Preface

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The automobile, the telephone and modern pesticides are all really inventions of the 20th Century, albeit initiated during the last years of the 19th. Widely used in the last hundred years, they have completely changed our standard of living. Now, as we approach the year 2000, it is clear that the telephone has been totally modified, utilizing new technologies incorporating digital systems and microwave links, with more and more users linked to the Internet. The automobile has become much more comfortable and faster, but its efficiency is still only 25–35% in terms of energy consumption. Pesticide usage has enabled yields to be increased, with better quality food generally available throughout the world, yet the basic technology of pesticide application has remained essentially the same as that developed 100 years ago, with much of the pesticide wasted in the environment. This holds true, even though much has been achieved by inventing new technologies to increase efficiency and efficacy of pesticide application.

It is generally accepted that environment-friendly substitutes for pesticides are biological control methods and less toxic materials. There is no doubt about their importance, but technologies already available, and partially used, might result in a most efficient dose reduction. Bait spraying serves as a good demonstration of this.

The State of Israel is located in the habitat of the Mediterranean fruit fly (*Ceratitis capitata*). The medfly can damage all the local citrus and deciduous fruit production. This was the reason for initiating, already in the mid 1950s, a country-wide program to control this insect in citrus and deciduous orchards (approximately 100,000 ha). This area was treated yearly in the past by several (5–7) aerial applications of 2 kg malathion w.p./ha. As the malathion w.p. formulation contains 50% active ingredient, this country-wide application resulted annually in at least 500 tonnes active malathion sprayed all over the country. During the mid 1960s, a bait technology for controlling the medfly was developed. The attraction of medfly females to the toxic drops permits the use of only 150 g malathion/ha. This caused an immediate reduction of 92.5% of the malathion sprayed annually in Israel. A further improvement became possible as the reduction of dosages caused a positive shift in the biological balance against this pest and thus permitted a reduction in the number of applications per year.

Adoption of improved methods for pesticide application will certainly permit decreasing the amount of pesticides used in agriculture, without reducing the yield. This, if adopted on a worldwide basis, could be of great import. Among such technologies one may count old ones such as seed dressing, and new ones such as automatic detection of infected plants and site-specific pesticide application, using placement spraying aided by

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modern technologies of global positioning systems and expert vision systems; automatic air-assisted spraying from the ground instead of over-the-canopy sprays. Some of these ideas have been collected in this volume, as incentives for environment-friendly agriculture, to the benefit of both the growers and the community at large.