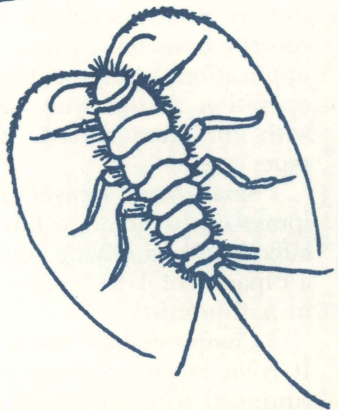
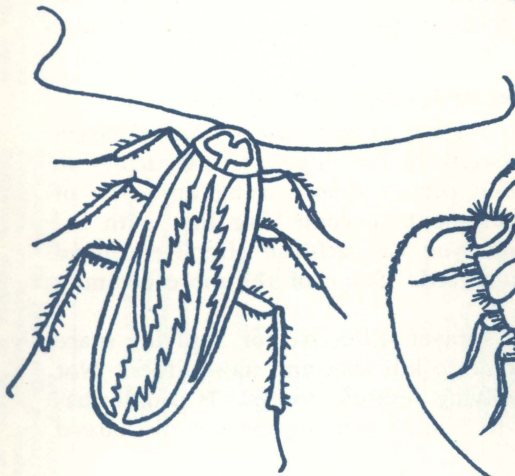


Texas Guide for Controlling Household Insects



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Texas Guide for Controlling Household Insects

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ANY HOME or its surroundings harbor 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 or are just general nuisances.

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

Certain pests, found outside, may be eliminated before entering the home. However, some insects live entirely within the home where they must be controlled by applying insecticides as sprays, dusts or baits. If a heavy or widespread infestation occurs or if you are in doubt as to correct control measures, it is advisable to employ the services of a local, reputable, commercial, pest control firm. Fumigation seldom is necessary. If a house must be fumigated, it is wise to rely on a qualified pest control firm to provide this service.

EQUIPMENT FOR APPLYING INSECTICIDES

Many types of sprayers and dusters on the market can be used effectively for applying insecticides to control household pests. Before using any type of application equipment, become familiar with its operation so that you can achieve effective control with minimum hazard. Some of the more common types are:

Small hand sprayer—Effective for applying space sprays in the home to kill flies and mosquitoes. 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 excellent 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 or water solutions on window and door screens, under sinks, on baseboards, etc.

Atomizer attachment—Suitable for applying solutions 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 insecticides 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 the valve is opened, material escapes as a fine mist.

Electric sprayers—Consist of an electric motor that operates a compressor for spraying the insecticides as a fine mist. Many types are on the market, but rather expensive for the average homeowner.

Garden hose attachments—Where sufficient water pressure (at least 30 pounds per square inch) is available, these spray attachments are satisfactory for applying insecticides 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.

INSECTICIDAL FORMULATIONS

Most insecticides are available in four forms: oil solutions, dusts, emulsion concentrates and wettable powders. Commercially formulated, ready-to-use household sprays in aerosol or atomizer-type dispensers are convenient to use and store. These require no mixing or additional dispensing equipment. Most contain a combination of active ingredients that control a wide spectrum of household pests. When purchasing ready-to-use formulations, select one designed for the specific problem you are attempting to control.

If desired, homeowners can purchase certain insecticides as wettable powders, emulsifiable concentrates and oil solutions. Wettable powders and emulsifiable concentrates must be diluted with water to obtain the desired spray concentration. As a guide to mixing water sprays, refer to the dilution chart at the end of this section. In addition, always read the label thoroughly to avoid mistakes or misuse.

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. However, oil base sprays may be injurious to asphalt tile. They also may soften and discolor some linoleums and plastic

materials. If in doubt about spraying such surfaces, test the spray on a small, inconspicuous place.

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. Mix these powders with water to prepare a spray. Use wettable powder sprays outside. They are much safer to use on tender foliage around the home than emulsion concentrate sprays.

APPROVED COMMON CHEMICAL NAMES

In the following recommendations, approved common chemical names are used. The following list of these names with their most frequently used registered trade names can be useful:

Approved common name	Other designations
carbaryl	Sevin®
dichlorvos	DDVP, Vapona®
dimethoate	Cygon®, DE-FEND®
naled	Dibrom®
ronnel	Korlan®
trichlorfon	Dipterex®

PRECAUTIONS

Most household insecticides are poisonous and should be handled with care.

