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EC1106 Control Methods for Household Pests

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U. of N. Agr. College & U. S. Dept. of Agr. Cooperating
W. H. Brokaw, Director, Lincoln

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1106

CONTROL METHODS FOR HOUSEHOLD PESTS
(Revised by Department of Entomology)

HOUSE FLIES

General Habits. The main breeding place of house flies is in manure, principally in piles of horse manure lying in stables and barnyards, but also in accumulations of manure about cowyards, piggens, and poultry houses and in human excrement lying in pits or open closets, as well as in the kitchen refuse of garbage cans and barrels and in fact almost any decaying vegetable matter that lies in one place long enough to ferment and decay. Because of their filthy habits, house flies carry the germs of several dangerous diseases, especially of typhoid fever.

The eggs are laid in clusters of 100 or more upon these substances, hatch in 24 hours or less, the resulting maggots making their growth in four or five days, after which comes a pupal period, of about the same length and the adult flies of the next generation appear. In three or four days the eggs for the next generation are laid and in this way there are 10 or 12 generations every summer.

Control - Manure should be placed in fly-proof pits or bins, or removed to the fields every third day, or chemically treated to dispose of the maggots in it. Several materials are more or less useful for this purpose but if the manure is to be used as fertilizer on the land the best treatment is to add one pound of powdered hellebore to 20 gallons of water; let it stand 24 hours and then sprinkle it over the manure at the rate of 10 gallons to every 10 cubic feet (8 bushels) of manure. If the manure is not to be used as fertilizer, dissolve one pound of powdered borax in water for each 16 cubic feet of manure and spray on the manure pile. As the borax may injure plant growth in the field if manure treated with it is applied stronger than 15 tons to the acre, this treatment is inferior when the manure is to be used as fertilizer. Iron sulfate is not an efficient fly larva killer and is therefore not recommended.

Fly traps are advantageous to use around houses and outbuildings to decrease the number of flies. There are several types of effective traps which one can make or have made described in U. S. Farmers' Bulletin 734, and any one desiring to use fly traps should secure this bulletin, which will be sent free upon request to the Extension Service.

All windows and doors should be screened during the summer, and if there is no back porch it is a good idea to build one and screen it in; as the flies will then congregate on the three sides of the porch rather than on the one back door. All food should be most carefully screened.

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Sticky fly papers are in common use to destroy flies that have gained access to houses and are both economical and efficient. Poison fly papers should always be avoided, since they usually contain considerable arsenic and their use in the home therefore attended with too much danger, especially to children. One of several less dangerous fly poisons may be used, however, if reasonable care is taken. By dissolving three teaspoonfuls of pure sodium salicylate in a pint of water, and adding some brown sugar to make it more attractive to the flies, a comparatively safe fly poison is obtainable. Commercial (95%) alcohol diluted 20 times with water is also an excellent fly poison. A slightly more effective poison than the preceding two is made by adding three teaspoonfuls of ordinary 40% commercial formaldehyde to a pint of equal parts of milk and water and sweetening with a little brown sugar. Used in the diluted way, formaldehyde is comparatively safe, but in undiluted form it is quite poisonous if taken internally and should be used with care to see that the children do not drink it. Bichromate of potash solutions are practically useless. These fly poison solutions should be used in this way. Partly fill an ordinary drinking glass with the solution, place a saucer or plate lined with white blotting paper cut to size bottom up over the glass, quickly invert so that the glass rests upside down against the blotting paper on the dish, and then place the end of a small match stick under the edge of the glass. The blotting paper is then automatically kept wet with the solution as the flies lap it up and as it evaporates.

MOSQUITOES

General Habits - Mosquitoes deposit their eggs on or near water, and the young or larval mosquitoes ("wigglers") always require water for development. Breeding is more or less continuous thru the warmer months, the insects undergoing a generation every two or three weeks.

Control - Satisfactory mosquito control means the elimination of their breeding places. Drain the breeding ponds or pools, or else spray kerosene over their surface at the rate of an ounce to each fifteen square feet of water surface. The kerosene spreads over the water in a thin film and kills the larvae or "wigglers" when they come to the surface of the water to breathe. It also kills the eggs and prevents the adult mosquitoes from depositing more of them. An application should be made every two weeks during the summer. Many mosquitoes breed in roadside ditches, mudholes, rain barrels, cisterns, and even old tin cans and broken crockery.

