

WELCOME

**ENTREPRENEURSHIP–ANIMAL
NUTRITION**

DEPARTMENT OF ANIMAL NUTRITION

**TOPIC :- FEEDING STRATEGIES FOR
LIVESTOCK AND POULTRY UNDER
CLIMATIC STRESS**

Feeding under climatic stress

FEEDING STRATEGIES FOR LIVESTOCK AND
POULTRY

Hot climate

FEEDING STRATEGIES FOR LIVESTOCK IN
HOT CLIMATE

- Heat Stress
-
- "The condition in which the animal is unable to dissipate the body heat effectively and lead to increase body temperature"
-
- • High ambient temperature and humidity adversely affects animal production. Heat stress can be minimized through a combination of proper feeding strategies.

- Feeding strategies for livestock under heat stress.
- More the fibrous feed more will be the heat production as result of fermentation.
- Less use of fibrous feed lead to relief of heat stress
- But it should be taken in account that some quantity of forages is used to avoid acidosis condition.
- More heat will produce if more forages and grains are fed to the animal

Use of Vitamins

- Oxidative damage, as a result of heat stress may be minimized by antioxidant defense mechanism.
- Both vitamin C and vitamin E have antioxidant properties.

Use of Minerals & electrolytes

- Zinc and other trace elements like Cu and Cr act as typical antioxidants as they work indirectly. Zinc is catalytic cofactor for Cu/Zn
- Minerals (K, Na)
 - To avoid respiratory alkalosis
 - ▶ Also used for electrolyte balance

Continue....

- Nutrients are needed to be consumed into smaller volume of feed Thus, feeding high concentrate diets during hot periods not only results greater consumption but also reduce heat production inside the ruminants body
- Electrolyte supplement contained 1.8g NaHCO₃ and 3.5g KCl per litre.

Water provision

- Water restriction enhances the effect of HS Heat-stressed animals can dissipate over 70% of their heat production via evaporative cooling.
- More use of water leads to more evaporative cooling



FEEDING STRATEGIES FOR LIVESTOCK IN COLD CLIMATE

Feeding strategies of livestock under cold stress

- The energy from feed that is available to keep an animal's body warm is known as the heat increment of feeding
- ☐ These extra heat increments are required under cold stress.
- Corn can be provided to the animal in order to provide extra heat increments required to warm the animal's body

Increase energy density not bulking

feed

- Feeding additional straw or low quality forage will not meet the higher energy requirements of the animal. Straw contains 50% of the energy compared to barley on a pound per pound
- Try to increase energy density so animal gets additional energy to gain required heat increments.

Feeding time

- Feeding at late in the afternoon provides higher amounts of heat from fermentation overnight when temperatures are lowest, making the most efficient
- Therefore, Feed cattle in the late afternoon or early evening.
- Both critical and non-critical feed periods must be considered when planning the winter feeding program. The non-critical feed period for the cow is the second trimester of pregnancy. The least damage to the cow and fetus will be incurred by reducing feed supplies or feeding lower quality feeds in this period.



**FEEDING STRATEGIES FOR POULTRY
IN HOT CLIMATE**

Feed form

- Offering pelleted feed to broilers can result in a 57% reduction in the energy required for eating, and hence direct such an amount of energy towards productive purposes.
- At high temperature, there should be an advantage in providing broilers with high quality pellets with the minimum amount of fines, thereby reducing the proportion of energy wasted in acquiring feed.
- The physical nature of the pellets allows the birds to consume their feed with less wasted energy and retained quality and quantity of feed.
- A change of 10% in fines may result in a change of 0.01 in feed conversion ratio.

Minerals & electrolytes

- Increased mineral excretion is one of the major consequence of heat stress
- Retention rates of phosphorus, potassium, sodium, magnesium, sulphur, manganese, copper, and zinc are all lowered in broilers reared at 35°C compared to those reared at 24°C, with a resulting impairment of growth, feed efficiency, and carcass traits
- Laying hens reared at such elevated temperature also exhibit increased mineral excretion with a resulting decline of egg weight and eggshell strength. This may force the need for further supplementation of diets with these minerals if better performance is to be achieved

Continue....

- The occurrence of alkalosis in heat-stressed birds has been known for a long time and the addition of ammonium chloride, potassium chloride and/or sodium bicarbonate have improved performance of broilers by improving water and feed
- The dietary electrolyte balance (DEB) is probably more critical at high temperature.
- Heat stress always depresses appetite and therefore reduces nutrient intake, the use of electrolyte pack in the drinking water for 3-5 days during under heat stress has been shown to be helpful in most cases.

Vitamins

- Vitamin C supplementation is probably the most beneficial among vitamins, •
Recommend administration of 1 g ascorbic acid/liter drinking water throughout heat periods.

☐ In addition, a vitamin pack of A, D, E and B complex supplementation of drinking water is beneficial for both performance and immune function of heat-stressed broilers

Water supply

- Heat-stressed birds can dissipate over 80% of their heat production via evaporative cooling. The evaporative heat dissipation extent and calories dissipated per breath are correlated with water consumption level and balance.
- With reduced water temperature, water consumption would be encouraged, thereby increasing evaporative cooling and heat dissipated per breath



**FEEDING STRATEGIES FOR POULTRY IN
COLD CLIMATE**

Feeding strategies of poultry under cold stress

Birds require extra energy to keep themselves warmed, so extra heat increments are to be provided.

- Extra handfuls of corn can provide this energy to keep the bird warm.
- Oats, barley and other energy inputs can be provided under cold stress.
- The drinkers can be wrapped up in a layer of bubble wrap to help prevent freezing and adding slightly warmer water in the morning helps to keep it unfrozen for longer.



THANK YOU