L-311

Texas Guide

for

CONTROLLING HOUSEHOLD INSECTS

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Texas Agricultural Extension Service
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Texas Guide for Controlling Household Insects

SELDOM CAN ONE OBSERVE a home and its surroundings without finding some form of insect life. Insect activity changes from season to season. Some insects feed on fabrics, contaminate food and attack dwellings while others bite or annoy humans, carry diseases, cause secondary infections and are general nuisances.

Certain pests may be found outside and controlled before they enter the home. However, some insects live entirely within the home and must be controlled by applying insecticides as sprays or dusts inside the dwelling. Fumigation is seldom necessary. If a house must be fumigated, it is wise to rely on a company qualified to furnish this service.

Sanitation and good housekeeping are important in controlling or preventing most pests but even the well-kept home sometimes becomes infested.

EQUIPMENT FOR APPLYING INSECTICIDES

Many types of sprayers and dusters on the market can be used effectively for applying insecticides to control household pests. Some of the more common types are discussed as follows:

Small hand sprayer — Effective for applying space sprays in the home to kill flies and mosquitoes. This type is not effective for applying residual sprays. It usually has a capacity of 1 to 2 pints and the spray is discharged in a fine mist.

Compressed-air sprayer—One to 4-gallon capacity. It is an exellent all-purpose sprayer for home use if equipped with adjustable nozzle.

Vacuum cleaner attachment—Satisfactory for applying household sprays if it is not too bulky and has an adjustable nozzle.

Paint brush — Can be used to paint oil solution on window and door screens as well as baseboards.

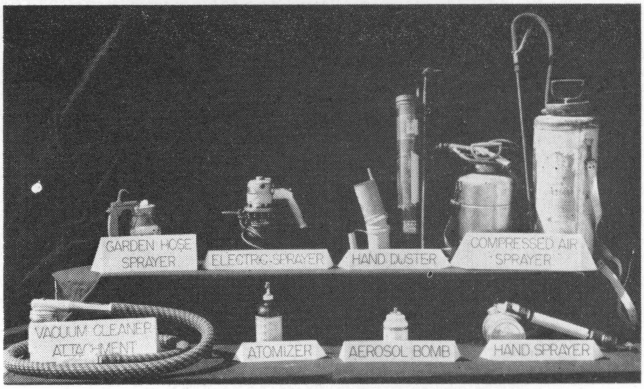
Atomizer attachment—Can be used to apply oil solution to cracks, crevices and around baseboards for ant and cockroach control. Many household insecticidal sprays come in bottles equipped with small atomizers.

Aerosol bombs—Useful for applying household insecticide as a fine mist for space spraying. The insecticide is dissolved in a low-boiling liquid and held under pressure in a metal cylinder. When a valve is opened, the material escapes as a fine mist.

Electric sprayers—Consists of an electric motor that operates a compressor for spraying the insecticide as a fine mist. Rather expensive for the average home owner. Many types are on the market.

Garden hose attachments — Where sufficient water pressure (at least 40 pounds per square inch) is available, these spray attachments are satisfactory for applying sprays outside the home. Emulsion concentrates are more satisfactory than wettable powders in these attachments.

Dusters—Useful for applying dusts to control garden and yard insects. Small puff dusters may be used inside the home. Many types of hand dusters are available, varying in capacity from less than 1 pound up to several pounds.



Equipment for applying insecticides

INSECTICIDAL FORMULATIONS

Most insecticides are available in four forms: oil solutions, dusts, emulsion concentrates and wettable powders.

Oil solutions are made by dissolving the insecticide in a very light oil base such as deodorized kerosene. Most household sprays are formulated as oil solutions and are preferred to dusts because the residue is less objectionable. The solvent evaporates and there is little danger of damaging fabrics with properly formulated oil solutions.

Dusts are made by mixing the ground insecticide with a "filler or carrier" such as talc. Dust formulations may be used inside the home but leave unsightly residues. They are best for outside use, except for silverfish control, where they can be used effectively in the attic.

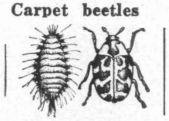
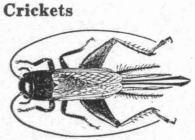
Emulsion concentrates are made by dissolving the technical insecticide in a solvent, such as Xylene, then adding an emulsifier so the concentrate can be mixed with water for use as a spray. Emulsion concentrate sprays are recommended for use outside the home.