Cover rain barrels with a fourteen mesh to the inch wire netting to exclude egg-laying adult mosquitoes. Make cisterns mosquito tight. Clean up all debris that may catch and hold rain water for several days. If ponds or pools can not be drained and it is not desirable to treat them with kerosene, introduce goldfish, sunfish, top-minnows or shiners to keep down the mosquito larvae.

Houses properly screened for flies will also be largely kept free from mosquitoes. Mosquitoes succumb to the fumes of burning sulphur, 1 pound to 500 cubic feet of air space. Burning moistened pyrethrum insect powder in a close room will stupefy the mosquitoes and cause them to fall to the floor where they may be swept up and burned. Another good fumigant is made by pouring melted carbolic acid crystals over an equal weight of gum camphor, forming a clear liquid which evaporated over a lamp at the rate of three ounces to each 1000 cubic feet of space, kills the mosquitoes. A good mosquito repellent is made from oil of citronella, one ounce; spirits of camphor, one ounce; and cedar oil, one-half ounce. A few drops on a bath towel will usually keep mosquitoes away for a whole night, or, if they are persistent, a few drops rubbed on the face and hands will certainly keep them away.

Place Found - In bedding of all kinds, more especially in the mattress or tick; in crevices, especially beneath the wall paper, of sleeping apartments; in upholstered furniture, picture frames, etc.

How Recognized - Reddish, wingless, flat insects about a quarter of an inch long when fully grown, which when crushed give off a peculiar, disagreeable "buggy" odor, which sometimes may be detected in a badly infested room.

Control - All treatments against bedbugs must be thoro and should be made several times in succession, with intervals of a week or ten days between treatments, in order to give time for the uninjured eggs to hatch.

Kerosene and hydrocarbon oils in general are effective against bedbugs, killing all of them reached by the application within 48 hours, and they also destroy the eggs when they come into contact with them. They have great power of penetration and may be applied to cracks with a small brush or feather. Gasoline and benzine kill the bugs but not their eggs. Undiluted coal-tar creosote emulsions are also effective killing practically all of the bugs in 24 hours, but are ineffective when diluted. Other effective killing agents are turpentine, ammonia water, 10%^{linseed} oil or cottonseed oil, and 50% acetic acid.

Pyrethrum insect powder, if pure and fresh and made of flower heads, dusted about the naunts of bedbugs will paralyze them immediately after their contact with it and cause their death within a few days. Powdered sabadilla seeds are also similarly effective. Corrosive sublimate, though effective, is too violent a poison to ever be used in houses, either in a dust or water solution form.

Fumigation with sulphur, burned at the rate of one pound to 1000 cubic feet of space and the fumes held for six hours is very effective, killing not only the bugs but their eggs.

HOUSE ANTS

General Habits - Several kinds of ants may prove to be an annoyance in the kitchen and pantries of houses, but probably the most common house-infesting species is the imported "little red ant" which in this region lives entirely in houses and other heated buildings, which sometimes literally swarm with them. Being only about one-sixteenth of an inch long, it can get into almost anything that is not hermetically sealed, and scarcely any household product is distasteful to it. The paler and even smaller native "tiny yellow thief ant" is also a permanent dweller in houses. The "little black ant" is a lawn-infesting species, the foraging workers of which often invade dwellings to a considerable extent and become a nuisance, and the "little brown ant" or "lawn ant" is an even more frequent pest in this way. There are three or four additional species of ants with similar habits. The native "large black ant" is an inhabitant of decaying wood, which sometimes takes up its abode in the porch beams and underpinning of wooden houses and then becomes troublesome in the house.

The ants ordinarily seen in the house are workers or neuters. They come from colonies in nests either within or without the house, in which can be found the wingless "queen". During the summer winged "queens" and "kings" appear, fly away, and the "queens" tear off their wings and establish new colonies. The "queen" lays large numbers of eggs which produce the myriads of workers of the colony.

