

Nutrition

Practical Feeding for Performance

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It is surprising how much mystery still surrounds the feeding of racing pigeons. Most grain blends that fanciers use have resulted from trial and error over the years. Many fanciers are still unsure as to why they use a particular seed mix other than that it seems to work for them. Many are reluctant to change a mix (possibly for the better) simply because it is the one they have used for years and they have won races while using it. Indeed, it can be confusing for the novice because he can receive conflicting advice from different established (and successful) fanciers.

The nutritional requirements for pigeons are now well documented in the veterinary literature. In this section I have tried to summarize these in a straight forward way so that fanciers have some information on which to base feeding decisions and also fanciers can make decisions that are more informed.

Feeding for performance during racing

Racing pigeons are avian athletes and like any other athlete, feeding them optimally for the job ahead, means that their full potential is more likely to be realized. The more the fancier deviates from the best diet, the harder it is for the birds to do well. Some birds can still win on other diets (which is why all the various “home truths” have developed) because they have other factors in their favour such as being exceptional genetically or under a particularly good manager etc, but a deviation from the best diet just makes it harder. There was one fancier in South Australia several years ago, well known to Australian fanciers who was best flyer in his state for many years. He actually fed a very poor diet but seeing him with his birds, it was obvious that he was an exceptional manager. We know that for optimal racing, diets need to contain 12-14% protein. For high performance sprint racing, this should be 12%. Racing diets also need to contain over 3000kcal per kilogram of energy (in the form of fat and carbohydrate).

Protein

Calculating the protein level of a grain blend

This is fairly straight forward using the following figures. The approximate level of protein in the commonly used grains are listed below. These levels will fluctuate a small amount depending on the variety of the grain, on the growing season and other factors.

Grain	% Protein
Maize	10
Wheat	9.5
Sorghum	10.5
Safflower	14
Peas	25
Vetch	27
Popcorn	10.5
Linseed	17
Rice	6

These grains can be added in various proportions to a grain blend, and using these figures, it is comparatively easy to calculate the total level of protein and protein percentage of the blend. Fanciers tend to use a scoop, like an old tin, as a measure. In this example, let's say the scoop contains about 100g. An example of a grain mix is below.

4 scoops of peas = 400g which is 25% protein = 100g of protein

2 scoops of corn = 200g which is 10% protein = 20g of protein

1 scoop of wheat = 100g which is 9.5% protein = 9.5g of protein

1 scoop of sorghum = 100g which is 10.5% protein = 10.5g of protein

1.5 scoops of safflower = 150g which is 14% protein = 21g of protein

0.5 scoops of rice = 50g which is 6% protein = 3g of protein

Total weight of mix = 1kg with a total protein of 164g

The mix is therefore, 16.4% protein

Aiming for 12-14% protein, this obviously is a bit high. So, an informed decision (rather than a guess) to improve racing would be that to lower the level of protein would be likely to lift the performance of the team generally. One way of doing this would be by reducing the amount of (high protein) peas and increasing the amount of (low protein) corn and safflower.

When I started racing in the late 1960's, many fanciers just fed peas and grit. This now seems incredible to us but there are still fanciers who feed just peas and wheat, or just peas, sorghum

and wheat. I guess one just has to ask oneself, why, when presumably their aim is to win races and get birds home. For racing and particularly long distance racing, the birds do not need peas or protein, but carbohydrates and fats to provide energy for the long hours on the wing, during the journey home.

Proteins are made up of substances called amino acids. Various amino acids bond together chemically to make proteins. Proteins are necessary essentially for “tissue building”. The body has increased requirements for these tissue building substances fairly obviously through times of growth and reproduction. Pigeons therefore, need high protein levels in their diet when they are breeding, growing and molting. During racing however, although they still need proteins for tissue repair, eg, to heal tired muscles and for various base metabolic processes, it is the carbohydrates and fats that provide the energy for exertion during racing that are important.

Protein levels in excess of requirements during racing:

1. Take longer to digest – the digestive pathway for carbohydrates such as sugar are much shorter than for proteins. Simple sugars can be passively absorbed directly through the bowel wall, straight into the blood. Proteins have to initially be broken down by digestive enzymes into amino acids and then in turn, they have to be metabolized.
2. Add to nitrogen levels – in birds the major breakdown bi-products of protein digestion are two compounds rich in nitrogen, called urea and uric acid. Urea has to be actively excreted through the bird’s kidney, while 90% of uric acid is passively excreted through the kidney, provided the bird is well hydrated and the kidney well perfused with blood. In tired and particularly dehydrated pigeons, this process is compromised. Even in healthy pigeons, elevated levels of nitrogen based waste, put an increased workload on the kidneys. These elevated levels can be accurately measured in the pigeon’s blood and significantly interfere with the birds ability to win or simply return.
3. Do not release as much energy per gram to the competitive pigeon when compared to carbohydrate. This is particularly so when protein levels get over 14%. Rapid digestion and conversion of ingested food to available energy for the bird is compromised.
4. Increases the intake of various anti-digestion substances such as phytic acid and tannins. Some grains contain substances that in excessive levels can interfere with digestion and the release of nutrients. All legumes such as peas contain some of these substances that act in this way.

