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COTTON "VACUUM CLEANER"

Field loss of cotton has been one of the major objections to the use of mechanical pickers, says Joe E. Clayton, Agricultural Engineer with the U. S. Department of Agriculture. Although better machines and improved agronomic practices have tended to increase picking efficiency, ground losses of cotton are still excessive. The amount of cotton dropped during harvest generally ranges from 5 to 15 percent of the crop, depending upon weather, field, and plant conditions.

During the early years of mechanical picking, there was little interest in the development of mechanical methods for retrieving cotton from the ground. Some producers tried gleaning by hand, but this practice proved to be both slow and expensive. As yields rose and the use of harvesters increased, interest in mechanical pickup devices began to develop.

Mechanical cotton gleaners were first used in the West, where high yields and weather conditions are conducive to retrieving cotton from the ground. After it was successful in Arizona and California, the practice of using the gleaners spread eastward, and several machines were used in the Midsouth in 1961.

One of the cotton gleaners was tested by engineers at the Delta Branch of the Mississippi Agricultural Experiment Station in 1961, and test lots were ginned by the U. S. Cotton Ginning Laboratory at Stoneville. A 2-row, skip-row harvester was used in the tests.

Mr. Clayton explains that the pickup unit of the harvester utilizes 14 notched belts which roll on the ground and grasp the cotton in the notches. The belts are individually mounted on a floating arm and sheave arrangement so that they will follow the contour of the middle. The cotton is grasped and passed along underneath the belts to a smaller set of notched belts. Some trash drops out between the two sets of belts. After the cotton leaves the second set of belts, a drag-chain conveyor elevates it into a hopper at the rear of the pickup unit. When the hopper is filled, the cotton is dumped on the ground and then may be loaded on a trailer with a fan loader or seed fork.

The cotton gleaner was used throughout most of the 1961 harvest season, with the first tests beginning immediately after the first picking. In one of the tests, the machine was operated on October 12 in a field of open cotton where a picker had purposely scattered locks on the ground. Although some of the cotton had been thrown against the stalks, out of reach of the picking belts, recovery was at the rate of 1 bale per acre.

Tests also were conducted in October after normal mechanical picking. In these tests, the cotton contained an average of 35 percent trash, but some lots exceeded 50 percent in areas where all the leaves had just fallen. The gleaning machine caused some damage to plants in extremely rank growing cotton; consequently, it should not be used until after the second picking in this type of cotton.

Wet fields prevented the use of the gleaner at the Delta Branch in November 1961. The

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agricultural engineer points out that difficulty is encountered in pulling the machine through wet fields and mud fills the slots in the belts. Although the belts still pick up some cotton, the tractor wheels press cotton locks into the ground. The cotton picked up in December contained substantially more sticks but less leaf trash than that picked up during early-season tests. The machine was operated a second and third time in some of the fields, and additional cotton was picked up during each trip.

In October, when picking conditions were favorable, the gleaner had to cover 10 to 25 acres in order to harvest a bale of cotton. In December, the machine gleaned a bale from 8 to 10 acres; and in one instance, it gleaned a bale from 4 acres after the stalks had been cut. The cotton picked up in December had a lint turnout of 27 percent; therefore, 2,071 pounds of seed cotton were required for a 500-pound bale of lint. This lint graded Good Ordinary, had a staple length of 1 inch, and sold for 30.5 cents per pound. Some of the early-season cotton graded Low Middling or better, with a staple length of 1 1/16 inches.

The cotton picked up by the gleaner in the Mississippi study contained large quantities of sticks and stems, necessitating a large amount of overhead cleaning at the gin. Although the trash content was about the same as that in hand-snapped cotton, ginning and cleaning requirements were somewhat greater because of the higher percentage of sticks. Mr. Clayton says that gins may be reluctant to handle this type of cotton during the peak ginning season. Cotton gleaned from the ground frequently has a higher moisture content and should be checked carefully when stored.

Low Wattage Bulbs for Cage House

A commercial cage operator can use lower wattage light bulbs and yet maintain egg production at a satisfactory level, according to Louisiana State University specialists.

