OPERATIONAL AND SCIENTIFIC NOTES

FIELD OBSERVATIONS ON THE EFFECTS OF AN AROMATIC OIL HERBICIDE ON MOSQUITO PRODUCTION[1]

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Chemical herbicides are used extensively in California by irrigation districts and mosquito abatement agencies for the control of various weeds along the banks of irrigation canals and irrigation laterals.

Incident to other studies concerned with the prevalence and production of mosquitoes in cotton fields, an opportunity was afforded to observe the effects of an herbicide on mosquito production. Observations were limited to an irrigation lateral of one of the cotton fields (Sullavan) in West Fresno County.

This particular irrigation lateral was first flooded on July 14, 1955, and contained water for the remainder of the season. Flooding of the lateral was due to a faulty shut-off valve at the head gate, which allowed water to trickle from the main irrigation canal into the irrigation lateral.

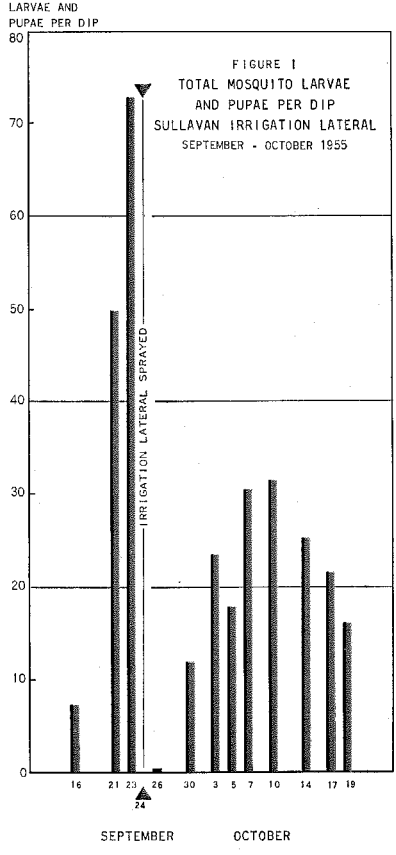
Observations prior to September 24, 1955, indicated that this irrigation lateral was highly productive of two species of mosquitoes, namely, *Culex tarsalis* Coquillett and *Anopheles freeborni* Aitken.

This summary accounts for the mosquito prevalence during the period of September 16 through October 19, and is based on data recorded for the express purpose of evaluating the toxic effects of the herbicide in the treated portion of the lateral.

In view of the fact that the irrigation lateral contained a considerable amount of vegetation scattered along the banks and also within the lateral, it was sprayed on September 24 by personnel of the Tranquillity Irrigation District. The material used was Kem-Kill "W" Aromatic Weed Oil, a formulation using General Petroleum's Aromatic Oil No. 10.[4] A portable Bean sprayer was used to apply the oil. The spray mixture was prepared by adding 75 gallons of concentrate to 225 gallons of water. Apparently only the upper two-thirds of the irrigation lateral was sprayed.

A residual odor from the herbicide application persisted for a long period of time as evidenced during subsequent inspections.

The data in Figure 1 show that excellent temporary control of the aquatic stages of both species of mosquitoes was obtained.



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[4] Specifications: gravity (API) 14.6; flash (PMCC) 210° F.; viscosity (SSU @ 100° F.) 39.3; distillation (ASTM, 90%) 628° F.; water and sediment . . . trace.

There was no evidence that the egg rafts of *C. tarsalis* were affected by the treatment. It was also apparent that in spite of the pungent odors which were evident along the irrigation lateral, there was no discernible curtailment of oviposition by the females of *C. tarsalis*. Inasmuch as all of the culicine larvae taken were identified as *C. tarsalis*, the assumption is made that the culicine egg rafts were also exclusively *C. tarsalis*. While egg rafts were comparatively abundant at the time of the last two inspections prior to the treatment, a marked increase was noted during the first week following the herbicide application. Unfortunately, this weed control operation was not anticipated; thus, no pre- and post-treatment records of the number of adult mosquitoes in and among the vegetation within the irrigation lateral are available for comparison.

Six days following the treatment, a considerable number of *C. tarsalis* larvae in first and second instars were found in the lateral. On the sixteenth day after treatment fourth instar larvae were fairly abundant and after twenty days pupae were in evidence.

In contrast, *A. freeborni* was much slower in re-establishing itself in significant numbers. A small number of first and second instar larvae were taken nine days after treatment. It was not until the thirteenth day that *A. freeborni* larvae were observed in significant numbers in the lateral. Fourth instars were seen on the twentieth day and pupae on the twenty-third day after application of the herbicide.