listed ten Erythrean species from the Mediterranean coast of Palestine. Several of them are now very common: *Mulloides auriflamma* is caught by trawl in considerable quantities and is of commercial value; *Siganus rivulatus* and *Stephanolepis ocheticus* are among common fishes met with along the shores; *Hepsetia pinguis* is the most abundant among Atherine fishes of this coast.

To the list of Red Sea fishes already mentioned from the Mediterranean but not previously reported from the Israel coast should be added: (1) *Tetrodon spadiceus* (Rich.); (2) *Upeneus* sp.

Besides these fishes, eight Indo-Pacific species were also determined, which so far as it is known have not yet been reported from the Mediterranean. Part of them, however (the first four in the list below), have been observed in the Suez Canal[4–7]. These fish, found along the Israel coast-line, have been identified as follows: (1) *Dussumieria prouctissima* Chab., common along the shores and often caught by trawl and purse seine; (2) *Sphyraena obtusata* C.V., caught in considerable quantities by trawl and ring net; (3) *Caranx djeddaba* (Forsk.), kindly determined by J. T. Nichols of the American Museum of Natural History; (4) *Apogon thurstoni* Day, appears often in Haifa Bay; (5) *Istiophorus gladius* (Brouss.), a young specimen 356 mm. in total length; (6) *Callionymus* cf. *brunneus* Fowler, common bottom-fish along the shores. The addition of 'cf.' indicates some systematical deviation from Fowler's description; (7) *Saurida grandisquamis* Gthr., caught occasionally in Haifa Bay during winter months; (8) *Platycephalus indicus* (L.), rare.

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Measurement of Colonization and Survival of Soil *Fusaria* in Detached Plant Tissue

The colonization in soil of detached host tissue by soil-inhabiting parasitic fungi was demonstrated by Sadasivan[1] with *Fusarium culmorum*. Recently, this technique has been utilized by several University of Madras research workers in studies to determine the effect of micro-elements on the colonization and survival of *Fusaria* in cotton and gram (*Cajanus cajan*) roots[2–4]. Generally, they found that zinc, aluminium, boron, lithium, manganese and cobalt at soil concentrations from 100 to 400 p.p.m. retarded *Fusarium* colonization and survival.

Investigations on flood-fallowing for the eradication of *F. oxysporum* f. *cubense* are seeking to determine some of the factors involved in the survival or non-survival of this fungus in both submerged and non-submerged soils[5,6]. The root-colonization technique is a valuable tool in these studies although quantitatively this method is not sufficiently accurate. Previously, quantitative data have been obtained by culturing on agar approximately 25 root pieces per treatment to determine percentage colonized, that is, yielding *Fusarium* colonies, or similarly, percentage fungus survival in previously colonized roots subjected to treatment[7].

In the case of fleshy roots, such as bananas, decay is rapid and in a period of 2–3 months only the tubular parchment-like periderm and woody stele remain. Culturing of these decayed root pieces to determine percentage colonization or survival gives erratic results even when large numbers are used. This lack of consistency is attributed in part to the rapid development of bacteria and saprophytic fungi on the agar plates. Some of the fungi, which are rapidly growing spreaders, have been observed to inhibit or obscure developing *Fusarium* colonies. Also, the extent of colonization cannot be accurately determined unless numerous small pieces of the root are cultured separately.

In studies on the effect of soil moisture on *Fusarium* survival in colonized banana roots, it was observed that this fungus developed rapidly and abundantly on agar plates after decayed colonized roots were finely cut in a Waring blendor and diluted with water[6]. The Waring blendor–dilution technique was developed further[8] and recent unpublished data indicate it to be amenable to an improved quantitative analysis of *Fusarium* growth and survival in colonized roots. Fragmentation of mycelium using this technique results in a much higher colony count than would be obtained by other methods. Thus, this method is particularly valuable in determining minute areas of survival that are rapidly overgrown and inhibited from development on culture media by soil saprophytes including other *Fusarium* spp. Of course, mycelial fragmentation tends to indicate a higher level of survival than may actually exist. Nevertheless, in diseases such as the *Fusarium* wilts, any level of fungus survival indicated is of value in predicting the subsequent behaviour of susceptible or partially resistant varieties.

The Waring blendor–dilution technique is being used in studies to determine the effect of various compounds on colonization and survival of soil *Fusaria* in detached plant tissue. Using this method of measuring colonization and survival of *F. oxysporum* f. *cubense* in banana roots, the micro-elements zinc, boron and manganese at concentrations of 100 and 200 p.p.m. have exerted no significant effect. Survival in colonized roots has occurred even under treatments that eradicated the fungus from the surrounding soil. These treatments included submerging the soil and roots for three months under two inches of water with and without sodium nitrate, and saturating the soil with aqueous solutions containing 400 p.p.m. of various fungicides. Thus far, cyanamid at 2,500 lb. per acre and 1 per cent formaldehyde drench have been effective in drastically reducing *Fusarium* survival in colonized roots in the laboratory.

A detailed report of these studies will be made elsewhere.

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