Wettable powders are formulated with a material known as a wetting agent. These powders can be mixed with water to prepare a spray. Wettable powder sprays should be used outside. They are much safer to use on tender foliage around the home than emulsion concentrate sprays.

Straight lines below or beside drawings in Table, denote approximate length of actual insect.

TEXAS GUIDE FOR CONTROLLING HOUSEHOLD INSECTS

— ATTACKING FABRICS —

Insect	Description and Habits	Control
Clothes moths  	Both webbing and case-bearing clothes moths are common in Texas. The adult webbing clothes moth is yellowish or buff-colored; the case-bearing moth is similar in color but has indistinct dark spots on the wings. Moths have a wingspread of about 1/2 inch and fly lazily in darkened corners, are not attracted to lights and usually conceal themselves in dark places. Eggs are deposited in nap of clothing, cracks and other dark places. Eggs normally hatch in 4 to 8 days into white larvae with brown heads. A webbing clothes moth larva spins a silken webbing to form a feeding tube, which is attached to the food material. A case-bearing moth larva spins a protective case which it drags about. Clothes moths cause their damage in the larval stage and feed upon wool, mohair, hair, fur and products manufactured from these goods.	To control clothes moths and carpet beetles, practice good housekeeping constantly. Dust and lint should not be allowed to accumulate. Rugs and draperies should be vacuumed often and clothing should be kept clean. Washable woolens may be protected from these pests by using EQ-53, a product developed by the USDA, in which DDT is the active ingredient. It is on the market under different trade names. Woolens may be protected against feeding damage by spraying with a 5% DDT oil solution. Those in storage will be protected for several years; those in use, for a season, if not washed or dry cleaned. Crystals or flakes of paradichlorobenzene or naphthalene, in the proper concentration, protect stored woolens. Rugs, carpets and upholstered furniture should be sprayed every 12 to 18 months. Use a 2% chlordane, 0.5% lindane or 0.5% dieldrin household spray to treat surfaces in the house where clothes moths and carpet beetles may crawl. A 5% DDT household spray kills clothes moths but not carpet beetles.
Carpet beetles  Common  Black	The common and black carpet beetles are the most prevalent species in Texas. Carpet beetles are destructive in the larval stage. These two species can be easily distinguished. The larvae of the black carpet beetle may reach 1/2 inch in length, are elongate, carrot-shaped, golden to chocolate brown and have a tuft of very long brown hairs on the tip of the abdomen. The larvae of the other species are short and chubby, rarely over 1/4 inch long and the body is covered with erect brown or black bristle. These larvae feed on numerous household articles including stored food, rugs, upholstery, clothes and furs. The females lay their eggs upon the food material in dark secluded places. Eggs hatch in 1 to 2 weeks and 1 to 3 years is the time required for them to develop into adult beetles. Adults are oval, hard-shelled beetles, not over 3/16 inch long, and they feed primarily on pollen, never damaging household goods. The adult black carpet beetle is dull black while the common carpet beetle has a mottled brown-banded back.	
Silverfish 	Flattened, slender, wingless, scale-covered insects, about 1/2 inch long when full-grown. It is silver, with three tail-like appendages at the tip end of the body and with two long slender feelers on the head. Firebrats, similar to silverfish, can be distinguished by dusky markings on their backs and they prefer to hide in warmer places, such as around furnaces and steam pipes in heated basements. Both have similar food habits. They feed upon most any vegetable food with high starch or sugar content such as book bindings, wallpaper, starched clothing or curtains and may eat holes in thin fabrics such as rayon.	Use a 5% DDT, 2% chlordane or 0.5% dieldrin household spray or 5% DDT or 10% chlordane dust. Make a thorough application to surfaces where silverfish crawl, especially around stored books or papers, in attics, around bathroom fixtures, in furnace rooms and basements.
Book lice 	Book lice are annoying but harmless. They are tiny, wingless, white or grayish-white insects about as long as the width of an ordinary pinhead. Long periods of humid weather favor book lice development. Usually, they are most abundant in damp, dark rooms that have been closed or poorly ventilated. Book lice may feed on starchy material but their chief source of food is probably microscopic molds.	Same as for silverfish.
Crickets 	Adults vary from light tan to black and may be 3/5 to 1 inch long with very long antennae or feelers. They are attracted to lights and may migrate in large numbers during the summer and early fall. In addition to destroying plants, they may eat holes in paper, rubber and garments made of cotton, linen, wool or fur, especially if soiled with perspiration or foods.	Household sprays containing 2 to 3% chlordane or 0.5% dieldrin may be used inside the home. If dusts are preferred, use 5% chlordane or 2% dieldrin. During heavy migration when crickets are attracted by lights around the home, the numbers may be reduced by dusting the area with 5 or 10% chlordane, 2% dieldrin or 5% heptachlor. Emulsion sprays of these insecticides may be used according to directions on the label but dusts are more satisfactory. Complete control should not be expected during heavy migrations.

