USING ENERGY CORRECTLY

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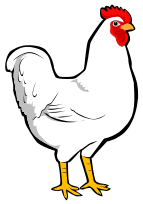

UNLESS DIETARY ENERGY LEVELS REQUIRED FOR OPTIMAL PROFITS VARY UP TO 100 ME Kcal/LB MANY PRODUCERS ARE NOT OPTIMIZING RETURNS.
ARE YOUR HENS FED ENERGY CORRECTLY ?
IF NOT YOU COULD BE LOSING UP TO 4 ¢/DOZ IN EXCESS FEED COST.

There is a wide range in dietary energy levels used by the industry. Many producers believe moderate dietary energy levels are required for optimal profits while many others believe low or high levels are required. The purpose of this newsletter is to review factors that should be considered when determining dietary energy levels.

Dietary energy levels used by producers can be divided into 3 ranges:

High dietary energy levels (1365-1275 ME kcal/lb). Producers using these levels believe the higher feed cost is offset by improved feed efficiency and other benefits.

Moderate dietary energy levels (1305-1270 ME Kcal/lb). Producers using these levels believe the cost of the extra energy is offset by beneficial effects on egg size etc. After egg size reaches large , they believe the cost of the extra energy is not economical but maintain a minimum of .5% added fat in all diets to help with feed palatability, reduce dust and increase machine die life ,etc.

Low dietary energy levels (1215 to 1280 ME Kcal/lb, no added fat). Producers using these levels believe the increase cost of energy outweigh the benefits.

A major reason for feeding increased dietary energy levels is improved feed efficiency. As dietary energy increases, feed intake decreases and feed efficiency improves. The data In Table 1 shows information required to calculate how much producers can afford to pay for additional energy just considering the beneficial effect of energy on feed efficiency.

Table 1. Feed intake, efficiency and cost as influenced by dietary energy levels currently fed W-36 hens phase 1 (average wk 21-36)

	High Energy	**Moderate Energy**	**Low Energy**
Energy(ME Kcal/lb)	**1355**	**1288**	**1250**
Feed Intake (lbs/100h/d)	**19.1**	**20.1**	**20.7**
Energy (ME Kcal/hen/d)	259	259	259
Production	87	87	87
Feed efficiency (lbs/doz)	**2.63**	**2.77**	**2.86**
Feed cost $/ton	(210.65 calculated)	**200.00**	(193.71 calculated)
Feed cost ¢ /doz	**27.7**	**27.7**	**27.7**
Production (5% less)	82	82	82
Feed efficiency (lbs/doz)	2.79	2.94	3.03
Feed cost (¢/doz)	29.4	29.4	29.4

Hens fed the high, moderate and low energy diets consume 19.1, 20.1 and 20.7 lb/100h/d. When production is 87%, feed efficiency is 2.63, 2.77 and 2.86 lbs/doz for hens fed the high , moderate and low energy diets. Reducing average production by 5% from 87 to 82% reduces feed efficiency .17 lbs feed /doz eggs and increases feed cost 1.7 ¢/doz. If feed cost were $100/ton, a 5% reduction in production would only increase feed cost .85 ¢ /doz.

Calculated Value of the added energy

Using a $200 /ton feed cost for the medium energy diet, we can calculate that feed cost per dozen will be 27.7 ¢ /doz (Table 1). To calculate how much one can afford to pay for the high energy diet and still have the same or less feed cost per dozen, divide 27.7 ¢/doz by 2.63 lbs/doz and multiply by 20 . We calculate we can pay up to $210.65 or $10.65 more /ton for the 67 additional calories and still have the same or less feed cost per doz. Likewise we calculate that as long as the savings in feed cost obtained by reducing energy (38 calories) in the low energy diet is $6.29 /ton or more, feed cost per doz will be equal or less than that of hens fed moderate energy diets.

Other factors influencing dietary energy levels

Even when we maintain the same energy and protein intake in hens fed all three energy levels; egg size will be larger in hens fed the higher energy diets. In some cases depending on spread in egg price due to size and environmental temperature the value of high energy on egg size could be much greater than improvements in feed efficiency. Also hens fed a corn –soy diet with a min.

of 0.5% added fat will lay on average about 0.5% more eggs than hens fed the same diet with no added fat.

In some instances hens will not completely adjust energy intake as dietary energy changes especially older hens housed under low environmental temperatures. Because of the above, along with changing egg and feed prices, it is difficult for producers to know the dietary energy level required for optimal returns. **This results in producers using all three energy levels with each thinking they are correct.**

Of all the nutrients, energy is by far the most difficult to feed correctly. It is the only nutrient in which the exact requirement cannot be delivered feeding based on intake. Hens will simply eat more or less as dietary energy level changes to satisfy their energy needs which varies with body weight, egg weight, hen activity, production, temperature and genetics.

Benefits of energy (fat)

1. Reduced feed intake
2. Increased egg wt and egg mass
3. Increased production up to .5%
4. Increased % yolk and egg solids
5. Improved feed efficiency
6. Increased hen wt.
7. Etc.

Most costly and common mistakes made with energy for table egg hens

Low dietary energy levels are more likely needed with low spreads in egg price due to size, excess egg size, high fat cost, low grain cost, older hens and producers having facilities with poor environmental control under cold conditions.

