

INVESTIGATIONS INTO THE BIOLOGY OF BOTRYODIPLODIA

THEOBROMAE Pat.

I. INTRODUCTION.

Trinidad grapefruit in storage are subject to the attacks of a number of fruit rotting fungi. Baker (1) has investigated the causes of these rots and shown that the principal losses sustained are due to a leathery rot caused by Botryodiplodia theobromae Pat. The soft rot caused by Penicillium digitatum Sacc., which in other parts of the world often causes severe losses, also occurs frequently in Trinidad, but is not nearly so serious as the leathery rot.

In a typical attack of the fungus a watersoaked, light brown area develops in the button region of the fruit. The rind in this area becomes soft and pliable, but not easily punctured by the pressure of the finger as is the case with the soft rots. This area extends rapidly over the surface of the fruit and becomes darker in colour. After a day or so from the first appearance of the rotting, dark bluish-black patches may develop. At this stage the fruit has developed a typical sour odour, which with practice can be used to distinguish it from other types of rot. Internally the fruit becomes soft and pulpy, the central pith often developing a bluish-black colour. If the fruit is kept in a dry atmosphere 'mummification' will occur, the whole fruit being converted into a hard black mass. In this stage pycnidia may be developed on the surface. Although the rot usually starts at the stem or button end of the fruit and is therefore frequently termed a 'stem-end rot',

it does rarely start at the styler end or even laterally, but in this case always from a wound.

Stem-end rot is essentially one of storage. It is never found attacking fruit on the tree and, in the grove, is only found on fruit that have been left on the ground. During passage through the packing sheds, it is only found to any extent when shipment is delayed and the fruit has to be held in the shed longer than usual. It is during shipment that the bulk of the wastage develops, especially when there are no facilities for cold storage.

A very similar rot to that caused by B. theobromae in Trinidad has been reported from the grapefruit growing areas of the United States. This is, however, stated to be caused by Diplodia natalensis Pole-Evans, a very similar fungus. These two fungi shew so great a similarity that the question has arisen as to whether they are not synonymous. The matter has been submitted to examination by the Imperial Mycological Institute, but for the present it has been decided that the two species should be kept apart, owing to certain differences in cultural behaviour and in the size of the spores. All cases of stem-end rot of citrus outside Trinidad are reported to be caused by Diplodia natalensis, when a Diplodia-like fungus is concerned. As these two fungi are so close to each other, it has been decided for the present discussion to treat them as practically synonymous. It should be remembered, however, that this is actually not the case, and that if D. natalensis has been found to behave in a certain way, it is only an indication that a similar mode of behaviour may be found in B. theobromae.