

FEEDING & BREEDING

PART 1: NUTRITION: PROTEIN & MINERALS

In avian nutrition **protein** remains the most misunderstood aspect of feeding birds. We seem to get caught up in the amount of Crude Protein in a diet. Crude Protein is simply a measure of the nitrogen content of the feed multiplied by 6.25! It tells us nothing about the value of protein to the bird.

The CP was introduced to the production animal field many years ago as some measure of feed quality, however, it is useless unless combined with the profile of the amino acids.

Amino Acids are the building blocks of protein and they are absorbed from the gut to be recycled into the tissue in the birds.

Protein is not absorbed as long chains of protein but is cleaved into small segments (amino acids) and these are absorbed. The amino acids are then sent to the active body cells to be remade into protein or enzymes for use by the animal. **So it is amino acids and their relative proportions which are important to the bird not the amount of nitrogen in the food.**

The demand for various amino acids (there are both *essential* and *non-essential* amino acids) varies with the time of year, temperature, breeding status and activity of the bird.

We can't all be expected to understand and know all the requirements of amino acids, but we can realise that it is much more involved than just the CP level.

Chick rearing is an important time for proper nutrition. **The demands for amino acids in the chick are high** - lack of any of the essential amino acids leads to a development problem. It is at this stage that balanced protein is most important and we need to be mindful of providing a good spread of protein sources.

As we all know protein is found in nearly all foods - what varies is the

amount and the amino acid ratio of protein. Birds in aviaries get most of their protein from vegetable sources. Unfortunately, plants and seeds are often low in two *critical* amino

acids - **Methionine and Lysine**. The cereal grains (including the millets) are recognised as having unbalanced amino acids - that is why purified amino acids are added to processed stock feeds.

The best source of amino acids for animals comes from animals! Animal protein has already been balanced to suit the animal it comes from - so egg, insect and meat protein contain very good amino acid balance. These are sources of protein that are very under used in bird feeding. (Please remember that most "egg and biscuit" mixes are *mostly* biscuit - **not egg!**)

THE CP MEASURE TELLS US NOTHING ABOUT THE VALUE OF PROTEIN TO THE BIRD...

TRACE MINERALS ARE BECOMING MORE IMPORTANT TO NUTRITION...

If your protein supply is chronically unbalanced you will get fat birds. This occurs because the birds eat more than necessary in an attempt to get adequate amino acids for their needs. By eating more they also intake extra carbohydrates and fats which are then stored as body fat. Single seed diets and cereal diets commonly result in fat birds - **a direct result of the amino acid imbalance.**

The practical way to prevent protein imbalances is to feed the birds a regular supply of animal protein. Boiled egg, chicken meat, chop bones, meal worms, in fact any animal meat is suitable.

Common sense must be used in feeding meat to ensure the meat does not spoil while in the aviary. I commonly use good quality meat in supplement for birds as it is readily available and has a good amino acid range. To ensure it is safe from bacterial contamination I microwave it so that the temperature in the centre of the container is greater than 71°C.

Minerals are split into two groups - the "*macro minerals*" such as Calcium, Phosphorus and Magnesium and the "*trace minerals*" such as Zinc, Copper, Cobalt and Manganese.

Although we know about the importance of Calcium in bird nutrition it is often not the total answer to problems in egg shells, egg binding, and poor bone strength. Trace minerals are becoming more important to nutrition because the grain growing areas are slowly being depleted of the trace minerals through

long term cropping. Unless the trace minerals are replaced as special fertilizers the grains will be trace mineral deficient.

Trace minerals have a vast range of actions in the body - from enzymes to cell walls and from nerve impulses to egg shells.

An important consideration is how effectively these trace minerals are absorbed from the gut of the bird. It is well known that most trace minerals are produced from pulverised rock or chemical processes and they are poorly absorbed from the gut because of the interactions with other compounds in the digestive system. **Feeding poorly absorbed minerals is about the same as not feeding them at all.** To improve the absorption, we have chemically bound the trace minerals to the amino acids methionine and lysine (the two that are often deficient in plant protein).

By linking the trace mineral and the amino acid we stop interactions with the mineral and vastly improve the absorption from the gut. We have researched the product **Tracemin Soluble** which provides an excellent source of these essential trace minerals in this chemically linked way. Tracemin Soluble is added to the water as per instructions.



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PART 2: NUTRITION: FATTY ACIDS

Fatty acids are the bits that make up the fats within a food. Just like “*oils ain't oils*”, fats are all different. We have heard of fats being saturated and unsaturated but here we are considering the actual components of the fat. These are special molecules which all have different properties and different functions in the body.

The ones I am particularly interested in are **Linoleic and Linolenic fatty acids**. These are of special importance to birds as they are well recognised as having an effect on egg production and egg quality. Birds which lay multiple eggs in a season are more likely to need extra fatty acids than those which only lay a couple of eggs a season. Budgies, Quarrions, Finches, Neophemas, and Quail need good supply of these fatty acids if they are to produce good numbers of high quality eggs over a season.