Control - Temporary control measures such as allowing ants to collect on sponges sweetened with sugar syrup and dropping them in boiling water; the use of ant tapes, the use of repellants such as naphthalene, camphor, etc., while more or less effective, are not recommended because they do not get at the seat of the nuisance and may end by only attracting more ants. The first step in real control is to locate the nest or colony from which the foraging workers come. This can best be done by "trailing" the workers, as they go back and forth between their nest and the food supply. If the colony proves to be in an easy place to reach it can be exterminated by drenching with boiling water, kerosene, or a mixture of one pint of crude carbonic acid and one-half pound of soap dissolved in a quart of water, or by injecting in the nest a quantity of carbon bisulphide, which quickly vaporizes and suffocates the occupants.

If the colony can not be located, or if it proves to be within the walls or under the floor of the house or some other place too difficult to reach, the ants must be exterminated by feeding the foraging workers on a slow acting poison which they will carry back to their nests, eventually poisoning the "queen" and the home workers, and thus destroying or driving away the whole colony. Such a poison can be made by dissolving one pound of sugar in a cup of hot water to which about 1/20 of an ounce of sodium arsenite or 1/5 of an ounce of common white arsenic (arsenic trioxid) previously dissolved in a little hot water; is added. Small sponges are soaked in this syrup and placed in jelly glasses, the lids of which have been punctured with several large holes. The sponge should about half fill the glass. Several glasses should be prepared in this way and placed where the ants are foraging. When the ants stop visiting the glass of poisoned syrup it should be moved a short distance, where they will visit it again. It should be remembered that this syrup is poisonous and must be kept away from children. The use of cyanide of potassium, corrosive sublimate and other virulent poison is always to be avoided in the home.

CLOTHES MOTHS ("MILLERS")

Place Found - In woolen fabrics and articles of clothing, carpets, furs, feather articles, and particles of animal origin in general.

How Recognized - The adults are small, pale buff-colored moths with an expanse of wings of about a half inch, which are most often seen during the warmer months of the year irregularly flitting about the house, especially in an unused room or closet. They are commonly known as "millers". They are night flyers and are rarely seen in the daytime except when disturbed by the handling of infested articles. These moths do not damage anything, but the females lay minute eggs on the articles which are to form the food of the tiny caterpillars or "worms" which hatch from these eggs, and these whitish worms burrow and eat the warp of the woolen fabrics or fur articles often completely ruining them.

Control - Clothing which is not frequently used and is subject to attack by clothes moths should be brushed and exposed for several hours to strong sunlight and fresh air at least once every month during the chief period of activity of the adult moths which is from June 1 to October 1. This is to remove the eggs and larvae or to kill them by exposure.

Winter apparel, such as furs and woolens, should be thoroly brushed, aired and sunned in the spring, and then packed in pasteboard boxes or other tight receptacles, the openings or cracks of which should be sealed by the use of gummed tape, or strips of pasted paper. It is well to add some of the repellants mentioned below for perfect protection.

Repellants of various kinds are effective not only in keeping the moths from laying eggs upon the articles, but some of them also kill the eggs and the "worms" which hatch from them. Naphthalene flakes, cakes or balls ("moth balls") not only kills the clothes moths but also their eggs and worms, when used at the rate of one pound to 20 cubic feet of space in fairly tight trunks, drawers, etc.. This material kills thru its fumes. It also effectually prevents moths from laying their eggs on woollens or furs treated with it. Gum camphor, broken up into small pieces and used at the rate of one pound to each 16 cubic feet of space also repels and kills the moths, eggs and "worms", fairly satisfactorily, but is not quite so effective as naphthalene. Red cedar chips and shavings and red cedar chests repel and kill the moths, but do not prevent the hatching of eggs or kill the "worms" unless they are very small. Powdered cloves and oil of lavender are effective repellants and also kill some of the "worms." Pyethrum powder and sodium fluoride powder readily kill the "worms" but do not repel the moths or destroy the eggs. Fumigation with sulphur is also effective in killing both moths and "worms" if burned at the rate of $8\frac{1}{2}$ ounces to each 350 cubic feet of space and the fumes confined for 18 hours. The moths will be killed if only $7\frac{1}{4}$ ounces of sulphur is burned, but only 20% of the larvae are then destroyed. Heat kills all stages of clothes moths readily, a temperature of 110 - 115° F. being fully effective in half an hour.

