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How Broiler Integrators Can Achieve Maximum Profits By Optimising FCRs And Body Weights Of Broilers Through Better Nutrition

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How Broiler Integrators Can Achieve Maximum Profits By Optimising FCRs And Body Weights Of Their Broilers Through Better Nutrition

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Introduction

Modern broilers can achieve remarkable body weights and FCR with proper nutrition and growing conditions. However, most feed millers and integrators try to minimise cost of feed. As a result most broiler farmers can only achieve a body weight of about 2 kg and FCR of 1.8-2.0 at 42 days while according to most breed standards a body weight of 2.25-2.4 kg and FCR of 1.67-1.77 should be achievable. More importantly, it is possible to achieve a body weight of 1.9-2.0 Kg and FCR of 1.6-1.65 at 36/37 days. Achieving an FCR of 1.65 would reduce the cost of feed per broiler by 25 to 60 sen. In a large scale trial which we conducted in Malaysia involving more than 20,000 birds, body weights of 1.9 kg and FCR's below 1.5 was achieved at 35 days using open houses. This proves that under tropical conditions with good raw materials and proper formulation, the breed standards can easily be achieved and exceeded even with feed of normal ME and protein/amino acid levels.

(Starter: ME=3150 kcals/kg, protein=21.5%; grower: ME=3250 kcals/kg, protein=19%).

Principles

Most integrators and feed millers will try to minimise the cost of feed by either using cheaper ingredients or lower the metabolizable energy and protein level of the feed. Those who follow closely the nutrient data from ingredient matrixes given by drug companies or NRC will not be able to achieve a consistent quality feed. Therefore, most will then modify nutrient specifications and set maximum and minimum levels for the various feed ingredients thus acknowledging that there are many nutritional unknown factors which they do not understand. Even the assumption that the nutrient values of basic ingredients such as corn and soybean meals are the same, is wrong, as proven by many studies published in various journals. One of the most misunderstood concepts is regarding illeal amino acid digestibility; most assume that this is equal to available amino acid ignoring the various studies especially those of Batterham *et al.*

There are at least two schools of thought, one assumes that all feed ingredients are the same and would use the cheapest ingredients that can do the job while putting some restrictions on certain ingredients such as meat and bone meal, wheat pollard, rice bran etc.

The feed produced by this type of nutritionist tend to be higher in energy and protein but can still be of lower cost due to the use of cheaper raw materials. However, the quality of their feed will have variables following the inconsistent quality of their ingredients. The other school of thought will use the best ingredients they can find and limit the use of poor quality ingredients such as meat and bone meal, rice bran, local fish meal etc, but in order to keep cost down they lower the energy and protein/amino acid levels of their feed. The feed produced by these nutritionists are more consistent in quality while maintaining acceptable performance. Most are able to lower dramatically the energy and protein/amino acid levels of these feed e.g. broiler starters have protein levels of 20.5% instead of 22%, lysine levels of 1.1%, ME of 3000 kcals/kg or lower instead of 3150 kcals/kg.

Integrators have the problem of balancing feed cost and the cost of production of broilers, because some of them still maintain separate cost centres for feed and broiler production. Unfortunately this management concept is flawed since the final profit or loss of these companies will be based on the cost of production per kg of broiler and not the cost of production of feed. Ultimately the FCR and growth rate will be the determinants of profitability for the broiler integrator.

Therefore, to achieve maximum profitability, the broiler integrator must minimise feed cost per kg of live bird produced. If the integrator has a slaughterhouse and markets finished poultry products, then eviscerated yields and abdominal fats are also important criterias for maximizing profitability.

Financial Considerations

The cost of feed is the main cost of broiler production:
For example to produce a live broiler of 2 kg @ 1.8 FCR, it will cost approximately RM 2.88 in feed cost (feed cost is RM800/ton). However, the same broiler produced at 1.6 FCR will cost only RM2.56 in feeding cost or less 16 sen per kg live weight.

Therefore, even if the feed used to achieve a 1.6 FCR cost 12.5% more, the cost to produce 1 kg of broiler will be the same. For an integrator producing 1 million broilers a month, a 0.1 improvement in FCR will decrease feed cost by RM160,000/month.
Every 0.1 increase in FCR will result in a 6.25% increase in feeding cost.
If by using a better soybean meal at say 30% inclusion in the feed can result in a 0.1 improvement in FCR, the extra value that soybean meal generates is RM800 x 0.0625 x 0.3 = RM166 per ton of soybean meal today. This is the reason why it is so important to use good ingredients in feed formulation.

Recommendations

In order to achieve the optimum cost of production for broilers it is important to use good quality raw materials in totality because anti nutritional and toxic factors from poor quality ingredients will pull down the performance of the feed negating the positive effects from the good quality ingredients.

For example using poor quality fishmeal in a feed consisting of good quality corn and soybean meal will still result in a poor quality feed.

Similarly mixing poor quality soybean meal with good quality soybean meal does not produce a soybean meal of a quality that is the average of the two soybean meals. Instead the resulting soybean meal will have a quality closer to the poor quality soybean meal. Therefore in order to produce a good quality feed it is important to use good quality raw materials in a proper manner. We recommend the following protocols to be followed:

- Use corn or sorghum that has a low mycotoxin content. If wheat is used it must be supplemented with a good Xylanase .

- Except for soybean meal, do not use other processed meal or raw materials exceeding 5%. This is because most processed meals such as meat and bone meal, canola meal, fishmeal etc have undergone excessive heat treatment and the availability of certain amino acids are greatly reduced and the byproducts produced by the heat treatment are toxic.

