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HOW TO COMBAT GRASSHOPPERS

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HOW TO COMBAT GRASSHOPPERS

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This Extension Circular has been prepared for the convenience, information and guidance of farmers who have obtained from the County Agricultural Agent poison-bait for the control of grasshoppers on or adjacent to their farms. An attempt has been made to present briefly pertinent information relating to the spreading of the bait for best results and to the care which should be exercised in handling the bait in order to prevent the poisoning of livestock, poultry, song and game birds, and wild animals.

Poison-bran bait is the standard remedy for the control of grasshoppers. In devising an adequate formula for the mixture, many substances have been tried and the following formula is now recommended. The fact that arsenic is used makes it necessary that the bait be mixed under competent supervision.

Coarse bran -----	100 pounds
Sawdust -----	Equal in bulk to 300 pounds bran
Sodium arsenite (4 lb. material) -----	2 gallons
Water -----	10 - 40 gallons

Note: Only enough water is added to moisten the bait without causing it to become sloppy, or even wet enough for the flakes to stick together. If the sawdust is wet, reduce the water proportionately. It would be best to make a trial batch in order to determine the exact quantity of water needed. The water should always be measured for a large batch, as guessing frequently results in a too dry or too sloppy bait.

Time to Use Bait

Young grasshoppers eat poisoned bait much more readily than do the adults, and only a very small amount is required to kill them. Where hatching grounds can be located, a light application of bait should be made as soon as the little hoppers appear in any great numbers, and this should be followed in about 10 days by a second light application. Two light applications give much better control than one heavy one. In fact, a large part of a heavy application usually is wasted.

Young grasshoppers normally stay in or around their hatching ground for about two weeks, and then move into crops in search of new food supplies. If bait is used before this movement occurs, less bait is required, the area to be treated is relatively small, and damage can be almost entirely prevented. Where grasshoppers migrate into a field, only prompt use of bait can be expected to save the crops. After they have destroyed or badly damaged the crops, poisoning them is of use only in preventing further migration and in reducing the number of grasshoppers that will lay eggs later.

Weather conditions and the time of day at which bait is spread are largely responsible for either good or poor results. Grasshoppers feed very little during cool and cloudy or wet weather. Bait spread under such conditions is wasted. Feeding occurs mainly on bright, warm days with the temperature between 70 and 90 degrees Fahrenheit. Feeding is very light below 70 degrees and falls off very

rapidly as the thermometer nears 90. During spring months best results are secured between 6 and 10 o'clock on the morning of a bright and reasonably warm day. Later, when weather becomes quite hot, best results will be secured by spreading bait very early, sometimes even at daylight or before.

How to Spread Bait

Bait should be spread thinly and thoroughly, both because such spreading gives by far the greatest kills of hoppers, and because thin and thorough spreading eliminates any danger of poisoning livestock, poultry and birds. Ten pounds dry weight, or approximately 20 pounds wet weight per acre gives excellent results. Such applications at 7- to 10-day intervals are much more satisfactory than heavier applications. Every particle should be thoroughly moistened, but bait should not be too wet to scatter easily and thoroughly.

For gardens and small fields the moist bait may be scattered by hand from a bucket carried on the arm in the same manner that seed is sown by hand. Farmers often ride horseback while broadcasting bait. In large fields the wet bait may be applied much faster and easier from a box or tub in the rear end of a truck or other vehicle being driven across the infested field. Broadcasting may also be accomplished by the use of an endgate seeder, the mash being slowly fed into the hopper by hand or with a small shovel so as to prevent clogging the seeder. The wet bait should be carefully sown so that the bran will fall largely as individual flakes and so that no lumps will be distributed on the ground.

In the alfalfa fields the best results are usually secured by poisoning just after the hay crop has been removed. A narrow border near the outside and two or three narrow strips in the field should be left standing. After the hoppers have gathered in these uncut strips they may be easily poisoned. Applications at 4 or 5-day intervals may be necessary to protect crops from the migrating hoppers.

Results - Do not look for results the first day after poisoning. For grasshoppers the arsenicals are rather slow acting poisons and require from 2 to 5 days to kill. Soon after eating the poisoned bran the hoppers become sick, stop feeding and often crawl into secluded places to die. The dead grasshoppers are usually found around the bases of plants and under weeds or debris. Two or three applications of wet bait at about 5-day intervals are sometimes necessary in heavily infested areas to destroy the migrating nymphs and adults, whereas applications at 10-day intervals are adequate in breeding areas.

Cooperation - Community-wide cooperation is essential in controlling grasshoppers. The infested fields of the entire locality should be treated at the same time, preferably while the young hoppers are still feeding in their hatching ground. After the older nymphs and adults migrate from their birthplaces and become widely scattered, the costs of materials and labor are greatly increased and, furthermore, the results secured at this time are seldom entirely satisfactory.

Danger to Livestock, Poultry, Birds, Etc.

Extensive experiments along this line have been carried on by the United States biological survey, State game, forestation and parks commission, State Agricultural experiment stations and many others. These experiments have furnished conclusive evidence that grasshopper baits, if spread properly, are not a menace

to livestock, poultry, song and game birds and wild animals.

Caution

Sodium arsenite and other poisons used in grasshopper bait are very deadly, and the dry or wet bait as well as the poisons themselves must be handled with great care. The hands may be protected with vaseline or axle grease, and grease or soap should be worked under the finger nails. Immediately after preparing and broadcasting the bait, the hands and other parts of the body which have come in contact with the bait should be thoroughly washed with soapy water. Clean carefully, both under the ends and around the cuticle of nails. Contaminated clothing should be removed and washed before it is worn again.

Care should be taken so that chickens, cattle, horses and other animals do not eat the bait at the mixing station. Water dripping from the wet bait is poisonous. Containers, platforms, shovels and all utensils used in preparing the bait should be washed thoroughly so that animals will not obtain poison by licking them. All materials spilled on the ground during the mixing process should be scrupulously cleaned up. Sacks used in storing or handling the poisoned bait should be burned and the ashes scattered thinly in the field. Children and irresponsible persons should be kept away from the mixing stations and stored poisoned bait. Containers with poison or poisoned bait must always be properly labeled. Accidental poisoning from grasshopper bait is due to carelessness which, in turn, may be due to lack of understanding and experience. Read and carefully follow instructions. Avoid all risks of poisoning human beings, farm and wild animals.

When the grasshopper mash has been prepared and broadcast according to the instructions given in this circular, cattle, horses, sheep, hogs, domestic fowls, wild birds and game animals may feed day and night in baited fields with no danger of being poisoned.

All poisoned bait not used in the grasshopper campaign should be kept in tight, dry buildings away from feed materials and where irresponsible persons and farm animals cannot get at it. The poisoned bait should be labeled so that it will not be fed by mistake. When sacks containing poisoned bait rot, resack the bait and label the new bags. Bait stored in dry places will keep for several years, but should be moistened again before use. If it is desirable to get rid of a small amount of bait, do not bury or burn it but broadcast it in the field as per instructions in this circular.