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## *— a prescription for pest control*

**R**APID AND EXTENSIVE CHANGES are occurring in attitudes toward pest control. Some of this is voluntary, but much of it has been forced by the increasing difficulties of pesticide use. We are accustomed to coping with the old familiar problems of pest resistance, toxic residues, hazards to humans, resurgences, and secondary pest outbreaks but we are now faced with an entirely new phenomenon that may be far more difficult to handle. Pesticides have suddenly become political and are no longer merely a technical "in-house" problem of agriculture. This is a result of the widespread concern over environmental quality and the public alarm over pesticides as global pollutants. The extent of change is typified by the example of DDT which momentarily gave us the closest glimpse of a panacea that we are ever likely to see. It is now both ironic and sad that Sweden which awarded the Nobel Prize to the developer of DDT has banned its general use. In the current anti-pesticide climate it is predictable that public opinion will result in extremely negative and unnecessarily restrictive legislation on pesticides.

Disregarding the sound and emotional fury generated by the hordes of instant, "pop" ecologists and anti-pesticide crusaders, the fact remains that to rely solely on chemical control measures is no longer satisfactory. The serious and complex problems associated with synthetic pesticide use in agriculture, public health, and forestry are of such a magnitude, and the dollar, social, and ecological costs are so high that almost everywhere a reappraisal is necessary. Actually this has been quietly underway for a number of years in California; so we now have in the University's Division of Agricultural Sciences substantial experience with alternatives which are removing us from the horns of the pesticide dilemma.

A common-sense approach to many pest problems is to combine every available means of control into a single, uni-

fied program—within the framework of normal farm operations. Such a program requires a broad interdisciplinary and ecological approach. This is based on the strategy of pest management which holds populations at tolerable levels. It rejects the unrealistic idea that pest control must be equated with total elimination. It recognizes that the most powerful control forces are natural ones, some of which can be manipulated to increase the mortality of a pest species. It considers the pesticide as the ultimate weapon to be held in reserve until absolute necessity dictates its use. It is a sophisticated use of ecological principles and is both intellectually satisfying on theoretical grounds and extremely effective in application. This is the concept known and practiced as integrated control.

In developing an integrated control program the basic ingredients must be provided by the coordinated efforts of a team of research specialists from diverse disciplines. Entomologists, plant pathologists, ecologists, economists and agriculturists of all types contribute. Such task forces with representatives from both the Agricultural Extension Service and the Agricultural Experiment Station are presently refining the control programs on cotton, walnuts, peaches, and grapes in accordance with the integrated system of pest management. California is achieving tremendous success in this modern concept of pest control, for it has the unique capability of using the statewide resources of the University's Division of Agricultural Sciences in close harmony with the agricultural industry. This is a continuing partnership of long standing that has produced the most progressive agricultural enterprise in the world, and now in the case of the pesticide dilemma has once again demonstrated its ability to cope with adversity and quickly adapt to changing conditions. The end product will be a pest control system that satisfies both the agricultural and environmental requirements of California.