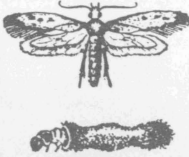
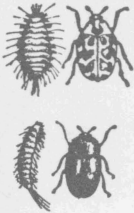



Use Pesticides Safely

1. Read and follow all directions on the container label and heed precautions.
2. Avoid repeated or prolonged contact of insecticides with the skin and prolonged inhalation of spray mists.
3. Do not spray oil solutions near an open flame such as the pilot light on a stove or water heater.
4. Do not contaminate food, dishes, cooking or eating utensils.
5. Dispose of empty containers, rags, papers and other materials contaminated with the insecticide so that they pose no hazard to humans, animals or valuable plants.
6. Do not puncture or incinerate aerosol or pressurized spray cans.
7. Store insecticides under lock and key in closed, well-labeled original containers in a dry place where they cannot contaminate foodstuffs and where children or pets cannot reach them.
8. After using insecticides, always wash hands and face before eating or smoking.


TEXAS GUIDE FOR CONTROLLING HOUSEHOLD INSECTS

Attacking Fabrics

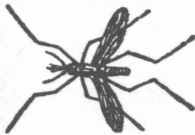
Straight lines below or beside drawings in table denote approximate length of actual insect.

Insect	Description and habits	Control
<p>Clothes moth</p> 	<p>Both webbing and casebearing moths are common in Texas. The adult webbing clothes moth is yellowish or buff-colored; the casebearing moth has similar color but also has indistinct dark spots on the wings. Moths have a wingspread of about ½ 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 larvae spins a silken web to form a feeding tube, which is attached to the food material. A casebearing moth larva spins a protective case which it drags about. Clothes moths cause damage in the larval stage and feed upon wool, mohair, fur and products manufactured from these goods.</p>	<p>To control clothes moths and carpet beetles, practice good housekeeping continually. Do not allow dust and lint to accumulate. Vacuum rugs and draperies often and keep clothing clean by washing or dry-cleaning. Woolen clothing and blankets may be protected against feeding damage by spraying with an oil solution containing methoxychlor. A ready-to-use pressurized (aerosol) container may be used for this purpose. Let articles dry before wearing or storing them. Spray rugs, carpets and household furnishings every 12 to 18 mo. with a 2% chlordane, 0.5% diazinon, 3-5% malathion or 1% ronnel oil solution. Give close attention to the edges of carpeting and those areas covered by furniture.</p>
<p>Carpet beetles</p> 	<p>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 distinguished easily. The larvae of the black carpet beetle may reach ½ inch in length, are elongated, carrot-shaped, golden to chocolate brown and have a tuft of long, brown hairs on the tip of the abdomen. The larvae of the other species are short and chubby, rarely over ¼ inch long. Erect brown or black bristle covers the body. 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. One to 3 years are required to reach the adult stage. Adults are oval, hard-shelled beetles, not over 3/16 inch long. They feed primarily on pollen and do not damage household goods. The adult black carpet beetle is dull black; the common carpet beetle has a mottled brown-banded back.</p>	<p>Crystals or flakes of paradichlorobenzene or naphthalene (popularly known as moth crystals, flakes or balls), in proper concentrations, will protect woolens effectively if stored in air-tight containers. Use 2% chlordane, 3% to 5% premium grade malathion or ronnel or 0.5% diazinon household spray to treat surfaces in the house where clothes and carpet beetles may crawl. Pay particular attention to baseboards, moldings, corners and other hard-to-clean places.</p>
<p>Silverfish</p> 	<p>Flattened, slender, wingless, scale-covered insects, about ½ inch long when full-grown. They are silver-colored with three tail-like appendages at the tip of the body. There are two long, slender antennae 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, protein or sugar content, such as book bindings, cereals, wallpaper, starched clothes or curtains and may eat holes in thin fabrics such as rayon.</p>	<p>Use a 1% ronnel or baygon, 2% chlordane, 2% malathion, 0.5% diazinon or 0.5% dieldrin household spray, or 4% malathion or 10% chlordane dust. Make thorough application to surfaces where silverfish crawl, especially around baseboards, doors, window casings, stored books or papers in attics, around bathroom fixtures, in furnace room and basements.</p>
<p>Book lice</p> 	<p>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 population buildups. 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.</p>	<p>Same as for silverfish.</p>
<p>Crickets</p> 	<p>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.</p>	<p>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% carbaryl or 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 migration.</p>