— ATTACKING MAN AND CARRYING DISEASES —

Insect	Description and Habits	Control
House flies 	Small two-winged insects familiar to all householders. Breed in manure, garbage or decaying organic matter. Flies carry or spread disease germs that are on the material on which they feed, walk or breed. They reproduce in tremendous numbers. House flies have four stages in their life cycle—egg, larva (maggot), pupa and adult. They have one of the shortest life cycles known among insects—6 to 20 days.	Chemicals alone will not control house flies. Employ good sanitary practices around the home. Adult flies breeding in livestock and poultry houses often invade the home. Control flies in chicken houses, dairy and livestock barns as outlined in L-256. Spray or paint 2½% malathion solution to all window facings, door frames and other areas outside the house where flies rest. Use prepared baits of 1 to 2% malathion, 1% Diazinon or 1% Dipterex outside the home but where children, pets, poultry or livestock cannot reach them. In the home, use a prepared spray of chlordane, dieldrin or DDT plus pyrethrins or allethrins. Pyrethrins or allethrins plus piperonyl butoxide may be used, also. Aerosol bombs containing these chemicals are effective in controlling adult flies.

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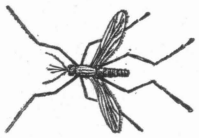
Mosquitoes



Many kinds of mosquitoes exist in Texas and can be a severe nuisance as well as carriers of diseases such as malaria and encephalitis. They are small-to-moderate sized, long-legged, dark-colored, blood sucking, two-winged insects. Some species carry heart worms to dogs and fowl pox to poultry. Bites infected from scratching may lead to serious secondary infections. Only the females bite.
The most troublesome kind are those that breed in temporary rain pools, flooded areas, irrigated pastures, salt marshes, rain gutters, ponds, tin cans and holes in trees. Immature stages of mosquitoes cannot develop without water in which to live.

Control mosquitoes in the home with a prepared household spray or aerosol bomb containing pyrethrins or allethrins, or apply a residual household oil spray of 5% DDT, 2% chlordane, 0.5% dieldrin or 2% malathion, to dark secluded spots, under chairs, tables, beds, bookcases, in closets and behind pictures. Paint or spray malathion on doors and windows as listed under fly control.

A number of mosquito repellents are marketed. When used according to directions on the label, they give several hours protection from mosquito bites.

Eliminate all standing water, if possible. Check cisterns, water troughs, fish ponds or ornamental ponds for wigglers. If present, treat water surface with NONLEADED gasoline, 2 to 4 oz. per 100 sq. ft. Use caution to prevent creating a fire hazard.

Treat stock tanks with kerosene; other bodies of water with fuel oil or diesel oil. In tanks with vegetation, apply 9 oz. of oil per 100 sq. ft. of water surface or 30 gal. per acre. With no vegetation, apply 2 to 4 oz. of oil per 100 sq. ft. of water surface or 7 to 14 gal. per acre.

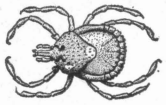
Treat stagnant water, where fish and livestock do not present a problem, with 1% emulsion or oil solution of DDT, chlordane, toxaphene, TDE or methoxychlor; 1 oz. per 100 sq. ft., or about 10 qt. per acre of water surface. Use 0.5% gamma BHC, dieldrin or heptachlor at the rates listed above. Repeat treatment as needed, usually at weekly intervals.

Conenose (Kissing) bugs

There are over 2,500 species of conenose bugs, many of which feed on other insects, but those belonging to the group known at TRIATOMAINAE feed exclusively on the blood of man and other animals. Many other species can inflict painful bites when handled carelessly. The head of this insect is elongated or cone-shaped giving rise to the name "conenose." Conenose bugs have a sharp pointed beak that is used for piercing their prey. Certain species of this group are known to transmit disease. The blood suckers hide during the daytime and feed at night. They may hide and breed under piles of trash, underneath the house in the nests of rats and other rodents, or other dark places.