CARPET BEETLES ("BUFFALO MOTH")

Place Found - In woolen goods of all kinds, carpets, furs, feathers and all articles attacked by clothes moths.

How Recognized - The adults are small, oval beetles, in one species (the black carpet beetle) black in color, and about one-sixteenth of an inch long, and in another specie (the common carpet beetle) marbled black and white in color and one-fifth of an inch long.

Carpet beetles occur all the year around in well-heated houses, but chiefly appear in the fall and spring. Unlike the clothes moths they are active in the daytime. They lay their eggs on the material which is to form food for their larvae or "worms." The "worm" of the common carpet beetle is about a quarter of an inch long and clothed with long hairs all over, while the "worm" of the black carpet beetle is more slender and has most of its hairs in a long pencil at the end of the body.

Control - Where carpet beetles have become well-established in a home nothing but the most thoro and long-continued efforts will eradicate them. Infested carpets must be removed, thoroly dusted and beaten, sprayed with gasoline, and hung in the air and sunlight as long and as often as possible. The floors should be thoroly washed and scrubbed with soap and water, especially along the baseboards and the cracks of the the floors. It would be of advantage to clean out all the dirt possible from cracks in the floor, pour in kerosene and fill with a crack filler or plaster of Paris, and to spray the cracks beneath the baseboards with gasoline. The extreme inflammability of gasoline vapor should always be remembered.

As against the clothes moths, Naphthalene and gum camphor are effective repellants against the carpet beetles, not only preventing the laying of eggs on treated materials but killing the insects in all stages, the fumes from the naphthalene being more rapid in the effects than the gum camphor. Red cedar chips and shavings, even when used at the rate of one pound to 18 cubic feet, and red cedar chests, are not very effective against carpet beetles, killing only the beetles and a few of the very young "worms", but no eggs. Oil of cedar leaves is an effective repellent against the beetles. The "worms" of the carpet beetles do not satisfactorily succumb to

pyrethrum powder or to sodium fluoride powder as do the "worms" of the clothes moths, but they do succumb to powdered cloves. Fumigation with sulphur is effective when the sulphur is burned at the rate of 8 1/2 ounces to each 350 cubic feet of space as it will kill the beetles and worms, but should not be used at a less strength. Carbon bisulphide is also an effective fumigant when used at the rate of one pound to 100 cubic feet of space, and kills these pests in all stages. Heat kills the worms when a temperature of 120 degrees F. is maintained for a half hour, but a higher temperature is necessary to kill the eggs. About 125 degrees F.

COCKROACHES ("WATER BUGS")

Place Found - About sinks, kitchens, pantries, storerooms and moist places thruout the house, hiding by day and active by night.

How Recognized - Our commonest species of cockroach is the German cockroach ("Croton bug"), which is light brown with two dark brown stripes on the back, fully winged and about five-eighths of an inch long; next is the Oriental cockroach ("black beetle") which is shining blackish, short winged and over an inch long; while a third species is the American cockroach, which is yet longer, light brown and fully winged.

Control - The most successful treatment against roaches is dusting sodium fluoride powder about their retreats and hiding places. When sprinkled undiluted in infested rooms practically every roach is killed within 48 hours and if diluted down to 20% with inert materials, such as wheat flour or ground flint, the effectiveness is not materially reduced. Sodium fluoride acts both as a contact and stomach poison, the roaches taking the poison into their mouths when cleaning their antennae and legs. Fresh, pure pyrethrum powder, made from powdered heads, is also an effective cockroach remedy, paralyzing the insects almost immediately and causing their death within 48 hours. If diluted, however, or if impure, its value is greatly diminished. It acts as a contact poison. Powdered borax is much slower and less effective than sodium fluoride, but if used repeatedly and persistently will kill the roaches in from four to seven days. It acts primarily as a stomach poison. Certain alleged methods of roach control, such as the use of plaster of Paris and flour, tobacco dust, phosphorus paste, etc., are ineffective or so slightly effective as to be of little or no value. Fumigation with sulphur, burned at the rate of 9 ounces to 1000 cubic feet of space is effective in killing the roaches, and they also succumb to carbon bisulphide used at the rate of one pound to 1000 cubic feet.

