

SOME ASPECTS OF EPIDEMIOLOGY AND CONTROL OF RICE YELLOW
MOTTLE IN KENYA.

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ABSTRACT

A survey was carried out from February to July 1981 to determine the occurrence and distribution of Rice Yellow Mottle disease in Kenya. The survey showed that the disease occurred in small holder rice farms in most areas of Lake Victoria basin. It was found to occur in Ahero and West Kano but not in Mwea and Bunyala rice schemes. In Western Province, Kakamega, Bungoma and Busia districts were free of the disease.

In the Coast Province, the disease occurred at Wema in Tana River but not in Kwale, Kilifi and Mombasa districts.

The physical properties were found to conform with those previously reported. The dilution end-point (DEP) was 10^{-9} , the thermal inactivation point (TIP) was 75°C and longevity in-vitro, 100 days.

Electron microscopy of partially purified preparations of the rice yellow mottle virus (RYMV) stained with phosphotungstic acid revealed the presence of isometric virus particles that were infectious when bioassayed to the rice variety "Sindano". The preparations also showed the presence of ghost particles in association with the

normal ones.

Antiserum prepared against RYMV gave a titre of 1/1024 using the tube precipitin test. The purified virus gave a maximum UV absorption at 240 nm, and a minimum absorption at 260 nm.

Sixty one introduced and 9 local rice varieties were screened for resistance to RYMV. The reactions ranged from highly resistant to highly susceptible. Twenty one percent of the varieties showed a high level of resistance, 32% were resistant, 21% were susceptible while 26% were highly susceptible. Some of the varieties that showed a high level of resistance included IRAT 13, IRAT 10, OS6, OS6DW, TOX 86-1-3-1, TOX 1011-4-2 and Ngovie. The following varieties were highly susceptible to RYMV: Cica 8, Cica 9, 6850, 6852 and 6906. Most of the African land races like Moroberakan, Ngovie, OS6 and OS6DW proved to be resistant to the virus. However, none of the local collections were resistant.

Thirteen grasses were tested for susceptibility to RYMV. Oryza sp., Dinebra retroflexa, Eragrostis tenuifolia and Eleusine indica were susceptible after mechanical inoculation and often exposure to

rice yellow mottle diseased plants in the field where the beetle vectors Chactornema sp. and Scymnus sp. were prevalent.

Dinebra retroflexa was the only susceptible grass species that developed local symptoms. Eragrostis tenuifolia and Oryza sp. showed some yellowing on the leaves. Eleusine indica did not develop any symptoms. The grasses were indexed for RYMV using the tube precipitin test.

The spread of rice yellow mottle disease within a susceptible crop was studied and it was observed that diseased plants formed infection foci to healthy plants in the neighbourhood.

Using the microprecipitin test the virus was found to occur in dried rice grains several months after harvest. It was also located in the husks but not in milled (white) rice. Using seeds harvested from RYMV infected plants of the variety "Sindano", seed transmission of the virus was tested and found to be negative. Healthy plants grown in soil obtained from roots of severely infected rice and from areas with a history of rice yellow mottle failed to develop symptoms of the disease. This indicated that the virus is not transmitted through soil.