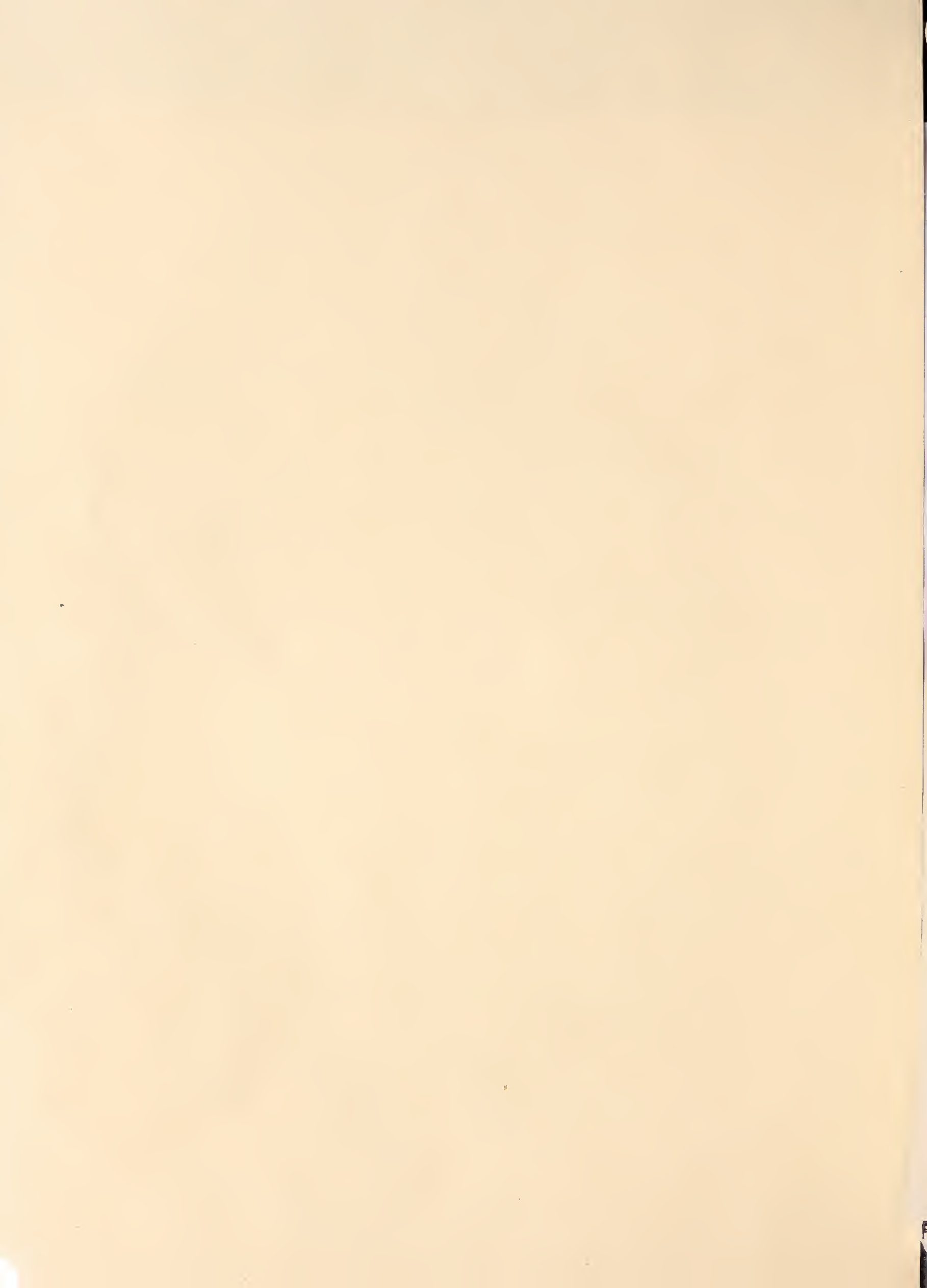


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# SAVE FARM-STORED GRAIN FROM

# Insects!

**FACT SHEET**  
U.S. DEPARTMENT OF AGRICULTURE  
Information Supplied by  
Agricultural Research Administration  
Bureau of Entomology and Plant Quarantine



**S**TORED-GRAIN insects are found wherever grain is grown. In the South they fly to the fields and infest maturing kernels. Most infestation, however, originates in farm storage, where insects abound in wooden bins and in old left-over feed and grain around and in farm buildings.

The insect population can be quickly reduced and grain can be protected by using adequate storage and modern control methods. Every bushel of grain saved will contribute toward increased farm efficiency and toward helping feed a hungry world.

Saving farm-stored grain from insect damage is a sevenfold job:

1. **Hold field infestations to a minimum.**
2. **Destroy field infestation as soon as grain is placed in storage.**
3. **Provide insect-free and weatherproof storage.**
4. **Keep insects from living in or near farm bins.**
5. **Have grain dry and free from dust and broken kernels.**
6. **Inspect stored grain frequently.**
7. **Fumigate infested grain.**

## Reduce Field Infestations

The majority of grain grown in the United States is free from insect infestation at harvest-time. In certain regions, however, field infestation is common and must be reckoned with.