- Wheat pollard can be used to reduce feed cost, but it is important to use pure wheat pollard since virtually all wheat pollards are contaminated by fine wheat bran. Usage levels should be less than 10%, preferably 5% or less. The soluble NSP in wheat pollard and particularly wheat bran increases the viscosity of the digesta thus reducing nutrient absorption.

- The quality of soybean meal is extremely variable, and will have a big impact on the quality of the feed since soybean meal is the main source of protein contributing 60-70% of the total amino acids in most broiler feed (especially for feed using mainly corn and soybean meal). However, present testing methods cannot accurately predict the actual performance of soybean meal. Soon Soon Oilmills have produced a new type of soybean meal by using a new technology whereby the natural anti nutritional factors of soybeans are deactivated without damaging the nutrients such as amino acids. This High Efficiency Soybean Meal has been proven in animal trials to increase animal performance by 5-10% when compared with other soybean meals. To achieve optimum performance it is important to use this High Efficiency Soybean Meal.

- All raw materials must be as fresh as possible and if necessary it must be stored under cool and dry conditions. Most raw materials store badly especially under tropical conditions, for example corn of 14.5% moisture cannot be stored for more than one month at 30°C without serious quality deterioration. Similarly soybean meal quality will drop rapidly when stored at 30°C. High humidity and temperatures typical of tropical conditions will cause rapid mold growth in stored grain and oilseed meals.

The use of least cost formulation programs has contributed to a lower cost of feed but not necessary to quality improvements. Once the nutrient value of each ingredient is fixed, the software will always pick the lowest cost for a feed.

Attempts to improve the accuracy of this method by using digestible amino acids may have created more problems than solutions since for many processed ingredients the digestible amino acid can differ tremendously from available amino acids. Furthermore a small increase in cost can result in a big increase in performance. For example, using canola meal to replace soybean meal can result in a small saving in total cost but any inclusion above 10-15% will result in a significant depression in growth and FCR. Therefore, in order to achieve the optimum feed cost per kg of broiler produced, a more intelligent way of formulation must be used to complement the least cost method which theoretically can work perfectly provided the relative nutrient and anti nutritional values of all feed ingredients can be quantified, which is not possible at this moment. We recommend the following guidelines in order to achieve optimum results:

- The formula should contain corn/sorghum as the main energy source (wheat can be used with inclusion of Xylanase).

- The use of good quality high protein meals such as corn gluten meal or Peruvian fishmeal is recommended for starter feeds but at inclusion levels of less than 5% in order to raise the protein of the mix. Also allow more corn/sorghum to be used for energy, replacing some of the added oil (especially palm oil or tallow). Young chicks do not have sufficient lipase to digest a lot of oil especially stearic and palmatic acid. Starch digestion is good due to adequate levels of amylase.

- The use of High Efficiency Dehulled Full Fat Soybean Meal is highly recommended for both starter and grower rations. Broilers are able to use soybean oil in the full fat soybean meal for energy purposes better than palm oil or tallow especially for young chicks. Due to reasons not fully understood the energy value of oil in properly processed full fat soybean meal is higher than the equivalent quantity of added soybean oil. We recommend using only our Dehulled Full Fat Soybean Meal partly because proper processing is critical for the production of full fat soybean meal and dehulling is very important for improved broiler nutrition. Our recommended inclusion levels are 8-10% for starter feed and 10-15% for grower feed. At this inclusion level, the soybean oil in the full fat soybean meal will be able to replace 2.25 to 3.5 % of palm oil in the finished feed resulting in a much better utilization of the added oil as energy.

- We recommend only the exclusive use of our High Efficiency Dehulled Soybean Meal without adulteration with other soybean meal or any other processed meal exceeding 5%. This is because of reasons given above as most other processed meal has low amino acid availability especially lysine, cysteine and threonine and may contain many anti nutritional factors.

- We do not recommend excessive heat treatment for the finished feed, although starch digestion may improve, heating will generally decrease protein availability. So, post mixing heat treatment should be adjusted to a minimum to ensure a hygienic feed but not at the expense of protein availability.

If the above recommendations are followed, a broiler integrator should be able to achieve a body weight of 2 kg and FCR of 1.6 at 36/37 days when using good breeds such as Ross 308 and Cobb 500 broilers. However, the nutrient levels for the starter feed need only to have an ME of 3150 kcals/kg, protein at 21.5 % with lysine at 1.2%, met + cys at 0.9%, other specifications as normal. Similarly the grower feed should have an ME of 3250 kcals/kg, a protein content of 19%, lysine at 1.1% and met + cys at 0.88%.

Naturally, there should be good day-old chicks, proper feeding procedures and good farm management practices with timely vaccinations and appropriate medications if necessary.

Conclusion

The broiler industry is very competitive, low production cost is critical. Unfortunately many integrators are still focusing on producing a low cost feed instead of achieving a low cost of feed per kg of broiler produced. Perhaps they have not been convinced that a much better growth rate and FCR is possible. However, the performance standards set by the broiler breeders are easily achieved and exceeded provided the above nutritional recommendations and guidelines are followed. On the other hand, using poor quality ingredients in broiler feed can result in other problems beside a higher FCR and lower body weight. Poor quality nutrition can seriously damage the health of the broiler resulting in high mortality and sickness, which will require constant medication. This is particularly important considering the current trend worldwide to reduce or eliminate the use of antibiotics in animal feed. Our research also shows that poor quality feed results in the development of a heavier less efficient gut system which uses more energy, and decrease the eviscerated yields in the slaughterhouse thus reducing profits. Broilers receiving poor nutrition will have poor body conformation resulting in poor carcasses which consumers do not prefer.

The conclusion is that trying to save cost on feed by using poor quality ingredients is not economical and also results in poorer quality products.