Destroy all trash piles, bird and animal nests and debris that may harbor insects. Use DDT or chlordane to spray or dust the outside area and under the house where bugs are likely to be found. Ten percent DDT or chlordane dust, or 5% DDT or 2 to 3% chlordane emulsion sprays are effective. Dust the attic with one of these materials. Where bugs are found inside the house, spray with a prepared household spray of 5% DDT or 2 to 3% chlordane or 0.5% dieldrin. Spray around windows, in all cracks and crevices, between baseboards and walls. Also, spray bedsprings and beneath the mattress with 5% DDT. Additional treatments at 10-day intervals may be needed to obtain control. For treatment of bites, see directions listed under scorpions.

Ticks



The term "wood tick" is applied to several species of ticks so similar that the average person cannot tell one from the other. Two common species in Texas are the lone star and brown dog ticks. They feed upon the blood of animals and are often brought into the home on dogs. Some species of ticks transmit diseases and their bites are painful. Wood ticks go through four stages of development—egg, larva, nymph and adult.

The larvae, nymphs and adults attach themselves to host animals and engorge with blood. They range in size from the unfed larvae, which are about 1/40 inch long, to unfed adults, which are about 3/16 inch long. Males do not enlarge as they feed. Larval or "seed ticks" are small, six-legged, dark in color and resemble mites. The nymphs and adults are larger and possess eight legs.

INSIDE THE HOME—Use a household spray containing either 5% DDT, 2% chlordane or 1% lindane. Apply thoroughly to baseboards, around door and window moldings, behind pictures, under furniture, around the edges of rugs and in all cracks. Control ticks on dogs by dusting or dipping with lindane or chlordane according to directions on the label.

OUTSIDE THE HOME—Ticks may be controlled outside the home, on the lawn and in other vegetation with sprays or dusts of DDT, toxaphene, chlordane or dieldrin.

Use 10% DDT, 10% chlordane or 2% dieldrin dust at the rate of 20 to 25 lb., or 20% toxaphene dust at the rate of 10 to 15 lb. per acre where vegetation is sparse. Increase the dosage in heavy vegetation. If sprays are used, follow manufacturers' directions for mixing. Apply at the rate of 15 to 25 gal. per acre to lawns and 50 gal. per acre to heavy vegetation.

Fleas

Adult fleas vary in size from 1/32 to 5/32 inch long. They are dark reddish-brown to almost black sucking insects with laterally compressed bodies. They transmit several diseases and parasites of man. Fleas usually enter homes on dogs, cats, rats and other animals. They deposit eggs loosely on hosts, which fall in cracks on the floor, ground or similar places.

Since the immature stages are spent in the soil, they often become a nuisance in garages and on the lawn around the home. These places should be treated with a 2½% malathion spray or 4% malathion dust. Dogs should be dusted thoroughly with 4% malathion dust or dipped in 0.5% malathion water solution. Follow directions on manufacturers' labels.

Bedbugs

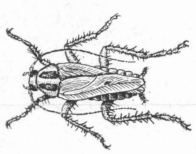
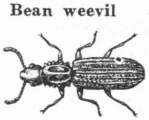
Flat, oval, wingless, reddish-brown, sucking insect. Adult is about 1/5 inch long and 1/8 inch wide. Feed upon blood of man and animals. Give off a musty odor when crushed. May be brought into the home in baggage of travelers, second-hand beds, bedding or laundry. The insect feeds only at night and can live a year without food.

Spray the bed thoroughly, together with the springs and mattress, with a 5% DDT household spray. The cracks and crevices of woodwork also should be treated with 5% DDT, 2% chlordane or 0.5% dieldrin household spray.

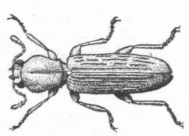
— ATTACKING MAN AND CARRYING DISEASES — (Continued)

Insect	Description and Habits	Control
Chiggers  Greatly magnified	Chiggers are often called red bugs. The young chigger, known as a larva, is a very small, pale yellow, six-legged mite which attaches itself to the skin of man or other animals. The preferred feeding locations on man are those parts of the body where clothing fits tightly. They insert their mouthparts in the skin and inject a fluid that causes painful swelling and itching. They become engorged in about 4 days, drop off, change to nymphs and finally adults, neither of which is parasitic.	Apply dusts or sprays of chlordane, toxaphene or lindane to grass and ground litter where chiggers are present. An emulsion spray usually gives the best results. Follow manufacturers' labels for mixing sprays. For small areas, use a compressed-air or knapsack sprayer and apply 2½ to 3 qt. per 1,000 sq. ft. If dusts are used, apply 5% chlordane at 40 to 50 lb. per acre or 20% toxaphene at 10 to 15 lb. per acre (approximately 1 to 1¼ lb. per 1,000 sq. ft.).

