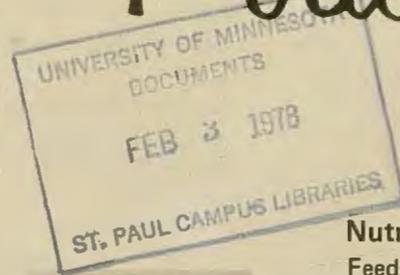


Poultry Patter



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THE IMPORTANCE OF EGG SIZE

Melvin L. Hamre
 Melvin L. Hamre, Professor and
 Extension Poultry Specialist



Next to number of eggs laid and livability, egg size may be the third most important factor in determining profits from the laying flock. Small and medium eggs do not return cost of production to the producer.

Genetics, nutrition, management, and other factors can influence egg size. As laying flocks come into production a fairly rapid increase in egg size is important so that hens produce eggs meeting large size specifications for most of the productive period. The egg producer should be aware of the factors affecting egg size so this information can help maximize profits from the egg production unit.

Genetic Influence

The experienced poultryman knows that some strains of birds lay larger eggs than others. While heredity may control maximum egg size, management and environment will largely determine whether this potential is reached. The producer wants a strain of birds that consistently lays a high percentage of large eggs, and has other desirable production characteristics. Practically all modern production strains produce eggs of sufficient size to meet normal market demands.

Results of random sample tests show variations in egg size among test stocks and from test to test. These differences indicate the influence of management and environment as well as heredity. Information on egg size and other economic traits can be found in copies of random sample egg production tests available from the Agricultural Research Service—Northeastern Region, Agricultural Research Center West, Beltsville, Maryland 20705.

Egg weight averaged 25.4 ounces per dozen in the last report (1976), with a range from 24.0 to 26.9 ounces. Egg weights are computed from bulk weighing of the eggs twice monthly during the laying period of the test.

The percentage of large and extra large eggs is determined by an egg size distribution determined one day each week during the test. In the 1976 report, stocks average 73.2 percent large and extra large eggs, with a range from 57.0 to 89.5 percent. Results of tests such as these, in addition to your experiences and the experiences of successful producers in your area, can be helpful in evaluating the commercial strains available.

Nutrition

Feeds usually do not affect egg size because most corn-soybean meal rations have more than adequate amounts of nutrients necessary to support egg production. Egg size may be influenced by feeds low or marginal in protein. Feeds with less than 15 percent protein may cause a decrease in egg size. Since the requirements of the birds are for individual amino acids rather than total protein, the effect would depend on the amino acid balance and the amount of each of these components in the ration. As more tailoring of the ration to meet the needs of the bird takes place, and emphasis is placed on reducing feed cost, more attention must be given to variations in ingredient quality and meeting amino acid requirements. It is especially important to have adequate protein—particularly the amino acids methionine and cystine—during the early months of production for increasing egg size rapidly when the flock is coming into production.

When ration substitutions are made for corn in the diet, egg size problems are more likely to occur. Rations using milo or wheat may be lower in the amino acids methionine and lysine. Sorghum grains are also lower in fat content and the essential fatty acid linoleic acid. When substitutions are made for corn as the major grain source in the ration, the addition of 1-2 percent added fat may increase egg size.

Certain drugs, used to control diseases and parasites, can also reduce egg size. Be sure any drug treatment is approved for use with laying hens.

Most feed manufacturers are extremely careful in their choice of ingredients and follow good manufacturing practices to prevent feed contamination. Care must be taken to prevent harm from insecticide and fumigant residues such as ethylene dibromide and carbon tetrachloride. Treated grains must be thoroughly aerated to remove all traces of the fumigant before feeding to poultry.

If you are having trouble with egg size, consult your flock serviceman, veterinarian, or nutritionist for an overall view of the problem and its best solution. Quite frequently remedies in a "shotgun approach" not only waste money on a possibly ineffective treatment, but leave the underlying problem unsolved.

Diseases

An outbreak of Newcastle disease may cause a slight reduction in egg size for a couple of months. Infectious bronchitis in a laying flock or in pullets just prior to production can also result in reduced egg size. Any abnormality that reduces feed intake can also influence egg size. Hens in poor condition or with parasite infestations may lay smaller eggs. A pathological exam may help find the cause of the problem.

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Flock Management

Since an egg contains about 70 percent water, an adequate supply of good, clean water is essential to good production and good egg size. Lack of drinking space, low levels in troughs, or unpalatable water may reduce intake. Remember that water requirements increase as house temperatures rise.

Feeder space must also be adequate so each bird gets the nutrients needed to reach maximum egg size potential. Increased density in caged systems may place a stress on the bird at the bottom of the social order as far as adequate feed and water intake are concerned. Crowding may involve stress as well as inadequate water and feed supply to the bird—which may show up as lower production and smaller eggs.

As the temperature rises above 70°F, egg size tends to decrease. Studies have shown that an increase in temperature from 70° to 80°F has caused a 1 percent decrease in egg size. Further increases to 90°F decreased size 3.5 percent, and at 100°F decreased size 13.5 percent. It is important to provide a higher nutrient density ration during hot weather to compensate for reduced feed intake.

Early egg size is influenced by body size, and age at sexual maturity. Management systems that delay maturity tend to increase egg size when birds come into lay. Birds that come into production early will lay more small and medium-sized eggs. Confinement growing of pullets allows the grower to influence the onset of sexual maturity and thus determine the size of eggs when the birds come into production. This makes the growing period management one of the most vital aspects of poultry production. A specified management program should be closely followed when the pullets are maturing to restrict production until they have adequate body development to maintain maximum egg production and egg size during their laying cycle. Programs involving good management, light control, and sometimes feed restriction during the growing period should be closely followed. The egg producer has a right to expect proper controls on his pullets during this period to insure success in the laying operation.

Your hatchery or pullet supplier should be able to furnish a chart showing body weight and egg size increases expected during the production cycle for your strain of birds. Question any marked departure from expected results.

Loss of Egg Weight

Moisture and gases escape through the egg shell causing a loss in egg weight. Proper storage temperatures and humidity from production to consumption and oiling eggs reduces the rate of loss in weight and slows quality deterioration. If eggs being produced are near a change in weight class, it is particularly important to maintain weight.

Weight classes for consumer grades of shell eggs follow:

Size or class	Minimum net weight per dozen (ounces)	Minimum net weight per 30 dozen (pounds)	Minimum weight for individual eggs at rate per dozen (ounces)
Jumbo	30	56	29
Extra large	27	50½	26
Large	24	45	23
Medium	21	39½	20
Small	18	34	17
Peewee	15	28	—

Producer payments are based on these weight classes. However, there is frequently no additional premium paid to the producer for extra large or jumbo sizes so there is no economic advantage to their production. They are also more costly to produce than large eggs.

Prices to the farmer for medium eggs have been 6 to 10 cents below the large egg price. One dozen additional large eggs per bird in a flock of 20,000 can increase yearly income over \$1,000. By considering the factors that influence egg size you may be able to take some steps to increase income from your egg operation if egg size becomes a problem with your flock.

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