CRICKETS IN THE HOUSE

Crickets of native species frequently make their way into dwellings and become a pest, sometimes invading the house in large numbers.

If children can be prevented from getting them, pieces of ground up fresh potatoes, carrots, or parsnips poisoned with white-arsenic or Paris green and placed in haunts of the crickets, will be eagerly eaten by the insects. This method is not recommended unless it can be done with absolute safety. Where this cannot be used, sodium fluoride may be scattered copiously about the retreats of the crickets, preferably using a hand bellows for this purpose. The crickets can also be trapped. Take a lidless tin can or Mason jar, fill it with diluted sweetened vinegar to about half its capacity; arrange some flat sticks to serve as inclined runways, and place them where the crickets abound. The insects run up these sticks and in trying to get at the bait fall into the receptacles and are caught or drowned.

SILVERFISH

Place Found - In dark, concealed places about kitchen and pantries, among starched goods and little used books and papers, back of mantels, under wash boards, in drawers and clothes presses, etc., hiding by day and active by night.

How Recognized - Glistening silvery-gray in color, wingless, about a half inch long, with two long antennae on the head and three long, antennae-like appendages at the tip of the abdomen. The body is covered with microscopically small scales. The insects run very rapidly for places of concealment when uncovered. One species is pure silver, gray and inhabits cellars and the moister parts of the house; another is marbled gray and dusky and is found in the dry parts of the house.

Control - Boil up a thin starch paste, add a liberal quantity of white arsenic and thoroly stir. Spread this poisoned starch paste on bits of card-board, dry them, and place them about in the infested places. Scatter pyrethrum insect powder liberally about their haunts.

INSECTS IN FLOUR, MEAL, BREAKFAST FOODS, ETC.

How Recognized - Very small beetles, less than one-fourth inch long, are commonly found in foodstuffs. To look for these is important. If the infested article has recently been purchased, call your grocer's attention to it and secure uninfested products. If, on the other hand, infestation has come from exposure since you purchased, use the remedy given below. Notice the place where you keep flour or meal if webby accumulations are found upon the sides of the barrel or in the corners of the box, examine these webs for small worms.

Control - Keep grains, flour, meal, etc., in boxes or cans having tight-fitting covers. From time to time examine contents. To rid foodstuffs of these pests, put contents in shallow pans and heat to 135 degrees F. and keep heated for fifteen minutes, or fumigate with bisulphide of carbon, confining the vapor for 24 hours, in a tight receptacle.

INSECTS IN HAM, BACON, CHEESE, ETC. ("SKIPPERS")

How Recognized - A hairy, brown, crawling "worm" about 1/2 inch long, or cylindrical white maggots, in the infested products.

Control - Store the meat or cheese in dark places made inaccessible by screens to the beetles and flies which are the parents of these "skippers". The affected portions of meat or cheese should be cut away and burned and the remainder may be used. A smoke-house or store-house once infested should be fumigated with sulphur or thoroly sprayed with benzine. When possible, keep the produce in tight, insect-proof bags.

APHIDS OR LICE ON HOUSE PLANTS

Occurring in large numbers on geraniums, carnations, chrysanthemums, roses, etc., will be found small, greenish, winged and wingless insects, about 1/16 to 1/8 inch in length. They frequently collect in masses and almost cover portions of the plant.

Control - A 40% nicotine sulphate solution, such as "Black Leaf 40", diluted at the rate of 1 part to 1000 parts of water, with a quarter pound of soap added to each six gallons of diluted spray, will kill the lice when sprayed or whisked over the plants so that they are wet with the wash. A strong soap solution, such as remains after washing of clothes, also furnishes a cheap and effective remedy against many of these lice, if the plant is not too tender for the suds wash.