In a 316-day experiment, 25- and 40-watt light bulbs were used in two sections of a cage house containing a total of 880 birds. Conditions in each section of the house were identical except for the light bulbs. Each bulb utilized a piepan-type aluminum reflector and illuminated an area of approximately 100 square feet. The group in the 25-watt section laid an average of 200 eggs per bird during the 316-day period, while the group in the 40-watt section averaged 203 eggs.

According to the Louisiana specialists, savings from the use of 25-watt bulbs as compared with 40-watt bulbs would amount to 18 kilowatt-hours per month for each 10 bulbs, or 1,000 square feet of house area. If a rate of 2 cents per kilowatt-hour is assumed, the saving would amount to 36 cents per month per 10 bulbs.

An Ice Cream Cow?

An ice cream cow may not be just a childhood daydream if the prophecy of some dairy researchers comes true, reports the Oklahoma Agricultural Extension Service. Researchers say that, in the near future, they may breed cows that can "specialize." Some cows could then produce milk for ice cream, and others could provide milk for making cheese.

Dairy researchers have found that feeding may encourage growth of certain bacteria in a cow's stomach (rumen) which will help produce milk with tailor-made qualities. They point out that the rumen is essentially a fermentation vat. Ideal conditions are provided for the growth of billions of bacteria and protozoa. These microscopic plants and animals are very effective in breaking down the food that the cow eats. If the cows are properly fed, they may be able to produce the type of milk best suited for ice cream — or cheese — or for consumption by children — or for adults.

Fire Ant Problem Believed Solved

Mirex, a new bait treatment for the imported fire ant, proved highly successful in a 3,000-acre test conducted recently near Baton Rouge, Louisiana, according to the State Agricultural Extension Service. The treatment was

very effective in eradicating the ants and had no harmful effect on wildlife in the area. The bait is composed of an insecticide (mirex), a food attractant (soybean oil), and a carrier (corncob grits).

Tests in Louisiana and several other fire ant-infested states show that mirex is highly specific in its effect on both imported and native fire ants. Only one-seventh of an ounce, or about a teaspoonful, of insecticide is required per acre. Mirex poses no threat to human beings, wildlife, birds, or fish; and, at the recommended dosage, the chemical causes no residue problem. Moreover, beef or dairy cattle do not have to be removed from pastures during treatment.

An outstanding advantage of the new material is that ants — highly attracted to the soybean oil — carry it inside the mounds to be fed to the queen and brood. During warm weather, the ants are killed out in 2 to 4 weeks; in cool weather, several months may be required.

When the Lights Go Off

When the electric power fails on the modern farm, many essential operations are halted, points out W. S. Allen, Agricultural Engineer with the Texas Agricultural Extension Service. Since much of the work of dairymen, poultrymen, sheep producers, and others depends on electric power, many farmers prepare for such emergencies by installing standby generating equipment.

Mr. Allen says that electric systems are constantly being improved and that power failures are becoming less frequent. However, hurricanes, ice storms, and other unpredictable catastrophes of nature still cause interruptions in service.

The farmer may choose either a completely automatic engine-driven generator or a model that is powered by a farm tractor. The tractor-driven type is more popular, because it is less expensive and the farmer has less money invested in a piece of equipment that he uses only occasionally. The generator may be driven by either a power take-off or a belt.

The size of the generator needed for a particular farm can be determined by estimating the amount of power required to operate equipment that must be used at all times and selecting a model that will handle the load. The agricultural engineer says that, generally, the installation of a generator which will handle the entire electrical load of the farm is not practical because of the substantially larger investment involved.

Generators usually are rated in watts or in kilowatts, and if the generator is to be powered by a tractor, 2 horsepower per kilowatt capacity of the generator should be allowed. A 20-horsepower tractor will be needed to operate a generator with a 10-kilowatt rating.

Mr. Allen says that, for safety and good service, the generator should be installed properly and a transfer switch should be part of the installation. The farmer should consult his electric power supplier for assistance in safe and satisfactory installation of a generator.