*Wheat.*—In regions where soft winter wheat is grown, field infestation by the Angoumois grain moth may occur. This moth is easy to control by early harvesting, since field infestation is relatively slight. The soft-bodied moths are unable to make their way below the surface of binned grain to lay their eggs.

*Corn.*—In the South, field infestation of corn by weevils, moths, and other flying insects is extensive. It can be greatly reduced (1) by growing varieties with ears that are protected with a long, tight shuck, (2) by the early planting of trap

crops, and (3) by reducing or preventing the flight of insects from nearby farm buildings through the fumigation or disposal of infested grain or feed stored there before the corn is in the silking stage. In the Northern States field infestation of corn is not important, since low winter temperatures will kill out infestation in corn stored in cribs.

*Rice.*—Rice grown in the South commonly is infested in the field by the rice weevil, Angoumois grain moth, and other insects. To reduce this field infestation, sources of infestation must be eliminated. Nearby warehouses should be cleaned thoroughly. All old grain, feed, and sweepings should be disposed of or fumigated before the new crop of rice heads. Strawstacks should be disposed of by spreading the straw on stubble fields or by utilizing in any possible way. Avoid planting corn or sorghum near rice fields.

*Grain Sorghum.*—Field infestation by the Angoumois grain moth is common. Preventive measures include the elimination of sources of infestation in nearby farm buildings, and threshing and binning of grain as soon as it is dry enough for safe storage. Storage of grain sorghum in the head is not good, since it makes it easy for the moth to cause serious damage.

## Fumigate Stored Grain

In regions where the Angoumois grain moth is known to occur, small grains that have not been threshed promptly after harvest should be fumigated to prevent further damage. The caterpillars of this moth develop inside the kernels so

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that the damage caused is not evident until they transform to moths and emerge from the damaged grain. In the South, corn with short, loose, or damaged shucks invariably is infested at harvest-time. Unless the infested ears can be separated from the uninfested ears and fumigated or disposed of by feeding, the entire lot should be fumigated.

## **Provide Safe Storage**

Wooden bins that are used year after year become heavily infested with the cadelle that honeycombs the woodwork with its burrows, thereby providing hiding places for itself and many other insects. These insects cannot be eliminated by ordinary cleaning methods. They quickly infest grain that is stored in old bins. If possible, steel bins that are easy to clean should be used. As soon as wooden bins are emptied and as long as possible before they are refilled, they should be sprayed with a 2½-percent DDT spray at the rate of 2 gallons per 1,000 square feet of wall or floor surface area. This spraying will kill most of the insects that emerge from the burrows and cracks in the woodwork.

Insects are attracted to high-moisture grain and breed in it much faster than in dry grain. Bins should therefore be made tight enough to keep out all rain or snow. A tight bin is also essential for effective fumigation.

## **Clean Out Infestation**

Grain growing in fields near the farmstead can become infested with insects only too easily. The same is true of fresh, clean grain that is stored on the farm after harvest. Accumulations of waste grain and feed, as well as infested grain and feed on hand, often are the cause of such infestations. Be sure to clean out all such possible sources of insects before growing grain has a chance to become infested and before new grain is put in storage.

## **Grain Condition Important**

Grain that is dry and free from grain dust and broken kernels is much less attractive to insects than moist, dirty, cracked grain. Grain in good condition will remain that way almost indefinitely unless temperatures are abnormally high or sources of infestation are nearby.

With the exception of grain sorghum, small grains are usually dry enough at harvesttime for safe storage. Some provision should be made for drying corn or grain sorghum to safe moisture levels. For long-time storage a moisture content of less than 12 percent is desirable. Proper loading machinery should be used to prevent breakage of kernels in handling. Shelled corn should be cleaned before storage.

## **Inspect Frequently**

Inspection of grain stocks should be made at least once a month during periods when the temperature exceeds 70° F. during the day, to determine whether insects are present or the grain is heating. If grain probes are available, samples of grain for screening can be taken from several parts of the bin. Otherwise, samples taken from just below the surface on the south side of the bin should be examined. The samples may be examined by shaking them on a screen fine enough to hold the grain but open enough to let the insects pass through to a sheet of cloth or paper where they can easily be seen. If weevils are present or the grain is heating due to the presence of bran beetles, the grain should be fumigated.

## **How to Fumigate**

Grain that is infested or that is heating because of insect infestation should be fumigated. Since the grain cannot be moved, the fumigant must be applied uniformly over the surface. The surface of the grain should be level and at least 6 inches below the top of the bin. If the surface of the grain is caked or webbed, it should be broken up by raking to a depth of several inches before fumigating. If possible the fumigant should be applied from outside the bin by means of a bucket pump or other type of sprayer. Do not expose yourself to the vapors as they are harmful. Fumigants recommended are the 3 to 1 mixture of ethylene dichloride-carbon tetrachloride or the 1 to 4 mixture of carbon disulphide and carbon tetrachloride. Dosages recommended are 6 gallons for each 1,000 bushels of grain in tight, well-built bins. For shallow bins, or more loosely built bins, or for treating grain sorghums, the dosage should be increased to 8 gallons.

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