

Use of Sorptive Dusts on Fleas

control of fleas on cats and dogs achieved by treatment with dusts that are easily applied and nontoxic to pets or people

I. Barry Tarshis

Dog and cat fleas—like so many other insects—have become resistant to a number of insecticides and pet owners report that flea infestations on pets are no longer being controlled by previously effective dusts and sprays containing chlordane, lindane and DDT. Additionally, the more effective insecticides do not last for very long periods of time and—because of their high toxicity—have to be used with caution on infested pets.

Treatment with hand duster.



While studies were being carried out on the use of sorptive dusts for killing and controlling cockroaches, a number of experiments were carried out to determine the effectiveness of several of the sorptive dusts on cat fleas. These studies showed that cat fleas which were allowed to crawl through films of sorptive dusts could be killed in from three quarters of an hour to four hours. Of several dusts experimented with, two compounds, a silica aerogel designated as SG 67—Dri-Die 67—and a silica gel called SG 77 were outstandingly effective, killing treated cat fleas in the shortest period of time. On the evidence of these experiments, the two compounds were tried on cats and dogs infested with fleas and it was soon evident that these compounds worked as effectively in controlling fleas on infested animals as on the fleas in the laboratory.

The flea most commonly found on cats and dogs is the cat flea—*Ctenocephalides felis* (Bouche). The cat flea is also the most common pest in homes and lawns

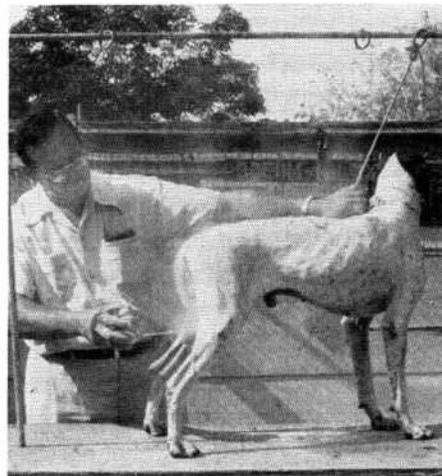
and is particularly abundant during the summer months. Besides infesting cats and dogs, this flea will also feed on man and a wide variety of other animals. The dog flea—*Ctenocephalides canis* (Curtis)—looks and acts like the cat flea and also infests cats, dogs, and other animals as well as man.

Fleas pass through four stages of development: egg, larva, pupa and adult. All fleas require the blood of animals in order to reproduce. The females lay eggs while still on the host animal but the eggs drop to the ground, floor or animal bedding where the larvae hatch in a few days. The larvae feed on organic matter and become full grown in about two weeks, then they spin tiny cocoons around themselves, at which stage they turn into pupae. In about one week, if the temperature and humidity are right, they change into adults and emerge from the pupal cases. Adult fleas can live for a number of weeks without food. This explains in part why people leaving their homes for vacations may be unaware of infestations and upon their return find their homes overrun with the pests.

Application of the Dust

Both SG 67 and SG 77 have been used to treat infested animals, homes, yards, and so forth, but—because SG 77 is 2.5 times heavier than SG 67—SG 67 gives better coverage and possesses better adhering properties. Therefore, for flea control tests, SG 67 is now being used exclusively.

Thorough dusting is essential.



One ounce of dust on cats and small dogs and two ounces on larger dogs may be applied by means of a small hand duster, such as the Getz gun or bulbular hand duster. The dust should be applied on the ears, around the neck, over the back, around the anus, over and under the tail, over the genitals, on the ab-

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Field Experiments with SG 67 and SG 77 for the Control of Fleas on Dogs and Cats

Date dust appl. 1958	Material used	Animals treated		Infestation	Control **
		Dogs	Cats		
6/29	SG 77		Persian	H*	1
7/18	SG 67	Cocker		M*	2
7/18	"		Persian	M	1
7/18	"		Siamese	M	1
7/23	"	Collie		M	2
8/20	"	Cocker		H	2
8/20	"		2 Persian	M	1
8/20	"	Sheep & Collie			
8/20	"	Sheep & Cocker		M	1
8/29	"		Persian	H	1
8/29	"		Tom	H	1
9/3	"	West Highland Terr.		L*	1
9/3	"	Wire-Hair Terr.		L	1
9/3	"	Mixed-Terr.		L	1
9/3	"	Cocker-Bull		L	1
9/3	"	Cocker-Terr.		L	1
9/3	"	Cocker		L	1
9/3	"	Dachshund		L	1
9/3	"	Min. Poodle		L	1
9/3	"		Persian	M	1
9/11	"	Doberman		H	1
10/29	"	Pointer		H	1
10/29	"	Weimaraner		M	1
10/29	"	Doberman		M	1
10/29	"	2 Beagles		M	1
10/29	"	5 Cockers		M	1
10/29	"	3 Poodles		M	1
10/29	"	2 Chows		M	1
10/29	"	2 Collies		M	1
10/29	"	2 German Shepherds		M	1
10/29	"	Basset		M	1
10/29	"	Min. Schnauzer		M	1
10/29	"	3 Muts		M	1
10/29	"	Chi-hua-hua		M	1
10/29	"	Pekingese		M	1

* H = Heavy. M = Moderate. L = Light.

** Number of treatments necessary for control.

SORPTIVE DUSTS

Continued from preceding page

domen and over the legs, with particular attention to the placement of the dust between the toes of the animals. For comfort's sake the dust should be kept away from an animal's face when dusting his body. However, no animals treated with the dust have ever exhibited any ill effects from it; this includes the cats, who, naturally, always ingest the powder when they lick themselves clean.