— ATTACKING FOOD AND FOOD PRODUCTS —

Insect	Description and Habits	Control
Ants 	Many species of ants can be found in the home. The most common species in Texas are the PHARAOH ANT, THIEF ANT, BLACK CRAZY ANT, FIRE ANT and ARGENTINE ANT. The workers range in size from the tiny pharaoh, 1/12 inch, to the fire ant, about 1/8 inch. Ants vary in color from yellow to reddish-brown or black. They feed on any kind of food material in the home including sweets and greasy foods. The thief ant prefers greasy foods. Tiny ants, such as the pharaoh ant, may nest in the wall, behind baseboards, in furniture and almost anywhere. The Argentine ant and fire ant nest outside the home. For control, it is essential to locate and destroy the nests.	INSIDE THE HOME—Apply 2 or 3% chlordane or 0.5% dieldrin household spray where ants are noticed, giving particular attention to drainboards, window sills, door thresholds and pantry shelves. Repeated applications of insecticides may be needed to control ants in the home. OUTSIDE THE HOME—Apply a band of insecticidal dust or spray around the foundation wall and treat all nests found in the yard. Use 10% chlordane, 2% dieldrin or 5% heptachlor dust. If an emulsion spray is used, follow directions on the label.
Cockroaches 	Four species of roaches are commonly found in homes. THE AMERICAN ROACH is the largest, ranging in size from 1½ to 2 inches long. It is light to dark brown. THE GERMAN ROACH is about 5/8 inch long, light brown with two dark stripes just behind the head. THE BROWN-BANDED ROACH is slightly smaller than the German roach and has a crossband of light yellow at the base of the wings and another about 1/16 inch farther back. THE ORIENTAL ROACH is about 1 inch long and dark brown to black. The male has wings while the female is nearly wingless. Roaches leave their hiding places at night and feed on foodstuffs as well as starchy materials such as book bindings. During the day, roaches generally congregate in dark places such as kitchen cabinets, under the sink, around plumbing fixtures, closets, back of baseboards and pictures, around bathroom fixtures and in and underneath household furniture. The American and Oriental roaches often are found hiding during the day underneath buildings or in some dark damp area nearby. Roaches reach maturity within 4 to 12 months.	To control roaches inside the home, use 2 or 3% chlordane, 0.5% dieldrin or 2% deodorized malathion household spray. Malathion is effective against resistant German roaches and may be used for spot treatment at concentrations up to 5%. Thorough application is essential for roach control. Spray all cracks and crevices around and under the sink, in cabinets, around door facings and window sills. Give particular attention to the kitchen and bathroom. Remove dishes and cooking utensils before spraying. Allow spray to dry before replacing them. American and Oriental cockroaches usually can be controlled by spraying or dusting with chlordane or dieldrin underneath the house and other hiding places. Use 10% chlordane dust or 2% dieldrin. If a spray is preferred, follow directions on the manufacturers' labels.
Insects infesting cereal and other stored food products  Bean weevil  Saw-toothed grain beetle	About 18 different kinds of insects infest various household foods. Most of these are small beetles, reddish-brown to black and from 1/16 to 3/8 inch long. The others are pale gray to dark gray moths about 1/4 inch long. The larvae of the moths are small white or pinkish caterpillars. These insects feed on cereal, flour, pepper, spices, nuts, dried fruit and various other food products. The most common insects of this type found in the home are confused flour beetles, cigarette beetles, saw-toothed grain beetles, drug store beetles, rice weevils, bean and cowpea weevils, Indian-meal moths and Mediterranean flour moths. Bean and cowpea weevils breed continuously in dry stored beans and peas.	Remove and destroy infested material. Uninfested material should be heat-treated in the oven in shallow containers at 140 to 160° F. for ½ hour, then removed and stored in tight containers. Apply 5% DDT household spray to walls and undersides of cupboard shelves. Be sure to spray cracks and crevices. Purchase foods in quantities small enough to be used up rapidly. Beans and peas should be fumigated when they are harvested and shelled to control BEAN and COWPEA weevils. To fumigate small quantities of beans or peas, add 1 tsp. carbon disulfide or carbon tetrachloride to each quart jar of beans or peas; cover tightly and keep at about 70° F. for 24 to 48 hours. Then, air and store in tightly closed container. For fumigating larger quantities, use a lard can, metal garbage can or any other airtight container. Use 1 to 1½ oz. of fumigant per bushel of seed. Place fumigant in pie pan or saucer on top of beans or peas and keep the lid on for 24 to 48 hours. Then, air as recommended above. Exercise caution when using carbon disulfide because it is explosive and flammable. (See L-217 for treating planting seed.)

