

J. H. LONGWELL, *Director*

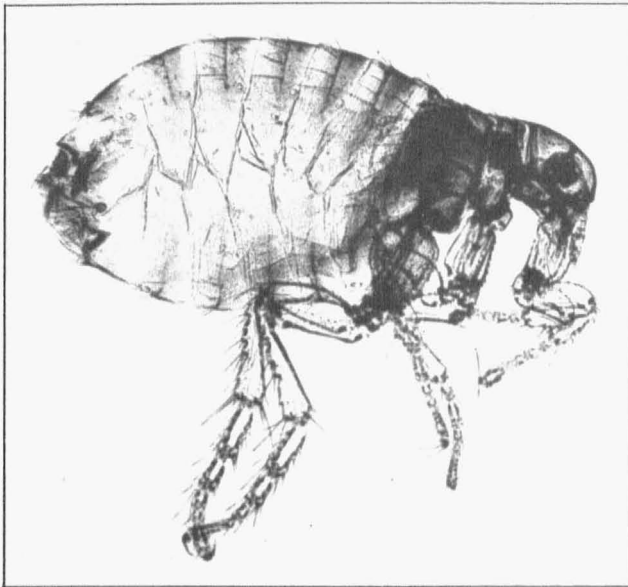
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Controlling Fleas

R. E. ROSELLE AND LEONARD HASEMAN



The human flea (greatly enlarged) which is often a serious pest on Missouri hog farms.

No other common parasite of man, with the possible exception of the chigger, can cause so much downright annoyance and turmoil in the home as the flea. In Missouri, the common dog flea, the cat flea, and the so-called human flea are the most troublesome species which attack man. These fleas may breed in great numbers on hog farms, or where there are dogs and cats. Hog houses, barns, kennels, and other places where these animals bed, may become heavily

infested. It is not uncommon for fleas to be carried into the home, where they may cause much annoyance. Fortunately, neither of these fleas seem to be responsible for the spread of any serious human disease in Missouri, but their bites are painful and very irritating, especially to children.

How Fleas Develop

The flea lays its eggs in the bedding of the host, or while feeding on the host, usually hog, dog, and cat, it may lay eggs which sift down into the bedding. The eggs hatch in from a few days to two weeks. The larvae are very slender, white worms, and when full-grown nearly $\frac{1}{4}$ inch long, with a small, pale brown head, and without legs or eyes. The body is plainly segmented and sparsely covered with long hairs. The larvae feed on feces, dried blood, and other organic matter in the bedding of their hosts for from one to four or five weeks, depending on conditions. Then they spin about themselves small, oval cocoons, in which they change to the resting or pupal stage. The adult fleas emerge from these cocoons in about a week. Under most favorable conditions, the pest may require only three or four weeks to complete its development from the egg to the adult stage. As a result, a home or a farm may quickly become overrun with fleas.

The adult fleas are small, brown, wingless insects, with piercing and sucking mouthparts, and with hind legs fitted for jumping. The body is flattened from side to side and has stiff hairs slanting toward the rear. The adult fleas must have the blood of mammals or birds as food and for reproduction.

Control of Fleas

In controlling an outbreak of fleas it is important, first of all, to prevent further increase by treating the bedding places of dogs, cats, and hogs. While cleaning up such breeding places, also treat infested animals at frequent intervals, and those fleas which are carried into the home should be destroyed.

Treating Breeding Places.—To clean up infested breeding places in hog houses, open sheds, barns, kennels, basements, and similar places, first dispose of all infested bedding and haul out and scatter the manure from infested barns and sheds. Then spray or sprinkle the ground or floor and the lower part of the walls of infested buildings with used crank-case oil, crude oil, stock dip, DDT, toxaphene, benzene hexachloride or kerosene. One must kill as many adult fleas as possible and prevent further increase of young fleas in this way in order to get rid of a severe infestation. It may be necessary to

retreat breeding places a number of times at 10-day intervals, and it may take several weeks to completely clean up a heavy infestation that may even spread out into the lawn and feed lots. While treating breeding places, keep host animals away. When working with fleas, wear rubber boots to prevent them from getting into the clothing and being carried into the house.

Treating Infested Animals.—To rid infested pets or other animals of fleas, give them either a dust treatment or, if their objections are not too strong, a bath in any one of several solutions. If a dust treatment is to be given, use either a derris powder or pyrethrum powder, or a combination of the two. A 5% DDT dust is very effective but *must not be used on cats*. There are a number of effective commercial flea powders on the market, which if used should be applied as directed. It is best to work the powder in next to the skin, beginning on the head and working back over the neck and body. Treat pets over an unfolded newspaper so that the stupefied fleas, which fall from the hair or are brushed or combed out, may be collected on the paper and promptly rolled up in it and burned. This is the simplest treatment for pets and, if properly applied, is very effective, but it must be repeated in case of a severe flea infestation or where the pet plays with other infested animals.

If the treatment for fleas is to be a liquid shampoo, any one of several materials may be used in the bath water. Two ounces of derris powder added to a gallon of soapsuds is satisfactory. Also, a bath in a fairly strong suds made with naphtha soap is effective if the suds are left on for 10 minutes or more. One of the most readily available and effective baths, safe for dogs *but not for cats*, is a suds made with common laundry soap to which is added one tablespoonful of kerosene for each gallon of suds. Odorless kerosene may be used if one objects to the odor. These treatments have the advantage of serving the double purpose of a bath and also a flea treatment. As in the case of dust treatments, begin on the head and work back. There are on the market a number of satisfactory commercial soaps and other chemicals which may be used in the bath for ridding pets of fleas, if directions are followed.

Infestations of fleas on hogs may be improved by using a little crude oil on the surface of wallows and on rubbing posts. However, it is usually more satisfactory to turn hogs on pasture or keep them out of the infested barns and hog houses and feed lots until such places are rid of fleas.

Destroy Fleas in the Home.—An infested basement can be cleaned up by using a lawn hose for washing down the walls and

floor and flushing fleas and dirt out through the drain. Then spray the walls and floor with kerosene or household DDT, chlordane or toxaphene spray. Repeat the treatment once a week until all fleas are gone, and keep pets out of the basement to prevent reinfestation.

In living quarters, the use of naphthalene flakes scattered over the floor, at the rate of about 5 pounds per room, is usually effective. Keep the room tightly closed for 48 hours. The remaining naphthalene flakes may then be gathered for use in treating other rooms. After this treatment the floors may be thoroughly gone over with an oiled mop to dispose of any eggs or larvae, if the room has been infested for some time. Mats or rugs on which pets are allowed to lie should be laundered or shaken frequently, or dusted or sprayed occasionally with derris, pyrethrum or DDT. Where fleas get into beds and cause sleepless nights, dust a little derris or pyrethrum between the sheets before going to bed.

Fleas As Disease Carriers

Some species of fleas spread disease from rodents or other animals to man. The common rat flea of the Orient spreads bubonic plague from rodents to man. On a number of occasions, in the past, this disease and this flea have been carried to America by commerce, and the flea is now known to be present at various places in the central part of the United States. This means that some day we may have the disease here in Missouri, so it is important that both fleas and rats be kept under control. Fleas are also known to carry a mild form of typhus fever among rodents, and they are intermediate hosts of the dog tapeworm that may be transferred to man. Fleas, therefore, are not merely annoying pests of man, livestock, and pets, but they are actually a menace to human health and should be kept under control. In these trying times, too much emphasis cannot be placed on the protection of man's health and comfort from fleas and similar dangerous insect parasites.