Attacking Man and Carrying Diseases

Insect	Description and habits	Control
<p>House flies</p> 	<p>The small, two-winged insects are most familiar to all householders. They 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.</p>	<p>Chemicals alone do not control house flies. Practice good sanitation 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 MP-691. Spray or paint 2½% malathion, 1% ronnel or 0.5% diazinon solution on 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% trichlorfon outside the home but where children, pets, poultry or livestock cannot reach them. Pyrethrins or allethrins plus piperonyl butoxide may be used where frequent retreatment is practical. Insecticides such as naled, dimethoate, ronnel and dichlorvos are effective for fly control, particularly where flies are resistant to the other insecticides. Aerosol bombs containing these chemicals also are effective in controlling adult flies. The resin strip containing dichlorvos controls adult flies and certain other flying insects when used according to manufacturers' directions.</p>

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, bloodsucking, two-winged insects. Some species carry heartworms 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.

Conenose (Kissing) bugs



There are more than 2,500 species of conenose bugs, many of which feed on other insects, but those belonging to the group known as TRIATOMINAE feed exclusively on the blood of man and other animals. Many other species can inflict painful bites when handled carelessly. The head is elongated or cone-shaped giving rise to the name "conenose." A sharp-pointed beak is used for piercing prey. Certain species of this group 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.

Ticks



The term "wood tick" is applied to several species of ticks so similar that the average person cannot tell one from the other. The most common species in Texas which is a problem to the homeowner is the brown dog tick. Ticks feed upon the blood of animals and often are brought into the home on dogs. Some species of ticks transmit diseases and their bites are painful. 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. The unfed larvae are about 1/40 inch long; unfed adults are about 3/16 inch long. Males do not enlarge as they feed. Larval or "seed ticks" are small, six-legged, dark and resemble mites. Nymphs and adults are larger and possess eight legs.

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 the home on dogs, cats, rats and other animals. They deposit eggs loosely on hosts; these then fall into cracks on the floor, ground or similar places. Flea larvae develop on organic matter, animal wastes and debris in the soil, in animal quarters, in furniture or other areas frequented by pets.

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. Feeds mostly at night and can persist for long periods without food.

These chemicals also are effective in controlling adult flies. Use from strip containing dichlorvos control adult flies and certain other flying insects when used according to manufacturers' directions.

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 2% chlordane, 0.5% dieldrin, 0.5% dichlorvos or diazinon 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. The materials listed under fly control also are effective for mosquito control.

Mosquito repellents applied to exposed skin according to directions on the label, usually give several hours of protection from mosquito bites. Diethyltoluamide, available commercially under a variety of trade names, is very effective. Dimethyl phthalate, 612 and indalone are also effective, alone or in mixtures.

Eliminate all standing water, if possible. Check cisterns, water troughs, fish ponds or ornamental ponds for larvae (wigglers). If present, treat water surface with NONLEADED gasoline, 2 to 4 oz. per 100 sq. ft. Exercise caution against 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 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.

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





INSIDE THE HOME—Use a household spray containing 0.5% diazinon or ronnel. Apply thoroughly to baseboards, around doors and window moldings, behind pictures, under furniture, around the edges of rugs and in all cracks. Control ticks on dogs by dusting with 5% carbaryl. Rub dust into skin and apply to sleeping quarters weekly.

OUTSIDE THE HOME—Ticks may be controlled outside of the home, on the lawn and in other vegetation with sprays or dusts of diazinon or carbaryl. Use 5% carbaryl dust at the rate of 20 to 25 lb. per acre where vegetation is sparse. Increase the dosage in heavy vegetation. Dogs and premises should be treated simultaneously to prevent reinfestation. If spray is used, mix 2 qt. of 25% diazinon emulsifiable concentrate in 25 gal. of water (5 tbsp. per gal.) Apply at the rate of 1 gal. of spray per 1,000 sq. ft. of infested area. In many areas of Texas, the brown dog tick is resistant to chlorinated hydrocarbon insecticides. Most other ticks such as the lone star tick still can be effectively controlled with chlordane, lindane, dieldrin or toxaphene.

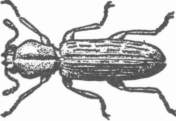

Treat garages, lawns and animal quarters with 5% malathion spray at the rate of 2 gal. per 1000 sq. ft. or 4% malathion dust at the rate of 1-2 lbs. per 1000 sq. ft. If necessary, treat inside of homes with 2% malathion or 0.5% diazinon spray, particularly floors, baseboards and walls to a height of about 1 ft. Apply a light mist to upholstery, rugs and other fabrics. Dogs should be dusted thoroughly with 4% malathion dust or dipped in 0.5% malathion water solution. Five percent carbaryl dust is also effective when applied to dogs and their quarters. Follow directions on manufacturers' labels.

