

ABSTRACT

Methods of disease assessment for pigeon pea rust (Uredo cajani Syd.) were examined and evaluated.

Selections were from many different origins, ranging from tall, indeterminate, photosensitive types to the daylength neutral, early flowering 'annual' dwarfs, recently bred for the row cropping of pigeon peas.

There was some evidence for greater resistance to rust in Indian varieties. Disease resistance mechanisms typical of horizontal resistance were suggested:- (i) a leaf morphology fairly restrictive towards rust infection: (ii) a continuous production of new leaves in indeterminate selections: and (iii) an 'escape' of significant disease by maturing before the build-up of an epidemic. This latter mechanism was also demonstrated in the new 'annual' dwarfs. Hypersensitivity, indicative of vertical resistance, was found in one 'old' West Indian variety. Other West Indian 'old' varieties, generally quite susceptible in Trinidad, may still be vertically resistant to rust races found elsewhere in the West Indies. It is possible that by haphazard breeding for resistance to rust in these West Indian varieties horizontal resistance has been eroded. Rust resistance from preliminary observations does not seem to be easily inherited.

Rust intensity increased with the onset of the reproductive phase, predominantly due to the cessation of leaf production in determinate selections. Leaf loss is synchronized and develops in a similar fashion independent of variety of rust with a few exceptions. Dense planting and the formation of a closed canopy seems to provide a microclimate favourable for rust development. Uredo cajani appears to be photosensitive sporulating with a diurnal periodicity. Rainfall

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augments the release of spores. Light rainfall and overcast windy days were found most suited for rust development. It was found that by taking daily spore-concentrations, identifying sources of inoculum, and observing weather conditions that a rust epidemic could be predicted and prevented by spraying.

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