

Vitamins - Why use them anyway?

Vitamin supplements are useful for all grades of chicken production. But breeding birds are even more important. The reality is that unlike mammalian babies, a bird embryo grows in a food package where all the food that the growing embryo has access to must be in the egg before it is laid.

Now to make an egg we need a few things. We need protein, carbohydrate, fat, water, and the right light to stimulate the laying of the egg. The level of micronutrients needed to make an egg are very low, and numerous research reports show the bird will lay eggs even when the micronutrient levels are very low. But when it comes to growing embryo's micronutrients are everything. The vitamins and minerals are essential mediators in numerous growth functions, and without them, embryos peter out and die or produce weak chicks.

The best assistance we can give a chick starts before the egg is produced. Micronutrient levels are easy to influence but at times it's just hard to know that the food we are giving has the high levels which make ideal chicks. So supplements are used to ensure these levels are good. Most B group vitamins need to be available in the bloodstream the day the egg is laid, fat soluble vitamins are stored up in the yolk, and minerals are present in both. In addition, many of the amino acids need to be available in correct levels the day the egg is laid.

So there are good arguments for breeder supplements to ensure these are right. This becomes more important the rarer the breed, as often the selection for the rare traits has included unknowing selection for nutritional requirement. This explains the inbreeding factor, which often is represented by changed nutrient requirements when breeding from a small population.

Two vitamin mixes include these amino acids, Bellbreeder which has just 3 of them and Aminovit which has almost all the amino acids. Aminovit now comes in a pelleted form for easy addition to the regular pellets instead of the water. Amino acids are made up of 2 groups:

- the essential amino acids, they must be in the diet, and
- non-essential amino acids, these are the ones the birds metabolism can make but only if there is a surplus of the essential ones.

Both of these are excellent for use in breeder diets.

A common statement made to me is "but I free range my birds so they have all they need". It is however, an urban myth that poultry can get all they need from a few handfuls of grain and grass. This myth denies the fundamentals of poultry biology.

In the wild, the bird lives on wild animals, mainly insects, (its beak is a killing beak), seeds in season, plus sprouted seeds.

Our modern perception of greens is mature leaves which have passed the sprout stage and have converted to cellulose, a description of most of our pastures and grasses. These are broadly speaking, insoluble to poultry. Sprouts are a highly digestible ingredient sought by the birds. Grains are an opportunistic find for wild poultry and the bird has a strong instinct to seek the concentrated energy of the seeds.

To replicate the diet in a domestic backyard is difficult, providing 2-300 grams of grains is easy, 200 grams wet weight of sprouted grains to provide the vitamin content is harder, and another 1000 kg of wet weight of live insects and animal food, the hardest of all. The bird in the wild also lays only 25 eggs per year, but our domestic fowl have the potential to lay 300 per year.

So what can we feed the birds?

There are two ways which are common:

Mixed grain "all natural" diets are the flavour of the day. A bunch of grains are thrown in a bag and call a balanced diet. However these diets are notorious for being high in fat, and low in protein. This results in the surplus fat being stored in the abdomen of the bird and in the long term results in greatly reduced laying performance as the egg production space is taken up by the fat layers. In addition, the imbalance of the nutrients will cause the birds to sort the grain, in the search of the balance of nutrients which the bird's body requires.

Sometimes the mixed grains have a "protein and vitamin" pellet added to balance the diet. This strategy does not work well unless the birds are forced to eat all the ration. A deep feeder with an anti-flick grill is essential for ensuring all the feed is consumed.

The other way is a balanced pellet diet which has all the protein, carbohydrate, and fat needed for good production plus a supplement of vitamins and minerals to make up for any analysed deficiencies in the ingredients used.

Often people say but my birds don't like the pellets misunderstand the instinctive drive (eat the grain, it has limited availability) as not liking the pellet. But in reality of the bird is hungry, it will eat almost anything, and the pellet form of diet is a balanced with all production nutrients included.

Use the pellet in the feed hopper, the birds are less likely to sort the feed if it is only pellets, and use the instinct for the grain to keep the birds digging over the shavings litter in the shed.

The last way is more difficult for a backyarder with small flocks. It is called free choice feeding, and it consists of a series of feeders each with a different type of grain, and one with a 50% protein supplement. The birds learn to balance their diet quite finely and vary the amount of each grain in accord with the weather and the status of lay of the flock. See the tech bulletin Alternative Feeding Method

Another common misunderstanding about diet is the concept that if the bird is laying well then it has all the nutrient it needs.

But when it comes to breeding, or to handling stress in hot weather, this is not necessarily true.

If the bird has sufficient protein, carbohydrate, fat, water, and importantly light, then the bird will lay eggs.

However, the level of micro nutrients needed to allow proper hatch is another matter. The level of micronutrients demonstrably has a low effect on the rate of lay until the level is so low that the general health of the bird declines. It has an immediate effect on the ability of the embryos to develop, and has a dramatic effect on the hatch and quality of the chicks.

It's just like when a woman is having a baby. First thing the doctor does is recommend a range of micronutrients to ensure proper growth of the baby.

In the case of the egg, all the required nutrients must be in the egg before the egg is laid. They cannot be added afterwards.

The type and spectrum of micronutrients varies with the base diet and the breed of fowls. Broadly speaking, the more commercial and common the variety, the less additional nutrients are required. The rarer and more unique the variety and species, the more likely the diet is to require additional materials.

Another common misunderstanding is "it's really easy to overdose on vitamins so you be careful how much you use".

The reality is that it's difficult to do so, and all the water based vitamins are easily excreted if in excess.

The risks of insufficient vitamins are far greater than the risks of too much.

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