

Summer Management in Poultry

Dr. Milind D. Rainchwar, Technical Service Manager - Novus South Central Asia

In the summer season, as the temperature increases, poultry suffers from the condition called heat stress, also known as summer stress. This is a condition of imbalance between heat generation and heat loss in the body. This condition not only brings poor performance in birds but is also responsible for huge



Dr. Milind D. Rainchwar

economic losses in terms of poor growth, lowered production, and higher mortality. This condition becomes a greater challenge when coupled with a high humidity environment, making the birds even more vulnerable. According to research, poultry is most comfortable in an environmental temperature around 22-28°C (known as their thermoneutral zone). Once the temperature rises beyond this point, poultry show symptoms of heat stress: reduction in feed intake, poor growth, poor production, and increased mortality.

In general, birds are susceptible to high environmental temperature due to an absence of sweat glands, their full body of feathers, their higher body temperature, and the fatty nature of the birds. This heat or summer stress not only brings lowered performance in poultry but also leads to immunosuppression issues, which can result in disease outbreaks and cause heavy mortality. This is mainly due to an absence of sweat glands in poultry making it impossible for them to dissipate heat. In this, males are found to be more prone to heat stress than females.

Ultimately, heat stress causes acid-base disequilibrium, or the inability to cool the body to

maintain normal body temperature. Panting allows birds to release heat through an evaporative cooling kind of method, but high humidity coupled with high temperature causes insufficient panting to control body temperature resulting in heat stress.

Behavioural, neuroendocrinal, and physiological changes are observed in birds during heat stress. Behavioural changes can include decreased feed intake, increased water intake, panting, less walking, and elevated wings. Physiological changes include oxidative stress, acid-base imbalance, and respiratory alkalosis. Internally the bird may experience decreased protein digestion and absorption, increased metabolic disorders, increased chances of disease prevalence, and fertility issues. Production challenges can include reduced feed intake, poor feed conversion ratio, reduced body weight, impaired meat, and egg quality, and, as mentioned before, increased mortality.

Summer poultry management

The following steps can help birds combat heat stress

1. Housing management
2. Water management
3. Feed management
4. General management

Water management is crucial in heat stress management. In summer, water consumption goes

up 3-4 times feed intake. So, a good quality water supply is essential. A water hygiene process must be followed because bad bacteria can prevail rapidly under poor conditions, which will lead to disease conditions. Water pipelines must be cleaned well and flushed with organic acids or hydrogen peroxide periodically. Treat water with a quality water acidifier and sanitizer. In general, try to make the water pH in acidic conditions (5.5-6). As feed intake is less during times of increased temperatures, nutritional water acidifiers should be used to help combat heat stress.

Housing management can be divided into two parts, inside shed management, and outside shed management.

1. Thatching of the roof with green grass or agricultural waste can help reduce shed temperature. Paddy straw can be used for this purpose.
2. Whitewashing the roof with lime helps mitigate the temperature inside the shed.
3. Applying sprinklers above the shed.
4. The use of gunny bags on the side walls (grill) of the shed over which drip water is set.
5. Allowing trees to grow near the shed to provide shade on the shed.
6. Prohibit wild birds, which can carry diseases like Avian Influenza, from entering the shed.
7. Provide 4-6 feet of roof overhang to protect birds from direct sunlight.
8. Provide ridge ventilation to help remove hot air from inside the shed

Inside the shed

1. Use of fans
2. Use of a fogger

3. Provide a continuous supply of cool water (if not possible, periodically flush the water to provide cooler water for birds)
4. Reduce litter thickness (ideally around 400-450 grams per square foot)

Feeding Management

Research shows feed intake is reduced by 1.25% with every 1° rise in temperature. Further, it is observed that there is a decline in feed intake by almost 5% with every degree rise in temperature from 32-38° C. Knowing this it's best practice to feed a good quality feed during times when heat stress can occur.

1. Feeding should be done during the cooler hours of the morning or evening but too much gap in feeding time is not advisable.
2. Increase the number of feeders and drinkers during feeding time to reduce competition among birds.
3. Adding antioxidants is shown to be helpful to reduce stress and improve feed consumption while maintaining or improving body weight gain. (Vitamin E, Vitamin C, Selenium).
4. A high-energy diet should be provided during summer because birds lose more energy while panting.
5. Energy in feed should be supplemented with oil rather than grain because fat has the lowest heat increment value compared to carbohydrates and protein.
6. Feed consumption is reduced in summer. To overcome nutritional and productive losses it is suggested to supplement the diet with 10-15% more amino acids, vitamins, and minerals rather than increasing the protein level directly.

