

BIOLOGICAL MONITORING, SAMPLING TECHNIQUES AND BIOLOGICAL AND CHEMICAL CONTROL: Posters and Abstracts:

THE IMPORTANCE OF OILS IN THE INTEGRATED MANAGEMENT OF THE PYRIFORM SCALE IN AVOCADO ORCHARDS IN ISRAEL.

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The pyriform scale, *Protospulvinaria pyriformis* (Cockerell) (Hemiptera: Coccoidea: Coccidae) was discovered in Israel in 1980 and within a few years had spread to most of the avocado growing regions of the country. Several major avocado varieties (mainly Nabal) are highly susceptible to the pyriform scale. Other less susceptible avocado varieties, in the vicinity of the infected sites, can become damaged as well. The damage is caused by the secretion of large amounts of honeydew, resulting in a thick cover of sooty-mould on the leaves and on the fruit. Despite the large numbers of local natural enemies which accumulate in infested areas, as well as the establishment of the introduced encyrtid *Metaphycus stanleyi* Compere, which between them often cause high mortality of the scale, injury to susceptible avocado varieties has not been prevented. As a routine, application of synthetic insecticides in avocado orchards in Israel is avoided. Hence, to lower the pyriform scale populations with minimum negative consequences to the natural enemies, we studied the effect of several oils and a soap applications on the pyriform scale and the activity of the natural enemies. Several mineral oils ("mayonnaise-type" 1.75% (80% A.I.) and "stylet-oil" 1% (80% A.I.)) effectively controlled the scale nymphal stages. Therefore, oil application is conducted in the spring (February-April) and in the second half of the summer (July-October), when the population consists of mainly immature stages. Cotton oil and soap (potassium salt of fatty acids) were less effective. Application of the above mentioned compounds did not interfere with the activity of the natural enemies of the scale.

A TECHNIQUE TO OBTAIN THE EGGS OF THE ARARAT COCHINEAL.

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Ararat cochineal (*Porphyrophora* sp.) produces a valuable, light-resistant red carmine dye. To protect this rare species and to increase its productivity, a technique for breeding it under artificial conditions has been developed. This has allowed a 5-6 times increase in body-mass yield and, therefore, of dye. The most laborious part of the technique is gathering the eggs during the spring and summer from wild plants for use in the greenhouse.

We have improved this technique. We now use wooden boxes (50 x 50 x 15 cms), with the bottom covered with gauze. The boxes are filled with 10 cm of soil derived from cochineal areas. Adult male and female cochineal insects are then placed in the boxes. Once fertilized, the females dig themselves into the soil, form the ovisac and lay their eggs. After 30-50 days, the boxes are transferred to cochineal natural areas and dug into the ground, level with the soil surface. The boxes are then maintained under these field conditions from November through to February, so that the eggs hibernate under natural conditions. The boxes are then collected and transferred to the laboratory, where the eggs are collected and are used either for the spring infection of plants or are kept in the refrigerator to infect plants in the summer. This has proved to be a very labour-saving technique.