— ATTACKING STRUCTURES —

Insect	Description and Habits	Control
Powder post beetles 	Several species of powder post beetles cause damage in Texas but the more common ones are lyctus and bostrichids. Lyctus beetles are small, 1/5 inch long, body flattened and elongated and varying from brown to black. The bostrichids are slightly larger, 1/5 to ½ inch long, have a cylindrical elongated body and vary from reddish-brown to black. Powder post beetles feed primarily upon hardwoods. Only sapwood is attacked. They may destroy hardwood flooring or furniture. Their presence is indicated by small piles of fine sawdust, almost like face powder, appearing on or near the infested wood. The wood surface is perforated with small "shot holes." The adult beetle lays eggs in the pores of the wood. When the young worms hatch, they cut irregular winding galleries into the wood.	Five percent DDT in deodorized kerosene, 2 to 3% chlordane, 5% pentachlorophenol or 0.5% dieldrin in an oil carrier will control powder post beetles. One gallon of either of these materials will treat at least 100 sq. ft. of wood surface. Apply the solution with a paint brush. In a single application, use only enough to wet the surface. Repeat the application until the wood is saturated. If the finish on the floor is not removed, do not walk on it until it has dried. If floors and furniture are kept varnished, it will help prevent damage by these insects. For serious infestations in inaccessible places, such as behind panelled or plastered walls, employ the services of a reliable pest control operator.

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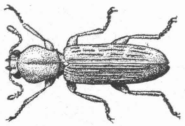
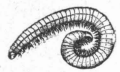
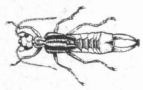
Powder post beetles 	Several species of powder post beetles cause damage in Texas but the more common ones are lyctus and bostrichids. Lyctus beetles are small, 1/5 inch long, body flattened and elongated and varying from brown to black. The bostrichids are slightly larger, 1/5 to ½ inch long, have a cylindrical elongated body and vary from reddish-brown to black. Powder post beetles feed primarily upon hardwoods. Only sapwood is attacked. They may destroy hardwood flooring or furniture. Their presence is indicated by small piles of fine sawdust, almost like face powder, appearing on or near the infested wood. The wood surface is perforated with small "shot holes." The adult beetle lays eggs in the pores of the wood. When the young worms hatch, they cut irregular winding galleries into the wood.	Five percent DDT in deodorized kerosene, 2 to 3% chlordane, 5% pentachlorophenol or 0.5% dieldrin in an oil carrier will control powder post beetles. One gallon of either of these materials will treat at least 100 sq. ft. of wood surface. Apply the solution with a paint brush. In a single application, use only enough to wet the surface. Repeat the application until the wood is saturated. If the finish on the floor is not removed, do not walk on it until it has dried. If floors and furniture are kept varnished, it will help prevent damage by these insects. For serious infestations in inaccessible places, such as behind panelled or plastered walls, employ the services of a reliable pest control operator.
Carpenter ants 	Some species of these ants are about the largest found in the home and may reach ½ inch in length. They get their name due to the habit of constructing nests in decaying wood. However, sweets are among their favorite food. They do not feed upon the wood in which they build their nests but may weaken house timbers. Their nests usually are under or near the home.	Use insecticides recommended for ant control inside the home. Locate nests, if possible, and spray or dust into the tunnels.

