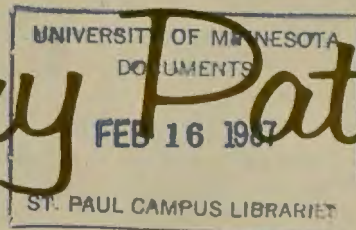


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# Poultry Patter



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## REDUCE COSTLY EGG BREAKAGE

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The yearly loss to the U.S. egg industry from egg breakage is estimated at more than \$60 million. This assumes 5 to 8 percent of the annual production is lost due to breakage or decreased in value due to cracks and checks. Concern over low prices and overproduction shouldn't cause the poultryman to overlook causes of breakage, one of the greatest drains on potential profit. Most poultrymen realize some breakage occurs in the production and marketing channels, but new studies show the total can become more sizable than often realized.

The new Federal Egg Products Inspection Act, which became effective July 1, 1971 on egg products and includes additional provisions for shell eggs effective July 1, 1972, has economic implications for the egg producer. The only outlet for restricted eggs such as checks and cracks will be through official USDA egg products processing plants. Leakers must be destroyed, denatured, or labeled to prevent their use as human food. Final regulations relating to shell eggs are yet to be issued, but it is certain to be a price reduction to many producers for these restricted eggs. Continuing attention to big and little details involved in egg breakage will pay even greater dividends: this means attention to birds, equipment, and people involved in egg production and marketing.

### Where Losses Occur

Information collected by Texas researchers shows an average egg loss of 3.9 percent in a daily count of broken eggs under laying cages. The loss in eggs not gathered ranged from 2.1 to 4.7 percent. This loss would average 8.3 eggs per hen per year or 21 cents per hen, or more than \$2,000 on a 10,000 hen flock during a year of average egg prices.

The Texas study also shows that gathering broke 1.2 percent of the eggs and checked 3.1 percent. Some of this damage occurred as the eggs hit each other when they rolled from the cage to the egg tray as well as during actual collection. This loss can total nearly 15 cents per hen per year.

This same study estimates the monetary loss per hen at 60.64 cents based on ungathered eggs and reduction in final yield. Of this loss, 49 cents is due to shell damage (checks or breakage). Other losses are due to interior quality defects and dirty shells. Eliminating this loss completely is not possible, but it may be well to examine your operation to see if some of this loss can be reduced. Anything that can be done to strengthen the shell will help reduce loss due to breakage and checks. Shell strength and impact or pressure on the shell are involved in shell damage. Studies show that shell damage increases as the proportion of extra large and jumbo sizes increases.

A North Carolina study shows egg breakage amounting to 7.3 percent of eggs processed, when eggs were candled as received at the plant and again after packing. Farm breakage amounted to 3.6 percent and processing plant breakage averaged 3.7 percent. Of the in-plant breakage, 2.0 percent resulted from loading operations and washing and 1.7 percent in packing and packaging.

Not all checked eggs are removed in the candling operation. Some checks are missed: eggs with fine checks are difficult to detect in candling. These may show up with further examination. Iowa researchers found an average of 3.7 percent of the eggs leaving processors' warehouses were checked. A higher percentage of checks resulted from an automated packing system than from a hand-packing system. Since checks are removed in candling, any eggs cracked in weighing and packing operations are usually not removed. The Iowa workers found only 0.5 percent damage during transportation to retail outlets and almost no damage in display coolers.

### Factors Affecting Egg Breakage

Egg breakage may be caused by one or a combination of factors. For example, the Texas workers found a large portion of the eggs never gathered were lost due to "egg-eating" hens. Observation and removal of these "egg-eating" birds would certainly reduce losses.

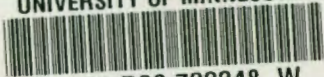
As hens age they tend to lay thinner-shelled eggs. This is an important factor in egg breakage—both prior to reaching the processing plant and in-plant. A North Carolina study shows that breakage ranged from 2.7 percent for hens in their 1st month of lay to 13.5 percent for hens in their 15th month of lay. When making decisions about extending the laying period for old hens or force molting, increased breakage is an important consideration.

Since some diseases can affect shell quality, an adequate vaccination program and attention to sanitation procedures can't be over emphasized. Damage to the shell-secreting portion of the oviduct may be only temporary or can be long lasting. Bronchitis and Newcastle disease are among the most costly to the egg producer from the shell quality standpoint. Defective shells or thin shells with increased susceptibility to breakage may last for months or even permanently after a disease outbreak.

Heredity can affect shell quality and influence egg breakage. Shell thickness varies considerably by strain and bird and even among birds in the same flock. A study indicates the behavior of the hen at laying time may influence the number of cracked or broken eggs.

Whether eggs are gathered mechanically or by hand, the human element is important in minimizing egg breakage. When workers are not properly trained or are in a hurry, they may be careless. Time spent demonstrating proper handling procedures and stressing need for careful handling may pay dividends in re-





duced breakage, especially with part-time help. Your helpers' work habits and performance should be observed regularly. Too many checks in eggs handled by a worker indicates more training or perhaps replacement is needed.

Picking up too many eggs in one hand will increase the number of checks. Some persons are rough and careless when placing eggs in a basket or on filler-flats. Egg baskets are frequently filled too full so that breakage occurs when the basket is picked up and the sides pull in slightly from the weight of the load. Basket capacity is reached before the basket is full, yet it is common to see baskets in the egg room heaped up. Jarring the basket against the door jamb, setting it roughly on the shelf or floor, or colliding it with carts can be costly. Gathering eggs directly into filler-flats cuts breakage to a minimum and reduces handling.

The human element is most important in proper use of mechanized egg gathering and handling equipment. Proper adjustment of equipment, such as collection belts, vacuum lifts, washers, graders and cartoning devices, is necessary to control breakage. Obstructions and overloading on belts create pressures against eggs that result in serious checking and breakage problems. Automatic equipment should be operated to minimize the number of eggs on the belt at one time. Breakage can be reduced in cage houses by collecting eggs three or four times daily instead of once or twice. This avoids the egg jams on the

belts after the heavy morning lay. Expansion cracks can result from temperature changes. If the eggs are too cold when washed, unnecessary cracking may result in the 110-115° F. temperature of the wash water.

Eggs should be packed only in clean, strong cases and filler-flats. A weak, beat-up case can't protect its contents properly. The producer should put eggs only in a case he feels is substantial enough to carry them to market safely.

The importance of adequate nutrition can't be overlooked in providing eggs with strong shells. Research shows that shell strength and thickness are improved by including both oyster-shell and ground limestone in the layers' ration. This increases the availability of calcium for deposition in the eggshell during the entire shell formation period. As the calcium level in the diet is increased from 2 to 4 percent, the percentage of absorption of the calcium is steadily decreased so that calcium usage increases only slightly. Vitamin D, phosphorous, and manganese are also important in proper shell formation.

Heredity, nutrition, disease, age of birds, management, and environment are among the factors that affect shell strength. There are many factors causing breakage, but the efficient poultryman can influence people, observe birds and equipment to make the necessary changes to help reduce losses.

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