FILTH FLY SOURCES IN *in Southern California's*

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Cull cantaloupes and watermelons are a major breeding habitat for several filth flies in southern California's lower desert valleys, with the common house fly, *Musca domestica*, being predominant. Biological control alone is not satisfactory, but its integration with cultural methods, such as destruction of breeding habitats by mechanical breakage of cull melons, could offer a practical solution to the fly problem.

Studies over the past decade have shown that animal wastes account for only a small fraction of the total filth fly breeding sites in the lower desert valleys of southern California. Extensive sampling in alternative habitats revealed that field-rotting cantaloupes and watermelons were primary breeding sites for the common housefly, *Musca domestica* L. and other noxious flies. Data gathered during 1968-70 (table) show the average production of three main fly species from watermelons in the Palo Verde Valley. Similar data have been gathered from other sample sites in 1975 in the Imperial and Coachella valleys.

Earlier surveys verified the presence of *Musca domestica*, the principal pest species, throughout the year in animal manure accumulations. The relative permanency of these habitats provide reservoirs or places of survival for flies during unfavorable winter periods. As conditions become favorable in the spring, fly dispersal results in colonization of fields of decaying cantaloupes (figure) and watermelons.

When cantaloupe fields are disced after harvest, protective microenvironments are eliminated, causing emerging adult flies to disperse into neighboring fields where watermelons are in the initial stages of decay. By mid-July, watermelon harvests are usually completed and the remaining fields are disced which causes emerging adult flies to disperse into cooler localities in towns and around animal feed lots, thus beginning the fly reservoir that will reinvade melon fields the next spring.

Larval development

The flies find the soil-melon interface ideal for egg laying and subsequent larval feeding which occurs on fluids from the decaying melons. When feeding is completed the larvae disperse into the deeper soil to pupate.

The average density of larvae was estimated to be around 265 per watermelon over 8 years, whereas the highest pupal recovery averaged around 80 per melon. Considerably lower densities were recorded from cantaloupes although this reduction was somewhat offset by a greater number of melons per acre.

Control

Melons that are broken at harvest rarely support fly development. When they are stockpiled in a field, however, moisture is retained for a longer period and flies develop.

Parasite species involved in destroying fly pupae are *Spalangia nigroaenea* Curtis, *S. endius* Walker, *S. cameroni* Perkins, and *S. drosophilae* Ashmead. However, their combined activity as measured by percentage parasitization is very low (about 7 percent in early July, decreasing to less than 1 percent by August 1st).

Conclusion

Cultural control measures initiated during the first cantaloupe and subsequent watermelon harvests can be expected to greatly reduce the fly population in the low deserts during summer. Rejected fruits should be broken so that desiccation can proceed rapidly, thereby reducing the probability of successful fly larval development. Biological control alone is not feasible for satisfactory control at present. Additional natural enemy species must be sought that can destroy flies more effectively in the severe harshness of the melon field habitat.