Higher dietary energy levels are more likely needed prior to optimal egg size, high spreads in egg price due to size, low fat cost, high grain cost, young hens, and poor environmental control under hot conditions.

A major requirement for table egg producers electing to use high energy diets to maximize feed efficiency is to have excellent environmental control. If hens get too cool when fed high energy diets they can over consume energy easier and in greater amounts than hens fed low energy diets.

Producers are fortunate that hens eat to meet their energy needs and can adjust feed intake as dietary energy levels change. Because hens can do this, feeding diets containing energy levels over or under the correct level is never a complete loss.

Feeding incorrect energy levels can adversely affect feed cost up to 0.5 ¢/doz or more. **A penny per dozen represents a quarter million dollars per million hens per year**. However that loss is small compared to the loss associated with letting hens over or under consume energy. If house temperature decreases below ideal , feed intake (energy intake) will increase and egg size and body weight could be above target. If hens get too hot energy intake will decrease below that needed to optimize performance and production, body weight and egg size can be below standard. Over or under consumption of **energy** can increase feed cost up to 4 ¢/doz or more. The cost of over or under consumption of **energy and protein (AA)** could be much more.

In some instances, a 2 -3 % drop in egg production commonly observed in hot weather due to under consumption of energy may not be all bad. For example, in the summer with school out, the demand for eggs can decrease resulting in excess eggs and reduced egg prices . During the past few weeks the Southeast Urner Barry large egg price has ranged from 79 to 97 ¢ (18 ¢/doz variation). The differences were mostly due to changes in egg supply. When producers are losing money and hot weather occurs, egg production for many producers can easily drop 2 -3% or even much more possibly reducing overall supply enough to increase prices. Reducing production 2 % may increase feed cost less than a penny per doz (Table 1) but an increase in egg prices could increase returns up to 18 ¢/doz or even much more because of reduced supply. If hens were not able to reduce energy intake in hot weather the adverse effect would be much greater, so it is definitely better for the hen .

SUMMARY

Feeding diets containing the optimal energy level and getting hens to consume their correct energy and amino acid requirement is difficult and complex but doing so offers many benefits.

Using and applying the following information should help optimize energy utilization:

1. **The first requirement is to determine the optimal dietary energy level under current conditions at each location.** . In most instances moderate dietary energy levels will provide for optimal returns. However, at some locations and under some conditions, high or low dietary energy levels may be needed. Not optimizing dietary energy levels can increase feed cost up .5 ¢ /doz or more. Energy levels used need to be re-evaluated as often as conditions dictate.
2. **The second requirement is getting hens to consume the correct quantity of energy**. The best way to do this is to know what the hens' energy requirement is at ideal temperature , maintaining ideal temperature , and have a feeding program that clearly shows which diet to feed as energy consumption changes to maintain amino acid intake. Although the producer may not be able to always optimize energy intake, optimal protein (amino acid) intake can be maintained by feeding based on intake. Maintaining protein intake as energy intake changes can significantly reduce adverse effects of over or under consumption of energy and help optimize performance.

3. **The third requirement is to use a feeding program that shows returns in ¢/doz as feed and egg prices change**. This will continually make the producer aware of the cost of over or under consumption of energy which can vary from almost no additional cost up to 4 ¢ /doz or more . In cases where close calls in diet selection are needed, being able to see the cost of over or under consumption of energy and/or amino acids along with **performance criteria** can significantly improve diet selections and returns. **It is impossible to feed all flocks directly on target; there are too many variables. The goal is to feed each flock as close on target as possible and hopefully keep the average energy and amino acid intake of all flocks directly on target**. **How close the hens's average energy and AA acid intakes in a complex are to standards is a direct indication of how well the feeding program is being implemented.** Using a feeding program that shows returns (¢/doz.) as energy intake and feed and egg prices change and a record keeping system that allows charting performance and critical nutrient intake along with standards in graph form will significantly help keep feeding programs on target. It is much more efficient and easier to study summary charts with standards than pages of performance numbers.
4. **The fourth requirement is to know when the energy and protein (AA) requirement for optimal performance is not the same as the requirement for optimal returns**. For example, when producers are losing money due to low egg prices (excess eggs), it may be possible for the producer to reduce loses by feeding graded protein (AA) levels less than required for optimal performance. Production would be reduced 1 - 3 % depending upon how much protein is restricted but the loss in value of eggs would be less than the savings in feed cost which can reduce egg supply at the same time it reduces losses. **The ability of producer's to use this information is directly dependent upon management skills, accuracy of performance and feed intake records and the confidence one has in their feeding program .** Producers using this information can significantly increase returns regardless of what other producers do, but the more producers feeding econometrically the larger the benefit.
5. **A fifth requirement is to know when feeding any less protein than required for optimal performance would increase losses**. The best feeding programs will also highlight when that occurs and let the producer know how much the loss is . In many instances the loss could be less than 1 cent/doz. **In some cases, even with that loss it could be the most economical way to reduce egg supply.** A major advantage of using nutrition to help regulate supply is that it not only reduces feed cost but the hens can rest a little while remaining available to immediately resume optimal production when egg prices return to profitable levels.

The more information the producer has available (econometric feeding) when deciding which diet to feed , the better any feeding program can be **implemented**. Small improvements can result in big benefits especially when large numbers of hens are involved.