Other facts to consider

Getting the protein level of the diet right, is a good starting point in formulating a good diet, but there are many other factors to consider. These include:

1. The level of fat – for non-competitive birds, levels of fat between 5 and 11% are often recommended in the diet. Levels of fat over 30% (as can occur when feeding high levels of peanuts, sunflower, safflower or linseed) quickly lead to the development of obesity, fatty liver, high cholesterol and even type II diabetes in birds. When exerting themselves, pigeons initially use as an energy source, the sugars already present in the blood. As the birds keep flying, complex carbohydrates such as glycogen (stored in the liver and

muscles), are broken down into simple sugars like glucose (in a process called gluconeogenesis, literally formation of “new” sugar) which in turn is used as an energy source. As this is depleted, fats start to be broken down and their energy released. The energy in fat can be released by metabolic pathways that do not require oxygen, but the amount of energy released, is not as much as that released from carbohydrates. Finally, if the pigeon is still not home, muscle tissue (and other proteins in the body) start to breakdown. After this, if the pigeon is still not home, he has no more “petrol in the tank” and does not make it. Balancing carbohydrate and fat in the diet, can be tricky. The birds need some fat “to burn”, ie, release its energy, during marathon events. Too much means the bird loses its buoyancy, gets heavy and uses too much energy to simply stay aloft. The exact level of fat required in the diet is affected by the birds genetics (eg, Janssens lay fat down much quicker than long distance birds), the amount of energy the birds use up around the loft (ie, time on the wing and loft temperature, etc) and the anticipated amount of hours on the wing during the race. Regular handling of the bird will give the fancier a guide. Most birds will become race fit with fat levels in the diet around 7-15%.

2. Amino acid balance – As mentioned earlier, amino acids are substances that “clump” together to make proteins. For this reasons they are often called the “building blocks of protein”. Some amino acids can be made in the body. Some cannot and have to be provided in the diet. These amino acids are termed essential amino acids for this reason. Amino acids need to be provided in the right proportions relative to each other. Some are absorbed into the body using the same digestive pathways. Feeding too much of the one sort can therefore leave no pathway available to absorb another type. Pigeons will often eat a grain blend until they have enough of the amino acid found in the lowest level. They therefore, eat to meet their amino acid demand. This can lead to an inappropriately increased food intake, as their body craves the nutrients found in low levels in a poorly balanced diet. Eating a small amount of a complete diet will meet the bird’s requirements. The amino acid balance, therefore, has to be correct. No grain blend contains good levels of all amino acids, which is why formulated pellets or a good vitamin/mineral/amino acid supplement are necessary for top performance to be achieved. A good grain blend however, is a good start.
3. Digestible protein – pigeons do not have the enzymes to digest all proteins in their diet, so the nutrients they contain are simply passed in the droppings.
4. Other factors, such as carbohydrate quality and availability, the level of digestion inhibitors (eg. Phytic acid and tannins), the levels of omega-3 fatty acids and vitamin levels are all relevant.

Nutrition is a complex area, and it is beyond the realm of a veterinarian, even a specialized avian veterinarian to make complete recommendations about a diet or indeed to formulate a pelleted ration or vitamin mineral supplement from first principles. At the Australian Pigeon Company, when this is required, we have two nutritionists that we specifically consult.

Supplements

It is easy for fanciers to be distracted by the plethora of supplements available for pigeons. What needs to be said is that no blend of grains can supply all of the vitamins, minerals and amino

acids pigeons require. When feeding a grain based diet, there is definite advantage in using either a fortified palatable pellet or a good multivitamin mineral/amino acid supplement or balancer, made specifically for pigeons, from a reputable company, using veterinary knowledge. Also there is definite advantage in using a probiotic. These correct gut ph (ie acidity), aid in digestion and protect the bowel from infectious disease. It goes without saying that these need to be made for the purpose and provided by a reputable veterinary company.

It is said that “you are what you eat” and that certainly holds true for pigeons. For a team to do consistently well, the diet is important. Getting the protein percentage of the diet right and making some informed decisions about the grain blend used, will help with performance.

Breeding

These days, many fanciers find it easier to provide a complete diet for their breeders by using a formulated maintenance pellet. Pellets do not work so well for race birds because their energy and nutrient requirements fluctuate depending on workload, temperature and other nutritional demands. However, in the stock loft, nutritional requirements are fairly static. There are a number of veterinary based companies producing pellets in Australia, US and throughout the world. In the better companies, because the pellets are based on the same science, nutrition in the pellets is fairly similar. They do, however, vary in their taste and presentation. Using a pellet means that no supplements are required because everything is right there in the pellet. Most pellets are also cost competitive with grain. With my own stock birds and fancy pigeons, I have now fed nothing except pellets for over 5 years. The adults look great, and the babies each year are beautiful. For those wishing to feed a grain based diet, the protein percentage can be calculated as for a race mix. In a maintenance breeder diet, protein levels need to be higher than a race mix, and most nutritionists recommend levels between 15 and 20%. Also for maintenance diets, most nutritionists recommend that fat levels should be between 5 and 11%, and energy should be approximately 2950kcal/kg. Calcium should be approximately 1% of the diet, and the calcium phosphorus ratio (Ca:P) 2:1.

In the stock loft, an error in dietary management, unless dramatic, is unlikely to have the direct consequences that it would in the racing loft. Pigeons are long lived and fairly tough. There is usually the opportunity for dietary correction. Obviously however, making good decisions from the start is going to lead to better quality weaned babies starting on the road to become winning race birds.