Without a good supply of these fatty acids the hen cannot produce her best eggs. We start to see reduced egg numbers, reduced egg size, and a reduction in the hatchability of the eggs. An obvious result of these factors is a drop in number of young on the perch. Oil seeds are a good source of these fatty acids as is the Vetafarm product **Breeding Aid**. Breeding Aid is mixed with the seed and allowed 24 hours to penetrate into the kernel.

By looking at the table below, it is easy to see that many of the factors controlling egg shell quality can be affected by what we do in the management of our birds and the way we feed.

FACTORS REDUCING EGG SHELL QUALITY	
FACTOR	EXAMPLE
Bird age	Very young/old birds
Egg size	Very large eggs
Environment	Hot humid conditions
Water quality	High mineral content
Disease	Uterine infections
Electrolytes	Disease and stress
Nutritional Balance	Trace mineral balance & fatty acid balance
Antinutrition	Mycotoxins and phytates

Show Bird Nutrition

The other special case for careful nutrition is the show bird. Show birds are bred to be the best that is possible.

Without good nutrition the birds cannot win on the bench.

A good rule of thumb is to treat these birds like you would a breeding hen. Their requirements are greater than those of a breeding male and it is imperative that they are not deficient in anything that may affect the way they look and the way they show.

My suggestion would be **Moulting Aid** and **Breeding Aid** are given to the show birds starting about a month before they come in to the show season.

PART 3: VIRAL DISEASES AFFECTING BREEDING

Polyoma Virus (previously Papova Virus)

Polyoma is probably *the most devastating viral disease* in Australian Budgies at present. It can completely destroy a seasons breeding.

Polyoma virus is well established in Australian birds - Budgies, Quarrions, and Peachfaces are the species most commonly seen with the virus, but it has been reported in a wide range of birds including pigeons and finches. The virus is spread by direct contact with infected birds via dust, faeces, nest boxes, clothing and hands. **The virus is quite stable in the environment so will survive outside the bird for some time** - where it becomes a source of infection for other birds. Generally you introduce this disease by buying it from someone else when you purchase new stock. **It is practically impossible to halt the spread of the virus once it is introduced to your aviary.** If it is introduced at the beginning of a breeding season you are in for a rough year.

What you see in the birds varies with the age of the bird and the degree of immunity. Older birds are rarely affected - they remain normal but become carriers of the disease to the chicks. **Babies are the worst affected with sudden death at about 10 days of age** and a high number of “runners” being typical of an outbreak. Birds that die often have full crops and will show blood spots on the skin and an

enlarged liver (seen as a large black area just below the point of the keel).

Runners will have none or very poor tail and flight feathers - otherwise they are bright and active. Some of these will eventually grow out their primaries, - others will never have normal flight feathers.

Once an outbreak has started you will need to shut down the breeding for the season. During the shut down, the adults will all become infected, they will develop an immunity and next season you will not see the virus. **There is no treatment for the disease** and the vaccine that is available overseas is of *very* questionable efficacy.

Psittacine Circovirus Disease - PCD (previously Psittacine Beak and Feather Disease)

This is Australia's great export to the world originating in Australia and transported around the world with bird movements. Although it is devastating in larger parrots, it is of low importance in the budgie.

It is thought that PCD virus and possibly the Polyoma virus in combination are responsible for French Moulting in budgies. This is yet to be confirmed but it would explain the unpredictable nature of French Moulting outbreaks. Carrier birds with PCD virus are known to be common but because we cannot identify the individual carriers they create a situation where it is impossible to totally eradicate the disease. **Unlike Polyoma virus, PCD infected birds do not always become immune to the disease** - these become the carriers.

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PART 4: MYCOTOXINS IN THE FEED

The final topic for this article is about the toxins created by moulds and fungi called “**Mycotoxins**”. These are extremely powerful toxins that are made by fungi when they invade foods, especially grains.

There are many different mycotoxins which have many different effects on the body. As time passes we are identifying more of these toxins and beginning to appreciate the effects they cause.

In birds the noted problems are:

- growth depression of young birds
- abnormal feather formation
- increased feed and water consumption
- excessively wet droppings
- decreased egg production

Most fungal growth occurs in storage of feed. The dark humid conditions of storage bins encourages the formation of fungi and moulds. Even if you cannot see moulds in the feed there may be mycotoxins present.

The best way to try to protect your birds is to regularly empty feed containers and wash and dry them. It is of utmost importance that containers are completely dry, and ideally they should have a sealable lid.

It is important to realise these things are present at some level all the time. However, if you encounter a problem in the aviary which you cannot identify with help from your veterinarian, you must consider mycotoxins.

Work is being done on ways of eradicating these toxins from the feed and to bind them in the gut before they are absorbed.