— ANNOYING TO MAN —

Insect	Description and Habits	Control
Centipedes 	Centipedes are grayish-brown with 1 pair of legs per body segment. The house centipede feeds upon insects while the garden centipede may feed upon the fine roots of garden and ornamental plants. Some species can inflict a painful bite but there is no record in this country of their harming a person seriously.	House centipedes should not be controlled unless they become a nuisance. Household sprays containing 5% DDT or pyrethrum will control them inside the home. Where centipedes become a pest outside the home, dust with 10% chlordane or 5% DDT.
Millipedes 	Millipedes are dark brown to black, worm-like in appearance, and have 2 pairs of legs per body segment. They feed on decaying vegetable matter, but some species may feed upon the roots and leaves of plants growing in damp soil. Millipedes may become serious pests in greenhouses.	Commercially prepared baits are effective for millipede control. Dusting outside the home with DDT or chlordane, as recommended for centipedes, may give fair control.
Spiders 	A number of species of these eight-legged relatives of insects are often bothersome in Texas households. The black widow spider is the only species in Texas whose bite is dangerous to man. The female black widow spider is easily recognized by the red hourglass-shaped spot on the underside of the abdomen. Spiders are beneficial in that they feed upon insects.	Clean up all trash and debris under and around the house. Spray or dust outside the home with DDT or chlordane. Follow directions on manufacturers' labels for mixing sprays. Use a 5% DDT or 2% chlordane household spray inside the home and spray around windows, door facings and other places where spiders are found.
Scorpions 	The common scorpion is crab-like in appearance and has a long, segmented tail-like abdomen ending in a bulbous sac and stinging organ. Scorpions are active at night, hiding during the day beneath loose stones, loose bark of fallen trees, boards, piles of lumber and within walls of buildings. Brick and stone houses are usually more attractive to scorpions than those of wood construction. The scorpions that occur in Texas are not considered dangerously poisonous.	Remove or destroy accumulations of old lumber boxes, rags, bricks, wood, trash, etc. Apply 5% DDT or 2% chlordane household spray to baseboards, moldings and around small cracks or crevices in the home. Dust under the house and surrounding area with 5% DDT or 5 or 10% chlordane dust. Repeat application as often as needed. If severe pain or slight systemic disorder should occur as a result of the sting, bathe the affected area with a weak ammonia solution. If this does not give relief, obtain medical aid.
Earwigs 	Earwigs are dark reddish-brown beetle-like insects up to 4/5 inch long with a pair of pincers or forceps on the end of the abdomen. They are usually found in flower beds and grass near the house foundation and are brought into houses with vegetables, cut flowers or other infested material. Earwigs are general feeders on flowers. Some species feed on other insects and decaying matter. Earwigs are active at night and hide in the soil or some protective place during the day.	Earwigs may be controlled by spraying or dusting with DDT or chlordane or by the use of commercially prepared baits. Apply a 5% DDT, 10% chlordane or 2% dieldrin dust to flower beds or other places they frequent outside the home. If a spray is preferred, follow directions on the manufacturers' labels. Thorough treatment outside the home should eliminate these pests and prevent their entrance into the home.
Wasps 	Most wasps are beneficial to man in that they destroy harmful insects. However, when they build nests near the home, they can become a serious nuisance due to their painful stings. Wasps bothersome to man may be divided into the following major groups: HORNETS and YELLOW JACKETS, RED and BLACK WASPS (polistes), and MUD DAUBERS. The three groups can usually be distinguished by their nests. Hornets and yellow jackets construct large globular nests of paper-mache material formed by chewing paper, rotted wood and dead leaves. The red and black wasps build their nests of paper-like material, also, but they are circular comb-like structures composed of cells that open downward. Mud dauber nests consist of a group of cells constructed of clay.	Wasps can be controlled by applying either DDT, chlordane or dieldrin as a dust or spray to their nests. Use 10% DDT or chlordane dust or 2% dieldrin dust. If sprays are used, follow directions on the manufacturers' labels. Use a 5% DDT, 2% chlordane or 0.5% dieldrin household spray inside the home. Wasps are controlled best at night when they are less active.

CAUTIONS

Most household insecticides are poisonous and should be handled with care. Read the manufacturers' labels and follow directions when mixing and applying insecticides.

Do not spray oil solutions near an open flame such as the pilot light on a stove or water heater.

Do not apply oil solutions or emulsions directly to the skin of humans or pets.

Allow surfaces sprayed with oil solutions to dry before rubbing against them to prevent smears.

Oil solutions of DDT that are too strong may cause a white "bloom" on dark surfaces. Remove the white DDT crystals with furniture polish or kerosene.

Store all insecticides and poisoned baits out of reach of pets and children.

This leaflet was prepared by extension entomologists, based upon results of research conducted by the Texas Agricultural Experiment Station and other research agencies. For additional information, contact your county agent or write to the extension entomologists, College Station, Texas.

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