Draft - Spray around the house

1 pt. to 1 quart of water
dry 2 pt. 1 qt. water

BOXELDER BUGS

These pests often become a nuisance in the fall by getting into houses. There is no known control measure or repellent for the adult bug. The boxelder trees and iris plants should be sprayed in the spring with a kerosene emulsion, which will kill the young bugs. The kerosene emulsion is made as follows.

Cut a quarter pound of hard soap into thin slices and place it in a half gallon of water. Heat the water until the soap is dissolved. REMOVE THE WATER FROM THE FIRE, and add one gallon of kerosene. As soon as the kerosene is added to the mixture, churn it violently until it gets milky. This is your stock solution. For a spray dilute one part of the mixture to 20 parts of water.

RATS AND MICE

Control - Traps - Owing to their cunning, it is not always easy to clear rats from premises by trapping. If food is abundant, it is impossible. A few adults refuse to enter the most innocent looking traps. And yet trapping, if persistently followed is one of the most effective ways of destroying these animals, especially the mice. The bait should be of a kind that rats or mice do not get in the vicinity. As far as possible food other than the bait should be inaccessible while trapping is in progress. The bait should be kept fresh and attractive and changed when necessary. Scald the trap each time any blood gets on it. The more simply constructed guillotine traps are preferable. Probably those made entirely of metal are the best, as they are more durable. Traps with tin or sheet metal bases are not recommended. Cage traps should be made of strong wires so that the rat cannot spread the wires apart and escape. They may be baited and left open for several nights until the rats are accustomed to enter them to obtain food. They should then be closed and freshly baited. It is better to cover the traps than leave them exposed. A short board should be laid on the trap and an old cloth or bag or a bunch of hay strewn carelessly over the top.

Poisons - While the use of poison is the best and quickest way to get rid of rats and mice, the odor from the dead animals makes the method impracticable in occupied houses. Poisons may be effectively used in barns, stables, sheds, cribs and other outbuildings, when placed so other animals do not get to them. Barium carbonate is one of the cheapest and most effective poisons. Its action is slow and if exit is possible, the animals usually leave the premises in search of water. Mix four parts of meal or flour with one part of the mineral, or place on moistened toast or bread and butter. Strychnine is too rapid in action to make its use against rats desirable in houses. Arsenic is extremely variable in its effect upon rats, and if the animals survive the first dose, it is difficult to induce them to take another. Phosphorus is not recommended, and the use of rat viruses is unsatisfactory.

FUMIGATION

Sulphur - In fumigating with sulphur the room should be tightly closed for several hours. In order to close the cracks around windows and doors, strips of newspaper may be soaked in water and applied rapidly over the cracks. They will stick tightly for many hours. The sulphur should be placed in a kettle set on bricks in a tub of water so as to avoid danger of fire. A half teacupful of wood alcohol poured on the sulphur and then lighted will serve to burn sulphur completely. It must be remembered that sulphur fumes bleach certain colors of wall papers and tarnish metals of various sorts. Remove colored drapes or other fabrics, and coat metals with vaseline to protect them from the action of the fumes.

Carbon Bisulphide - This substance is a clear, colorless liquid that is highly volatile and inflammable, and which in the commercial article gives off a powerful and disagreeable odor. The fumes are heavier than air, and poisonous to animal life. Temperature as well as the tightness of the enclosure of the fumes is a very important factor in successful fumigation with carbon bisulphide. With a moderately tight enclosure at a temperature of 90 degrees F. one pound of carbon bisulphide will effectively fumigate 500 cubic feet of space; at 80 degrees, 400 cubic feet; and at 70 degrees only 300 cubic feet, while at 60 degrees or less the results are altogether unsatisfactory. If the enclosure is not tight, or cannot readily be made so by plugging the cracks, a liberal increase in the amount of carbon bisulphide should be made. The fumes should be kept confined for about 24 hours, or better for 48 hours. Great care should be taken when handling carbon bisulphide to keep it away from lights of all kinds, pipes and cigars included, on account of its very explosive qualities when mixed with air. No person or domestic animal should be allowed to breathe the fumes long and the rooms where it has been used should be thoroly aired before occupying them after the fumigation.

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