Pink Bollworm Detection

Tests by scientists with the U. S. Department of Agriculture may result in improved detection of pink bollworm infestations. The tests use a natural attractant obtained from female pink bollworm moths. The scientists are working to identify this natural attractant chemically and are hopeful that it will lead to a synthetic, which would aid greatly in pink bollworm-control efforts.

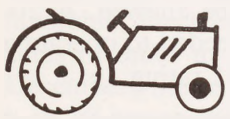
Although it has been confined to cotton-producing states west of the Mississippi River, the pest is a constant threat to the Nation's cotton industry. Scientists are searching for a low-cost method of detecting the pink bollworm, which inflicted its greatest damage (nearly $30 million worth) in south Texas in 1952.

In field tests at Torreon, Mexico, conducted in cooperation with the Mexican Department of Agriculture, the natural attractant proved as effective as living female moths in luring male moths to baited traps. Other insects were not attracted to the substance.

The researchers believe that the natural attractant will still be useful in bollworm eradi-

cation even if a synthetic pink bollworm sex attractant does not become available. Sufficient material can be extracted from the abdomens of young female moths to provide an inexpensive means for detecting the pest and defining the limits of a pink bollworm infestation area. According to the USDA, accurate determination of the limits of an infested area will reduce the cost of controlling the pest.

Tractor Tune-Ups Increase Efficiency, Power



Tuning up a gasoline or liquefied petroleum gas tractor can increase its fuel efficiency 14 percent and its power 11 percent, states Henry O'Neal, Agricultural Engineer with the Texas Agricultural Extension Service. This increased power and economy can also mean a saving in time.

LP gas and gasoline engines usually require a tune-up after every 250 hours of operation. If adjustments are not made when they are needed, the engine cannot deliver the power it was designed to give, and fuel will be wasted. Improper timing and incorrect carburetor adjustment can seriously harm an engine because of overheating and oil dilution from unburned fuel.

Some of the simple tractor tune-up operations can be performed with only a small amount of extra equipment and the hand tools that are available in the farm shop. The total cost of this equipment (which includes a flat feeler gauge, a round spark plug gap gauge, an ignition file, and a timing light) is about $8.

According to Mr. O'Neal, the tractor operator's manual, which outlines the tune-up procedures and furnishes the proper specifications for the engine, is the best guide to use when tuning up the tractor engine.

Read Labels on Poultry Chemicals

The development of chemicals for the control of poultry insects has been one of the major scientific contributions to the commercial poultry industry, points out Ben Wormeli, Poultry Husbandman with the Texas Agricultural Extension Service. However, carelessness in the use of these chemicals can be very dangerous to the poultry producer, his flock, and the meat and egg consumer.

An important precaution in the use of any insecticide is the careful reading of the label on the container. The label on each container of chemicals shipped in interstate commerce is based on evidence that the contents meet the legal requirements of the Federal Food and Drug Administration. The Texas Food, Drug and Cosmetic Act gives the Texas Department of Health authority over pesticide commerce within the State; Texas regulations conform with those of the Federal Food and Drug Administration.

The Federal Food and Drug Administration has established the tolerance amounts of chemicals that are permissible in poultry, meat, and eggs for human consumption. The tolerance amount in eggs and milk is zero for the commonly used pesticides; consequently, the chemicals used on laying hens must be selected carefully, advises the poultry husbandman.

In poultry meat, a tolerance of 4 or 5 parts per million is allowed for certain chemical compounds. Chemicals used for fly control in poultry must be selected carefully and applied cautiously in order to avoid contamination of water and feed.

The wise use of chemicals is an important part of a good poultry management program. On the other hand, negligence in the use of these materials can lead to legal prosecution, warns Mr. Wormeli.

Cotton batting can be chemically treated to make padding that holds its shape and remains resilient through long use, according to U. S. Department of Agriculture scientists. Expanded markets for cotton in fine upholstered furniture, mattresses, and seats for automobiles, airplanes, and other vehicles are anticipated as a result of a new chemical process. In addition to its improved resilience and dimensional stability, cotton padding made by this process is less expensive than such competitive padding materials as synthetic fibers and foam rubber.