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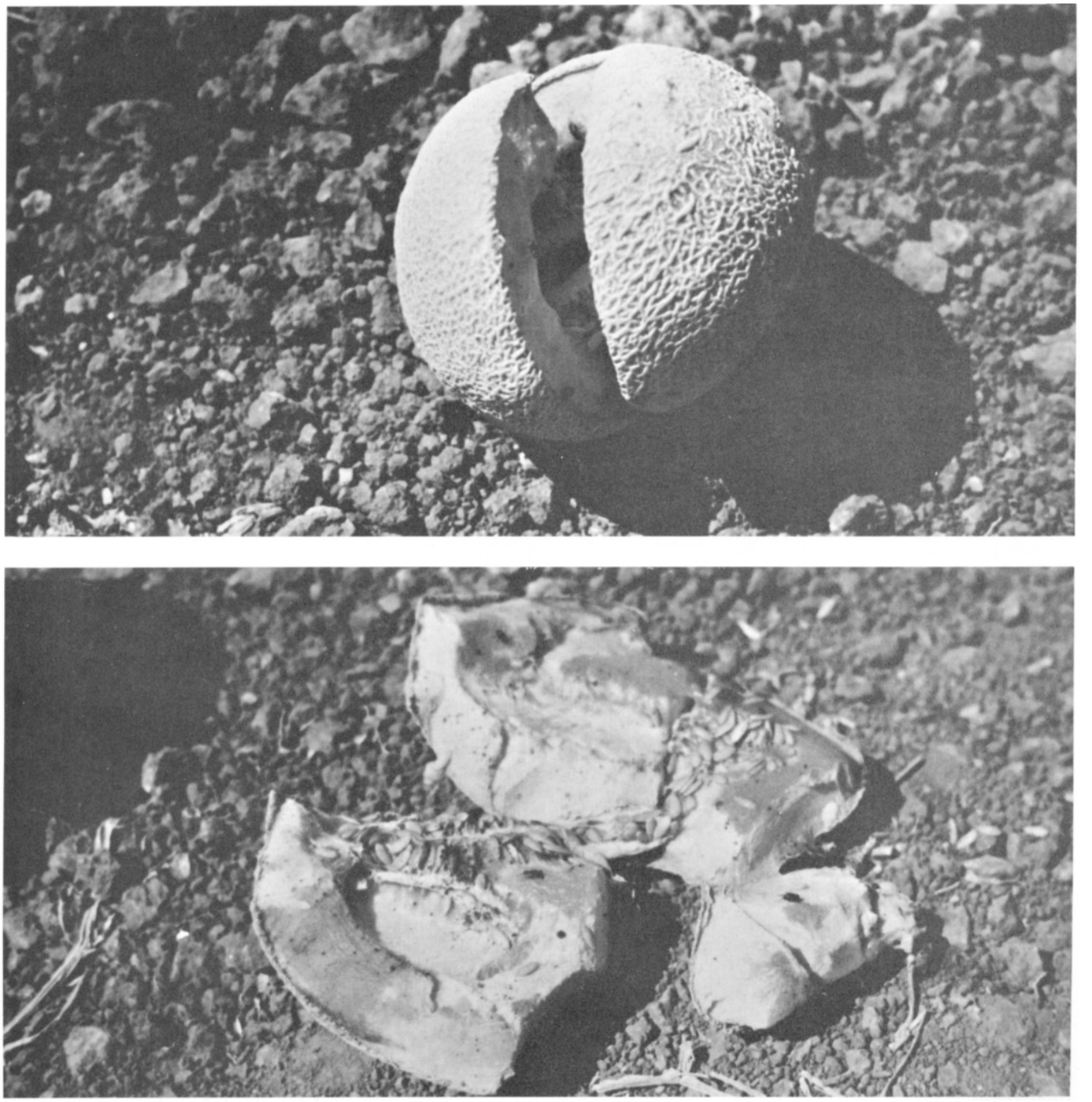
FLIES AND PARASITES RECOVERED FROM DECAYING WATERMELONS IN DIFFERENT CENTRALLY LOCATED FIELDS IN THE PALO VERDE VALLEY DURING JULY 1968-70

Sample date	No. sites	*Musca domestica* [a]	Parasitization (%)	*Calliphora* sp. [a]	Parasitization (%)	*Euxesta notata* [a]	Parasitization (%)
7/19/68	5	62.4	1.0c,d	0	0	present	—
7/15/69	10	79.4	0	10.4	6.3b,c	present	—
7/9/70	4	13.2	3.0b,c,d	0	0	17.2	6.7b,c,d,e
7/15/70	8	41.0	1.0c	0	0	41.8	1.0d

a Mean ± SE of viable host pupae per decayed watermelon (avg. 10 melons/site).
b *S. nigroaenea*.
c *S. cameroni*.
d *S. endius*.
e *S. drosophilae*.

DECAYING MELON FIELDS
Low Deserts



Cull cantaloupe showing adult *Musca domestica* and *Calliphora* sp. in the act of oviposition.