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BROILER TIP...

FACTORS AFFECTING FEED CONVERSION IN BROILERS

Broiler companies encourage effective management during grow-out. This encouragement is usually in the form of a bonus based on cost of production. Because feed is the most costly item in the production of broilers, efficient feed utilization by a flock can be of considerable economic importance to the broiler grower. There are several factors which influence feed conversion and the remainder of this tip will discuss these factors.

House Temperature: Probably the most important factor influencing feed conversion is the temperature of the broilers environment. Birds are homeotherms (warm-blooded), meaning they maintain a relatively constant body temperature regardless of the environmental temperature. Birds perform best when there is minimal variation in house temperatures over a 24 hour period of time.

In a cool environment, broilers will eat more feed but many of the calories they obtain from this feed will be used to sustain normal body temperature. When the calories are used for warmth, they are not converted to meat. Optimum temperatures allow the broilers to convert nutrients into growth rather than using the calories for temperature regulation. The ideal environmental temperatures for promoting feed conversion will be provided by your contractor. Additional information may be obtained from University specialists or USDA researchers.

Broilers consume less feed, and convert this feed less efficiently, at high environmental temperatures. The biological cooling mechanisms that birds use during hot weather require energy, just as the warming mechanisms do during cool weather (May et al., 1998).

Pellet Quality: Modern broiler strains have been selected for rapid growth rate and appetite. The physiological basis for feed intake regulation is not clearly understood. It has been suggested that chickens are capable of regulating their feed intake according to energy. However, growth may be adversely affected by low energy diets and poor pellet quality during the latter growing period. Protein appetite is not well defined since broilers in a choice situation do not maintain protein intake (Cowan and Michie 1977). Duncan and Widowski (1982) observed that broilers spend more time crouched down (resting) as they get older.

Schiffman (1969) demonstrated that birds have a pecking preference for textured rather than non-textured feed. It seems that as birds become older, preference for larger particles becomes more obvious. A combination of pellets and fines will allow the birds to consume the highest amount of feed per feeding. A sample of grower and withdrawal feed was obtained to study and determine the percent pellets which would produce the highest bulk density (#/cubic foot). The highest bulk density for the grower feed (20-35 days) was a combination of 71 percent pellets and 29 percent fines. It is estimated that the highest density for the withdrawal feed would be about 65 percent pellets.

Data from the National Research Council, 1994 edition, listing nutrient requirements for poultry, reveals that feed intake per gram body weight declines with age (Example: Table 1). Thus, good pellet quality (70% pellets) is necessary to maximize feed intake.

It is apparent that those factors which prevent maximum feed consumption, could adversely affect growth rate and feed to gain ratios, and thus prevent birds from performing at their genetic potential.

PUTTING KNOWLEDGE TO WORK

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TABLE 1. Male feed intake.

Age (Days)	Avg. Body Weight (gms)	Weight Change %	Feed Intake	
			Weekly (gms)	Per Gram Body Wt. (gms)
0-7	100		135	1.35
8-14	264	100	290	1.10
15-21	531	55	487	.92
22-28	886	39	704	.79
29-35	1331	31	960	.72
36-42	1832	22	1141	.62
43-49	2339	16	1281	.55
50-56	2834	12	1432	.51

Source: NRC

Feed Wastage and Feed Deprivation: Placing too much feed in the chick feeders or on paper results in feed wastage and contributes to an inferior feed conversion. To prevent excessive loss of feed, add small quantities of feed to the feeder lids by running the automatic feeders frequently for short periods of time. This will stimulate the chicks to eat more often. Also, this will encourage the chicks to feed from the automatic feeding equipment quickly.

Feed deprivation can occur during the growing period and contribute to an inferior feed conversion. This often occurs the first time the automatic feeding system is raised. Be careful not to raise the feeders too early and/or too high during the production cycle. Early feed deprivation will result in uneven growth, causing poor uniformity.

Diseases & Culling: The general health of a flock influences feed conversions. Sick birds do not perform well. Watch closely for early signs of disease and treat sick birds quickly and properly. Carefully use vaccines and medication since reactions caused by improper administration can adversely affect weight gain and feed conversion. Eliminate birds that have no chance of making it to market as early in the grow-out as possible.

References:

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- Schiffman, H. R., 1969. Texture performance and activity in the domestic chick. J. Comp. Physiol. 67:462.
- May, J.D., B.D. Lott and J.D. Simmons, 1998. The effect of environmental temperature and body weight or growth rate and feed: Gain of male broilers. Poultry Sci. 77:499-501.

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Consult with your poultry company representative before making management changes.
“Your local County Extension Agent is a source of more information on this subject”