

## Feature



# Principles of anti-microbial medication via drinking water

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ALL POULTRY PRODUCTION IS EXPOSED BY ITS very nature to the possibility of disease. In gamebird rearing, the intensification of systems in an outdoor environment, with little practical way of ensuring strict biosecurity, means that the modern-day farmer, and later on the keeper, have to be constantly aware of the possibility that their birds may succumb to infectious disease. Rapid and effective intervention prevents them developing into a more serious concern, and one of the key issues is effective use of the correct medication, at the correct dose, for the required time, for the diagnosed condition. Not forgetting that other problems may also arise.

The wet conditions of 2012, and to a lesser extent 2011, with a predicted future of wetter summers, has a direct effect on disease and medication. We tend to find statistically that disease first appears on the rearing fields often with Coccidiosis, typically 10 to 14 days after heavy rain and a subsequent warm period. Coccidiosis arguably takes such a time to build before it is recognised as causing an issue, by which time the disease has multiplied many times over already, and the bird's gut is severely compromised. Once the gut has been damaged, even if the condition is treated (and one has also to allow for the ongoing ground contamination), it takes a

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long time for healing to occur and the bird is at risk of other diseases, as well as relapse of "Coxi" (until immunity develops) and dehydration during that time. Consideration must be given to how one can prevent problems and support the bird even once prescribed medication has finished and this can take many forms, usually ones that are also given via the drinking water. Medication can be very difficult when there is a lot of ground water or wet vegetation as alternatives to treated water, as the birds will always prefer these.

One of the main issues I came across when first becoming involved with gamebird rearing, was the many erroneous myths that existed over medicating birds. Few in my area had ever heard of adjusting dose relative to the age of the poult. (Consider a chick as little but a bag of guts, whereas an eight-week poult has good amounts of muscle, bone, etc and relatively less gut. This means more drug is needed to get an effective amount into the gut to treat a disease process there.) It is also important to monitor water intake and make adjustments accordingly to the medication dose. Doses were often thought of in 'teaspoons per gallon', but have you seen how many sizes of teaspoon there are, not to mention the varying sizes of five-gallon drums?

Underdosing and not treating through to disease resolution can lead to resistance, and with the EU looking closely at the responsible use of antibiotics, and with few effective drugs available to us anyway, it behoves everyone to ensure they put their house in order on this.

### SO HOW DOES ONE MEDICATE AS EFFECTIVELY AS POSSIBLE?

The first issue to consider is water intake. This varies with age, breed of bird

(weight at a certain age), the weather (heat, cold, rain) and so on. There are a number of charts based on studies available both on-line and from various organisations, but your vet will likely have these anyway which you can copy.

Charts will get you close to the exact figure, but in more controlled environments such as barn/shed rearing, you will be able to measure daily intake and get a better idea of the specifics of your site.

Nothing is easy with gamebirds and drinker type will also have an effect. Open troughs in pens are affected by precipitation as well as evaporation; bell-type drinkers have a large surface area to collect water when it rains so need regular tipping out or the birds will be drinking little more than water. Large bowsers make accurate mixing of drugs into the water difficult and long lines from header tanks all need to be allowed for in calculations. Some drugs, alone or in combination, can themselves affect the birds' water intake. The type of disinfectant used for the water lines can have an effect. Even water hardness and pH have to be considered, with additives being useful in helping some medications stay in solution. All systems will have some problem that needs to be considered and overcome. And you can guarantee a sick bird will go for a muddy puddle over medicated water any day it rains!

Once you know water intake then you need to calculate the effective dose of the medication, which will usually be given in mg (of medication) per kilogram bodyweight of the bird as advised by your vet. One has to take an average of weight for age, and again there are charts which will tell you how many kilos a 1,000 birds weighs at a given age. You then have to consider the amount of the medication in a product – for example amoxicillin can be obtained in 100%



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67.5% and 50% formulations which all need adjusting for.

Confused? Don't be, the calculations are not that difficult and can be summarised by:

For 1,000 birds: average weight of 1,000 birds (kg) x dosage of medication required (mg per kg) = X mg of medication per day.

Then divide X by grammes/kg of medication in the prescribed product and the result = the gramme weight of the product needed for that flock that day.

(A 50% product will = 500 grammes per kg so divide X by 500.) Factor in your known water intake and you have your treatment rate: simple!

Of course you could have a very kind vet who has taken the headache out by creating dosage charts relevant to age for every product used in the practice and which are relevant to the conditions of the area! However, even these do not allow for the Law of Sod that happens from time to time.

One can only do one's best, but guesswork regarding diagnosis and treatment choice in gamebird flocks has no place in today's rearing industry. Diagnosis should arguably be left to the poultry vet who works daily on such and

will be better placed to guide decisions over treatment knowing your farm or shoot from his/her visits, results of previous interventions and that season's problems and resolutions. Consideration to follow-up post mortems should be given to ensure treatment has been successful. Economically in larger units these latter make sense and are done routinely anyway.

#### SOME POINTS TO BE CONSIDERED:

1. Always calculate the dose as accurately as possible.
2. Mix the medication thoroughly and check regularly to see it stays in solution especially in warm weather.
3. If using automatic water proportioners (medicators), check the equipment is working before the season starts, and familiarise yourself with the dose adjustments needed.
4. Flush through the water lines with clean water and empty them completely before refilling with medication to ensure correct dose.
5. Discuss with your vet the effects of your site's water pH and hardness and how it may affect the medication.
6. Consider any interactions with medication already in the feed.

7. Make up medication daily, or twice daily in warm weather conditions.
8. Allow 48 hours to judge the effectiveness of treatment and don't change on a whim – reassess diagnosis with follow-up post mortem if concerned.
9. Always complete the course of treatment prescribed.
10. Review biosecurity and risk to nearby pens and stock.

Antimicrobial medication is expensive, especially when large numbers of birds are involved. Getting it right saves time, money and results in better, healthier birds which can only be ethically correct.

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