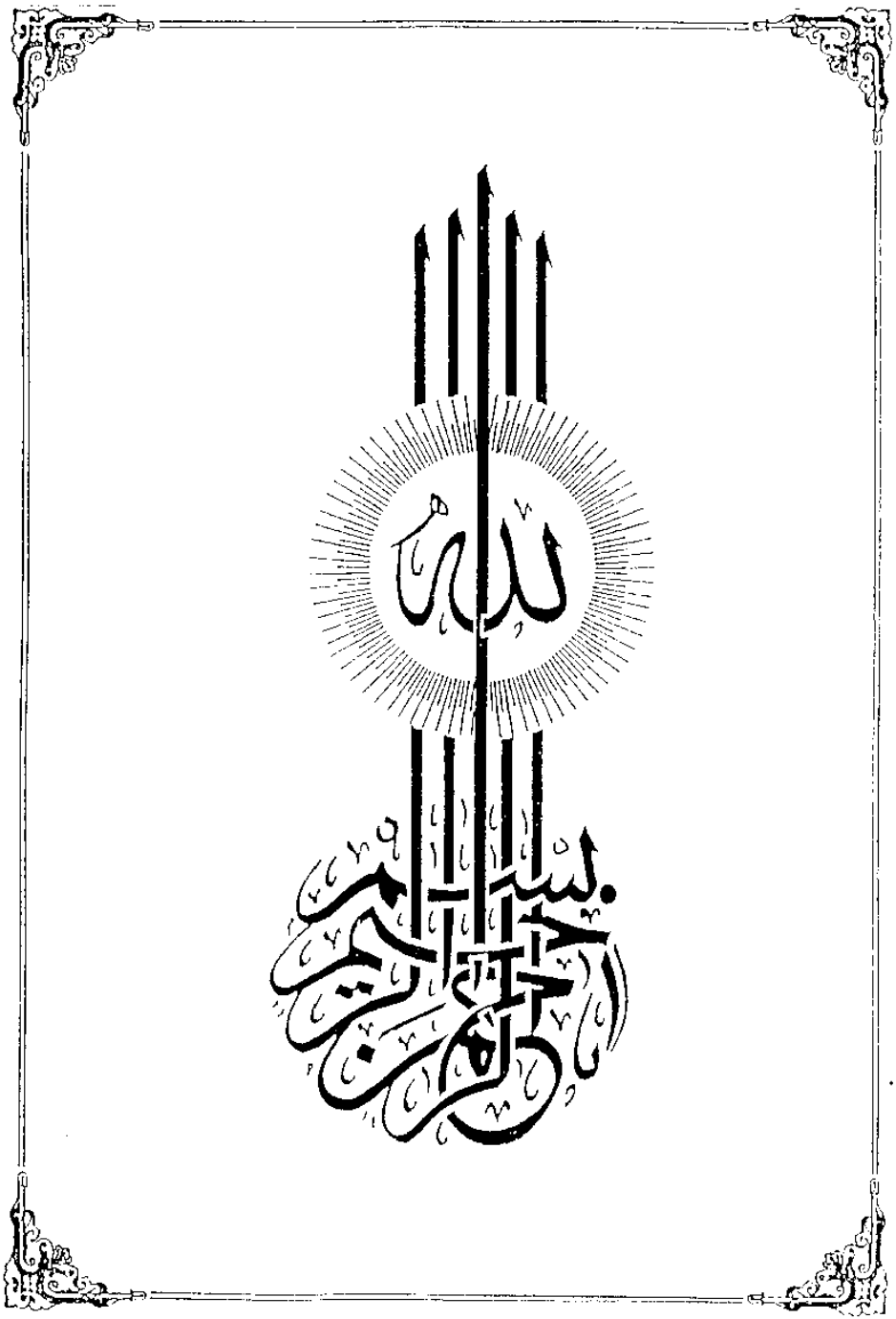

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ABSTRACT

Epidemiological studies in fields of tomato cv. Castle Rock showed that, severe outbreaks of the disease was associated with the number of whiteflies population which was affected by the temperature.

On the other hand tomato plants cv. Turquesa growing under plastic greenhouse showing interveinal yellowing, severe leaf crinkling, mild up-ward leaf curling and stunting symptoms, were used to isolate the virus which cause the above symptoms. The isolate virus can not be

transmitted mechanically in presence of different buffers, but it was transferred mechanically by injecting the infectious sap using a plastic syringe. The isolate virus was also transferred by grafting and by white-flies in a persistant manner. The isolate virus was not transmitted through seeds, and soil.

The isolated virus caused systemic infection on 28 cvs. of tomato and 15 of different hosts.

The virus particles appeared to be geminate paraticles when it was examined by electron microscope.

The syringe transmission of the virus gave us the opportunity to study its stability: its thermal inactivation point was 95°C, dilution end point was 10^{-7}, and longevity in vitro was 8 days.

The movement of the virus within tomato plants appeared as a rapid long distance spread through conducting tissues.

Data also showed that, there is a significant decrease in the sensitivity to infection with the isolate virus as the plant increased in size and age.

The isolate virus was partially purified using 10% polyethylen glycol 8000 MW and 1% NaCl, then it is electrophoresed in 3.5% acrylamide together with 0.6% agarose. The electrophoresis of the partially purified virus showed one band with no corresponding band from the healthy sample.

The UV spectrum of the partially purified virus had a nucleoprotein properties with A max at 258 and A min at 241 nm. The A 260/280 ratio was 1.46. The purified virus yield was 3.09 mg/kg of infected tomato tissue.

The area in the unstained gels which corresponded to the virus band in stained gels was used for antiserum production. The induced antiserum has a dilution end point of 1/4 after a week from the final injection, while it reached 1/16 after two weeks from the final injection, using agar double diffusion test.

According to the above mentioned before (modes of transmission, biological characterization, host range, morphological characters, stability in sap and UV spectrum), we believe that it is one of the geminivirus group, it may be tomato yellow leaf curl virus (TYLCV).

KEY WORDS.

Tomato yellow leaf curl virus;(TYLCV); Isolation ; Transmission ; Host range ; Electron microscope ;Stability ; Movement ; Virus purification ; UV Extinction spectra ; Antiserum production ; Serological tests .

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