Spray the slats, springs and bed-frame thoroughly with a 0.5% diazinon, 0.5% lindane or 1% malathion household spray. Apply a light mist spray to the entire mattress, paying particular attention to seams, tufts and folds. The cracks and crevices of woodwork also should be treated with 2% chlordane, 0.5% dieldrin, 0.5% lindane or 1% malathion.

Attacking Food and Food Products

Insect	Description and habits	Control
<p>Ants</p> 	<p>Many species can be found in the home. The most common species in Texas are the PHARAOH ANT, THIEF ANT, BLACK CRAZY ANT, and ARGENTINE ANT. The workers range in size from the tiny pharaoh, 1/12 inch, to about 1/8 inch. Color varies from yellow to reddish-brown or black. Ants 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 and fire ants nest outside the home. For complete control, it is essential to locate and destroy the nests.</p>	<p>INSIDE THE HOME—Apply a household spray of 2 or 3% chlordane, 0.5% dieldrin, 0.5% diazinon, 0.5% baygon or a combination of chlordane or dieldrin and diazinon. Apply where ants are noticed, giving particular attention to drainboards, window sills, door thresholds and pantry shelves. Repeated applications may be needed to control ants in the home unless the nests are located.</p> <p>OUTSIDE THE HOME—Apply a band of insecticidal dust, granules or spray around the foundation wall and treat all nests in the yard. Use 10% chlordane, 2% dieldrin or 5% heptachlor dusts or 10% chlordane, 5% dieldrin or 2.5% heptachlor granules.</p>
<p>Cockroaches</p> 	<p>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 bookbindings. During the day, roaches congregate in dark places such as kitchen cabinets, under the sink, around plumbing fixtures, closets, backs of baseboards and pictures, around bathroom fixtures and in and underneath household furniture. The American and Oriental roaches often hide during the day beneath buildings or in some dark, damp area nearby. Roaches reach maturity within 4 to 12 months.</p>	<p>To control roaches inside the home, use 0.5% diazinon, 2% premium grade malathion, 0.5% baygon or 2% ronnel household spray. Commercially prepared sprays or aerosol mixtures combining 0.5% dichlorvos are also effective. Malathion, diazinon and ronnel are effective against resistant German roaches and may be used for spot treatment at higher concentrations. 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.</p>
<p>Insects infesting cereals and other stored food products</p> 	<p>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 ¾ inch long. Others are pale gray to dark gray moths about ¼ inch long. The larvae of the moths are small white or pinkish caterpillars. These insects feed on cereal, dry pet food, 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, drug store beetles, sawtoothed grain beetles, rice weevils, bean and cowpea weevils, Indian-meal and Mediterranean flour moths. Bean and cowpea weevils breed continuously in dry stored beans and peas.</p>	<p>Remove and destroy infested material. Carefully examine spices, cereal, flour, dry pet food, etc. since these products commonly are infested in wholesale or retail stores. Heat infested material in the oven, in shallow containers at 150 to 160°F. for ½ hour; or freeze at 0°F. for 4 days; then remove and store in tight containers. Scrub cabinets thoroughly with a stiff-bristled brush and soapy water, paying particular attention to cracks and crevices. Apply 0.5% diazinon, 2-3% malathion or 0.5% baygon 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 or store in tight containers. 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 air-tight 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).</p>
<p>Bean weevil</p> 	<p>Saw-toothed grain beetle</p>	

Attacking Structures

Insect	Description and habits	Control
<p>Powder post beetles</p> 	<p>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 1/2 inch long, have a cylindrical elongated body and vary from reddish-brown to black. Powder post beetles feed primarily on 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.</p>	<p>Two to 3 percent 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. Repeat the treatment 2-3 months later. The oil carrier may have a solvent action on some wood finishes. Therefore, keep all objects off treated floors for about 24 hours or until completely dry. Keeping floors and furniture varnished 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.</p>
<p>Carpenter ants</p> 	<p>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, in wooden fences, patios, trees or outbuildings.</p>	<p>Lasting control can only be accomplished by direct treatment of the nests. Look for piles of sawdust to locate entries. Then dust 5% chlordane or 5% dieldrin into tunnels. To help prevent carpenter ant invasion, spray foundation walls and adjacent soil with 2% chlordane or 0.5% dieldrin. Do not water the chemical into the soil.</p>

