

inserted finger. In a second experiment, a cuffed endotracheal tube was inserted under anaesthesia through an opening in the hepatic sinus until the cuff lay within the sphincter. The cuff was then connected to a capacitance manometer and inflated with air from a syringe through a side tube. Pressure on the cuff caused a deflexion of one beam of a double-beam cathode ray oscillograph; the other beam was used to record stimuli. Fig. 1 shows the result of the experiment. In each instance the lower record is of the contraction of the sphincter and the upper record is of the application of the stimulus. The short vertical lines composing this upper record are the individual stimulating pulses. It can be seen that there is a brief latency (about 0.04 sec.) after the application of the stimulus before the contraction commences. The after-effect, on stopping the stimulus, is longer (about 0.08-0.10 sec.).

After making this recording, the branches of the phrenic nerve to the diaphragm were divided, leaving intact the branch to the sphincter; stimulation of this branch caused contraction of the sphincter without contraction of the diaphragm. Stimulation of the central end of the cut right phrenic nerve did not cause contraction of the sphincter.

Further observations on the vascular system of *Phoca vitulina* will be fully described in a later publication.

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Correlation between pH-Value of Tomato Tissue and its Susceptibility to Attack by Two *Fusaria*

THE problem of the resistance of plants to fungal or bacterial attack is of great practical importance. If the nature of resistance of a particular plant to a particular pathogen is understood, the plant breeder may be better able to combine the factors for resistance to disease with other desirable characters and so produce a resistant variety of higher quality. This, when it can be done, is usually the most satisfactory method of controlling disease.

The presence in the plant of some substance which inhibits the growth of a particular fungus frequently confers a measure of resistance. A high degree of acidity of the cell sap may confer resistance against organisms intolerant of an acid reaction. The immunity of monocotyledonous plants to the cotton root-rot fungus, *Phymatotrichum omnivorum*, has been attributed by Ezekiel and Fudge¹ to be in part due to the presence of acids in the cell sap.

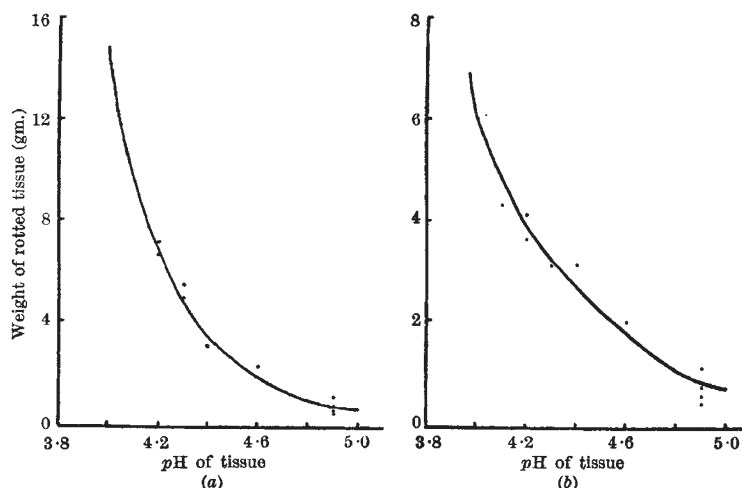


Fig. 1. Correlation between pH value of tomato tissue and its susceptibility to attack by (a) *Fusarium culmorum* and (b) *Fusarium oxysporum*

The following experiment was carried out in an attempt to find out the effect of pH-value of tissue of three tomato varieties growing in Egypt, namely, Pritchards, North Dakota and IAB, on their susceptibility to attack by two *Fusarium* species, namely, *Fusarium culmorum* (Smith) Saccardo and *Fusarium oxysporum* Schlecht. Green and red fruits of the three tomato varieties were used. Fruits were collected from crops growing under the same field conditions. They were chosen to be nearly of the same age and size. Each fruit was inoculated at the calyx and stylar ends. Twenty replicates were used for each treatment. The method used for fruit inoculation was roughly that given by Granger and Horne². The fruits were incubated at 25° C. for four days. The rotted tissue after the experimental period was then scraped off and weighed. The pH-values of tissues collected from the calyx and stylar ends of green and red fruits of each of the three tomato varieties were determined by the B.D.H. capillators with a range of difference of 0.2 unit.

In graphs a and b the weight of rotted tissue produced by *Fusarium culmorum* and *Fusarium oxysporum* respectively is plotted against the corresponding pH-values of the different tissue samples.

The graphs show that although the variations in the pH-values of the fresh tissue of the different tomato varieties are so limited, yet there is a definite correlation between the pH-value of the tissue and the amount of rot produced by the two *Fusaria* used in this investigation. The susceptibility of tomato tissue to attack seems to decrease with the increase in its pH-value.

It thus appears that the pH-value of tomato tissue is among the factors governing its susceptibility to attack by *Fusarium culmorum* and *Fusarium oxysporum*.

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