7. Increase calcium and phosphorus levels to overcome thin eggshells more often seen during summer due to respiratory alkalosis (more carbon dioxide is lost due to panting).
8. Instances of viral challenges increase during this time as immunosuppression is common. Fumaric acid is shown to have good antiviral properties and can help to reduce viral challenges. A combination of coated benzoic acid and fumaric acid as an acidifier (as AVIMATRIX® feed supplement) can help to reduce stress and improve the performance of the flock.
9. MINTREX® chelated trace minerals, a supplement of organic trace minerals zinc, copper, or manganese, and methionine source HMTBa are shown to help heat stress conditions. HMTBa molecules undergo absorption through diffusion, which doesn't require energy. Thus, using minerals with HMTBa can reduce heat stress during summer and help improve performance.
10. Essential oils have a broad range of action from being immunomodulators to performance enhancers. Adding essential oils - especially thymol and carvacrol – to the diet can help mitigate summer stress challenges and improve meat yield and overall performance.
11. Use of MOS and B Glucans during heat stress conditions is convincing due to the possibility to reverse or compensate physiological alterations induced by heat stress and by restoring immune function and promoting robust inflammatory responses.
12. The addition of ammonium chloride, potassium chloride, and/or sodium bicarbonate has shown improved

performance in broilers by improving water quality and feed intake.

13. Probiotics can be used to help control the corticosterone level and the excessive release of pro-inflammatory agents. Lactobacillus-based probiotics enhance goblet cell count in the duodenum and jejunum of heat-stressed broilers thereby improving the feed conversion ratio.
14. Since a hot humid climate favors the growth of mould/fungi in feed the consistent use of an antifungal is recommended.

General Management

1. The depth of litter should be 2-3 inches on the floor.
2. 10% extra floor space should be provided in summer. Bird overcrowding only contributed to heat stress and must be avoided.
3. Shifting, transportation, debeaking, and vaccination should take place during the night or cool hours in the morning.
4. Birds severely heat stressed may be dipped in cold water for 2-3 minutes to provide relief. Be sure to keep their head and neck above the water level.
5. Use foggers in the shed, which can reduce the shed temperature up to 5-10°C depending on the quality of the fogger.

The house should be situated away from other buildings to facilitate the free movement of air.

“Summer management is crucial not only to improve the performance but to gain profit in adverse conditions. So, effective use of feeding, Water, shed management brings the good health of birds and thereby profit to the farmer”.

Steps needed to dissuade livestock farmers from using antibiotics on animals

By Dr Krishna Sahoo

Despite a ban on antibiotics for livestock production, they are still being administered to the entire flock for prophylaxis, treatment of a disease and growth promotion in most countries of the world. The misuse and overuse of antibiotics and poor methods of prevention of infection have become one of the primary reasons for the onset of antimicrobial resistance (AMR).

AMR is a phenomenon that occurs when bacteria, viruses, fungi and parasites change over time and no longer respond to the medicines. This makes infections harder to treat and increases the risk of disease spread, severe illness and even death. The World Health Organization (WHO) has declared AMR as one of the top 10 global public health threats facing humanity. This has put mounting pressure on livestock producers to be mindful of their practices.

According to the think tank RAND Corporation, the world population will be between 11 million and 44 million by 2050 if the pace at which antibiotics are consumed continues. This is much lower than what it could have otherwise been in the absence of AMR. New estimates reveal that at least 1.27 million deaths per year are directly attributable to AMR.

AMR is an intricate problem that requires a unified multisectoral approach. Appropriate steps can be taken at all livestock production levels to reduce the impact and limit the spread of this resistance. While eliminating AMR is unlikely, the overall situation can be improved with appropriate measures.

Effective farm management, biosecurity, and novel feed ingredients can all help reduce levels of AMR in livestock farms. Besides, livestock producers are the critical agents in helping to reduce the development and spread of antibiotic resistance.

Globally, countries committed to tackle AMR have set out a Global Action Plan 2015 during the 2015 World Health Assembly and have committed to developing and implementing multisectoral national action plans.

Let's look at the steps that can be taken to contain the situation:

- **Veterinary supervision is required:** Veterinarians are leaders and agents in preserving antibiotics for animals. Therefore, it's in the best interest to often

communicate with the veterinarian, who will decide when the antibiotics are needed to treat, control or prevent disease in the livestock. Therefore, as a livestock farm owner, it is in the best interest to seek advice about preventing antibiotic-resistant infections specific to your farm size, animal species, and environment.

- **Contain the usage:** Antibiotics should not be given for growth promotion or to prevent the onset of diseases in healthy animals. Healthy animals should only be administered antibiotics to prevent a disease if it has been diagnosed in the other animals on the farm.
- **Proactive vaccination:** Vaccines and other alternative products can help minimise the need for antibiotics by preventing and controlling infectious diseases in animal populations and are central to the future success of animal agriculture. This would automatically reduce the need for antibiotics and the use of alternatives to antibiotics when available.
- **Promote good farm practices:** Apply good practices at all production and processing steps of foods from animals. Infections should be controlled through improved hygiene and animal welfare.
- **A national action plan:** There should be a robust federal action plan to tackle the problem at the government level. Policies and programmes should be strengthened and with a stern implementation of infection prevention and control measures. There should be improved surveillance of antibiotic-resistant infections. Besides, the government should make information available to the livestock owners on the impact of antibiotic resistance.

The cost of AMR to the economy is high. Besides death and disability, prolonged illness results in more expensive medicines and financial challenges for those impacted.

The author is Global Product Manager, Proteon Pharmaceuticals, a subsidiary of Proteon Pharmaceuticals SA Poland. Proteon Pharmaceuticals focuses on precision biology for microbiome protection to improve animal and human health, increasing environmental sustainability and eliminating the unnecessary use of antibiotics