Tag Day for anti-mosquito fund. "Buy a tag, mister?"

when, due to various deficiencies of conventional insecticides, the high standards of mosquito control in California threatened to deteriorate. Because mosquito research had been confined almost exclusively to pesticide development, there were few proven alternatives in the fields of biological, genetic, physical, and cultural control.

Faced with this crisis, the MADs supported special state funding for an expanded University of California mosquito research program. In addition, some districts further reinforced the research effort by increasing their own research input, by providing supplementary grants, and by donating equipment, materials, transport, staff, and other forms of assistance in kind to University researchers.

In fiscal year 1977-78 research assistance by MADs was valued at $195,000. In 1979-80, however, assistance was reduced to $88,000 because of an average 50 percent statewide reduction in local revenues for all MADs due to enactment of Proposition 13.

Mosquito control trends since the expanded research program began show a marked redirection of strategy and control methodology. Efforts by MADs to develop and integrate biological, cultural, physical, and other nonpesticidal measures into their mosquito programs have produced gratifying results.

The use of conventional organophosphorus pesticides has decreased 65 percent since 1970 from 250,000 pounds of such compounds as ethyl and methyl parathion, Dursban, Baygon, Baytex, and malathion to 87,000 pounds applied in 1978. During the corresponding period, the area receiving larvicide applications was reduced by 55 percent, a change attributed to improved water management practices, reduction of mosquito sources, and substitution of mosquito fish for larvicides. Changes in farming practices, such as conversion of irrigated pastures to row crops, and the encroachment of urban housing tracts upon agricultural land also contributed to the decrease in the use of larvicides.

Another important cause of declining pesticide usage is attributed to a gradual reduction in spraying coverage. Selective and discretionary spraying has largely replaced massive, total-coverage spraying once commonly employed in most control programs. In selective spraying, the pesticide is confined to specific sites of larval activity within an extensive habitat. Discretionary or optional spraying allows operators to judge the degree of larval infestation justifying the need for spraying. Besides conserving insecticide, the selective-discretionary practice spares natural enemies of mosquitoes in the aquatic habitat, lessens the possibility of mosquito resistance, and reduces the cost of labor and materials.

The impact of research on California mosquito control is reflected in the shift from almost complete dependence on conventional pesticides to an integrated control strategy, using biological, physical, cultural, and other nonpesticidal measures whenever feasible. Other factors, such as mosquito resistance to insecticides, the high cost of new insecticides, and regulatory constraints by the federal Environmental Protection Agency, have also influenced the redirection of mosquito control programs. Although not clearly recognized, the evolution in control results from the progressive attitude and resourcefulness of MAD managers in reconstructing their programs to pioneer new and largely unproven methods and to support research and development.

In looking to the future, the prospects for further development of biological control methods and concepts in the MAD programs seem ever more promising, because research will undoubtedly open up new opportunities for improvement in the practical application of such measures.

The California Department of Health Services

The California Department of Health Services maintains a program of vector biology and control. Its Vector Biology and Control Section (VBCS) has statutory authority to assist local mosquito abatement agencies, to conduct surveillance of vectors and vector-borne diseases, to perform emergency vector control, to certify vector control technicians, and to disseminate information to the public.

Types of VBCS actions in support of local vector control agencies include reviewing programs; consulting on physical, biological, and chemical control methods; assisting with specialized vector identification; assisting with pesticide resistance surveillance; representing vector control interests before state and federal regulatory agencies; reviewing environmental impact reports and other planning documents; and training technicians in all aspects of vector prevention and control. Agencies with limited resources place a greater demand upon the VBCS than do agencies with greater resources.

The VBCS is also responsible for administering cooperative agreements with local vector control agencies. This mechanism has been utilized to oversee the use, by local agencies, of pesticides and physical source prevention activities (habitat manipulation). Pesticide use reporting, assurance of compliance with chemical and physical control restrictions, and assurance of personnel competence are elements of the VBCS oversight function.