Subterranean
termites



May become abundant in moist soil containing wood or lumber for food, such as beneath slab-on-ground construction and where space below the floor of pier and beam structures is poorly ventilated. Also, areas where lumber contacts the soil are extremely conducive to termite infestation. Usually the first sign of termites is the sudden appearance of winged reproductive forms. These forms commonly are seen around outside lights at night during the spring, particularly following rain; however, a sure sign of infestation is the occurrence of winged termites inside the building. Winged termites are dark to black and have 4 silvery wings of equal length which break off soon after swarming. These reproductives establish new colonies and produce soft-bodied, pearly white workers and soldiers which live in the colony in the soil. Workers range from the colony and construct earthen tunnels or runways along foundation walls through which they travel to above ground structures. Heavy infestations can cause serious structural damage.

Insecticides properly applied to the soil beneath structures form a barrier to prevent termite movement from the soil into structural timbers. Termites in the woodwork at time of treatment soon die as they are prevented from maintaining contact with the main colony in the soil. Solutions containing 1% chlordane, 0.5% dieldrin or 0.5% aldrin in No. 2 fuel oil or water or a 0.5% heptachlor water emulsion are effective termite controls. On buildings with crawl space beneath the floor, dig a trench 8-12 inches wide and 4-8 inches deep along both sides of the foundation, around piers, pipes and all other structures in contact with the soil. Apply the insecticide mixture to the trenches at the rate of 4 gal. per 10 linear feet of trench. Trenches may be filled or left open. In the trench outside the foundation wall, apply chemical at the same rate but in three layers. Apply about one-third of the mixture and cover with a few inches of soil; pour in second one-third of chemical and cover with soil; apply last third of chemical, cover with soil and tamp the treated area. Slab-on-ground construction is difficult to treat and usually requires special equipment and technique. Services of a reliable pest control firm should be secured for this type of treatment.

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 injuring a person seriously.	Household sprays containing 2% chlordane or 5% pyrethrins will control them inside the home. Where centipedes become a pest outside the home, dust with 10% chlordane or 5% carbaryl.
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 green-houses.	Commercially prepared baits are effective for millipede control. Dusting outside the home with carbaryl or chlordane, as recommended for centipedes, will give fair control.
Spiders	A number of species of these eight-legged relatives of insects are often bothersome in Texas households. To date, the black widow and brown recluse spiders are the only species whose bite is known to be dangerous to man. Research indicates evidence that other species may also cause injury. The female black widow spider is easily recognized by the red hourglass spot on the underside of the abdomen. Brown recluse spiders may be recognized by a guitar or violin-shaped marking on the back. Spiders are beneficial in that they feed upon insects. For more detailed information on identification and control, see L-623, The Brown Recluse and Black Widow Spiders.	Clean up all trash and debris under and around the house. Spray or dust outside the home with carbaryl, dieldrin or chlordane. Follow the directions on manufacturers' labels for mixing sprays. Use a 0.5% dichlorvos, diazinon or baygon or 2-3% malathion, 0.5% dieldrin 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 wood houses. The scorpions which occur in Texas are not considered dangerously poisonous.	Remove or destroy accumulations of old lumber, boxes, rags, bricks, wood trash, etc. Apply sprays as recommended above for spider control to baseboards, moldings and around small cracks or crevices in the home. Spray with similar sprays or dusts under the house and treat surrounding area with dieldrin or chlordane dust. Repeat application as often as needed. If severe pain or slight systemic disorder should occur as a result of the sting, call your physician at once; the first 6 hours after a sting are the most critical.
Earwigs	Earwigs are dark reddish-brown beetle-like insects up to 4/5 inch long with a pair of pinchers or forceps on the end of the abdomen. They usually are found in flower beds and grass near the house foundation and are brought into houses with vegetables, cut flowers or other infested material. Earwigs generally feed 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.	Control earwigs by spraying or dusting with chlordane, dieldrin or carbaryl or with commercially prepared baits. Apply a 10% chlordane, 2% dieldrin or 5% carbaryl 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 because of painful stings. Wasps bothersome to man are divided into the following major groups: HORNET and YELLOW JACKETS, RED and BLACK WASPS (polistes) and MUD DAUBERS. The three groups usually can 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.	Control wasps by applying carbaryl, chlordane or dieldrin as a dust or spray to their nests. Use 10% chlordane dust, 5% carbaryl dust or 2% dieldrin dust. If sprays are used, follow directions on the manufacturers' labels. Wasps are controlled best at night when they are less active.