

ABSTRACT

Investigations were carried out on Internal Brown Spot (IBS) disease of Dioscorea alata cv. White Lisbon, a disease of unknown origin and of economic importance in the Eastern Caribbean.

The main objective of these investigations was to determine the nature of the causal agent(s) of IBS disease. Studies were carried out in a series of field, storage, greenhouse and laboratory experiments.

The anatomy of IBS lesions was distinct from that of fungal and nematode rots caused by Penicillium sp. and Pratylenchus sp., respectively. Field studies showed that IBS disease occurred in White Lisbon crops grown in Barbados, St. Vincent and Trinidad, in a wide range of soil types. While biological edaphic factors did not affect IBS incidence, certain chemical edaphic factors were found to influence disease incidence. These were identified as the Cation Exchange Capacity and exchangeable Magnesium and Calcium contents of soils.

Lesions of IBS developed in growing tubers as early as 20 weeks after planting and increased in number as tubers matured. Incidence of IBS did not significantly

increase during storage of White Lisbon tubers.

At least three viruses, with filamentous, bacilli-
form and isometric particles, were found to be associated
with White Lisbon plants in situations where IBS developed.
The isometric particles were associated with tubular, cell-
wall outgrowths of phloem sieve tubes. This is the first
record of an isometric virus in D. alata.

Tissue culture techniques, for the production of
virus-tested and IBS - free White Lisbon plants, which
have hitherto been undescribed, were developed.

Circumstantial evidence presented suggested that
IBS lesions developed in White Lisbon tubers as a result
of virus infection.

Results of these studies provide bases for the
control of IBS disease through the use of virus tested
planting material.

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