If a dust gun is not available, small quantities of the dust may be placed in the palms of the hands and the dust worked into the fur of the animals with the hands.

One dusting is all that is necessary for any breed of cat or a short haired dog. For the longer haired dogs—such as collies and cocker spaniels—two dustings may be necessary, particularly if the hair is matted down with dirt. When the matting is too severe the dogs' hair should be clipped and then the dust applied.

Shortly after the dust has been applied to an animal's body, great numbers of fleas will start coming out from beneath the hair of the animal. The fleas will be

covered with the dust, their movements will be very erratic and within minutes they will start falling off the treated animal. The dust-covered fleas will die within an hour after falling from the animal's body.

The dusted animal should be placed on a leash for several hours following treatment to allow time for all fleas to come in contact with the dust before it is partially removed through the normal activities of the animal. The dust should be left on the animal for as long as possible—at least a week—before bathing him.

If there is more than one animal in the house, all animals should be dusted. It would be inadvisable for dusted animals to play or sleep with untreated, infested animals.

Once a dog or cat has been treated and placed on a leash, the animal's play and sleeping areas should be dusted, including the ground where the animals roam—or, on the runways if in a kennel, the entire sides and insides of shelters—particularly wall cracks, floors and between floor boards. All sides of pillows and blankets and whatever is used for bedding should be dusted thoroughly. If a wooden box is used as a dog or cat house,

the dust should be applied on the outside as well as the inside and the under part of the box. Particular attention should be given to putting the dust in all cracks in the wood where fleas might lodge once off the animal.

Homes infested with fleas may be treated by dusting rugs, upholstered furniture, bedframes, mattresses, springs, drapes, curtains, and in all places which might offer refuge to the fleas. Lawns, garages, and children's play houses also may be dusted. One half to three quarters of a pound of the dust is generally sufficient for treating an average size home. Research is planned for this coming spring on the treatment of flea-infested lawns and gardens. In inconspicuous places the dust may be left indefinitely, but in the more conspicuous places the dust should be left for several days and then may be swept up or picked up with a vacuum cleaner.

The results of treating dogs and cats with SG 67 and SG 77 are shown in the table on the preceding page.

I. Barry Tarshis is Assistant Professor of Entomology, University of California, Los Angeles.

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BLACKLINE

Continued from page 9

trees the average total yearly rate of advance of blackline was 4.63" per year as compared with 3.55" in 87 unions in four-union trees affected. In another Payne orchard studied near San Jose where there were five to eight union trees in significant numbers the trend toward decreasing percentages of blackline with increasing numbers of unions per tree is also evident.

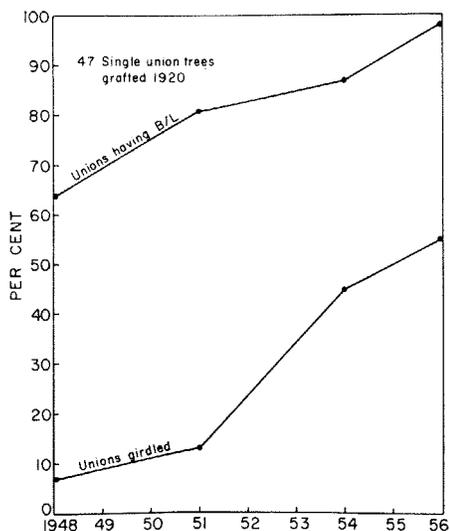
Young trees on black walnut rootstock

planted where old walnut trees were removed or interplanted in an old walnut orchard usually make poor growth. Seedling black walnuts grow better than nursery worked trees but in such situations growth rates are still generally unsatisfactory. In an interplanting test near San Jose at the end of six years Paradox seedlings were approximately six times as large as nursery budded trees of the same age on Northern California black walnut rootstock.

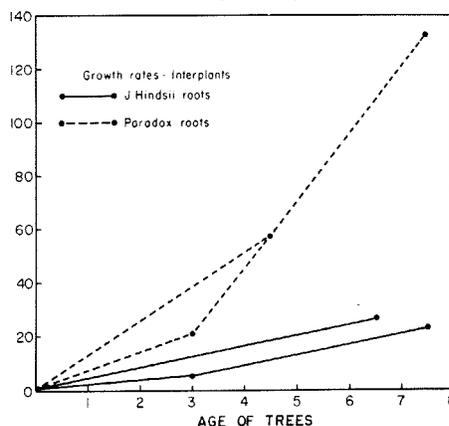
Trunks not over about 18" in diameter or limbs topworked high so that new grafts will get sufficient light can be re-

grafted successfully. The work must usually be done before the original union is not more than about 75% girdled. In another salvaging method sprouts from the rootstock can be left to grow and these rebudded or regrafted after the top dies. In a Contra Costa orchard where 33 sprouts were regrafted to Concord

Progress of blackline in single union trees in San Jose orchard. Payne variety.



Growth rates of Paradox hybrid seedlings compared to nursery grafted Payne trees on Northern California black walnut rootstocks. All interplanted in a San Jose orchard severely injured by blackline. Differences at 3 years significant at .05. Differences at 7 years significant at .01.



Incidence of blackline in single union trees compared to multiple union trees. San Jose orchard. Payne variety. Significance of differences:

	1948	1951	1954	1956
Trees grafted 1920				
1-union vs 4-union...	*	**	*	*
Trees grafted 1930				
1-union vs 4-union...	NS	**	**	**

* Significant at .05.
** Significant at .01.
NS Not significant.

