

# Heat stress feed strategies per species

Heat stress is a major concern impairing welfare, performance and farm profitability. It is also highly variable for each animal species. Animals are not equal in their ability to resist and recover from heat stress episodes, depending on their physiology and their level of production. Therefore, managing heat stress implies dedicated and adapted strategies for each of them individually.

BY JEAN PASCARD AND VERONIQUE ABGRALL, CCPA GROUP

**D**ue to the wide variety of heat stress impacts: reduced feed intake, oxidative stress, leaky gut, increased heart rate, sweating, panting, etc, it is very difficult to solve it with a single solution. The CCPA Group therefore develop specific feed solutions for each animal species, in order to maintain production performance.

## Boosting feed intake and pig performance

To prevent the feed intake drop, CCPA Group has designed a specific blend of feed ingredients which supports the feed intake. Axion ThermoControl contributes to improving a pigs appetite thanks to Capsaicin, a specific plant extract activating TRPV1 (Transient Receptors Potential Vanilloïd1). These receptors are involved in body temperature reduction through different mechanisms: heart rate reduction, increase of insulin level and decrease of adipogenesis. Besides relieving the animals, the solution contains buffering substances improving the ionic balance and limiting alkalosis due to high temperature and respiratory rate.

Axion ThermoControl is effective during the fattening period

where heat stress induces a deteriorated feed intake and a slower growth. Different trials on fatteners were carried out with the product incorporated into feed. *Table 1* illustrates the performance results obtained. Field trials were also led on sows in hot conditions (27-35°C) in Europe and Asia. The use of the solution clearly enhances sow feed intake (+400 g on average) and sow milk production, and consequently increases the litter weight: +4.9%, on average. In addition, sow weight losses during lactation were reduced.

## Relieving ruminants and better milk yields

The nutritional solution Axion Thermoplus incorporated into ruminant feed was developed to act at the different levels impaired by hot weather in order to maintain animal performance, through three ways:

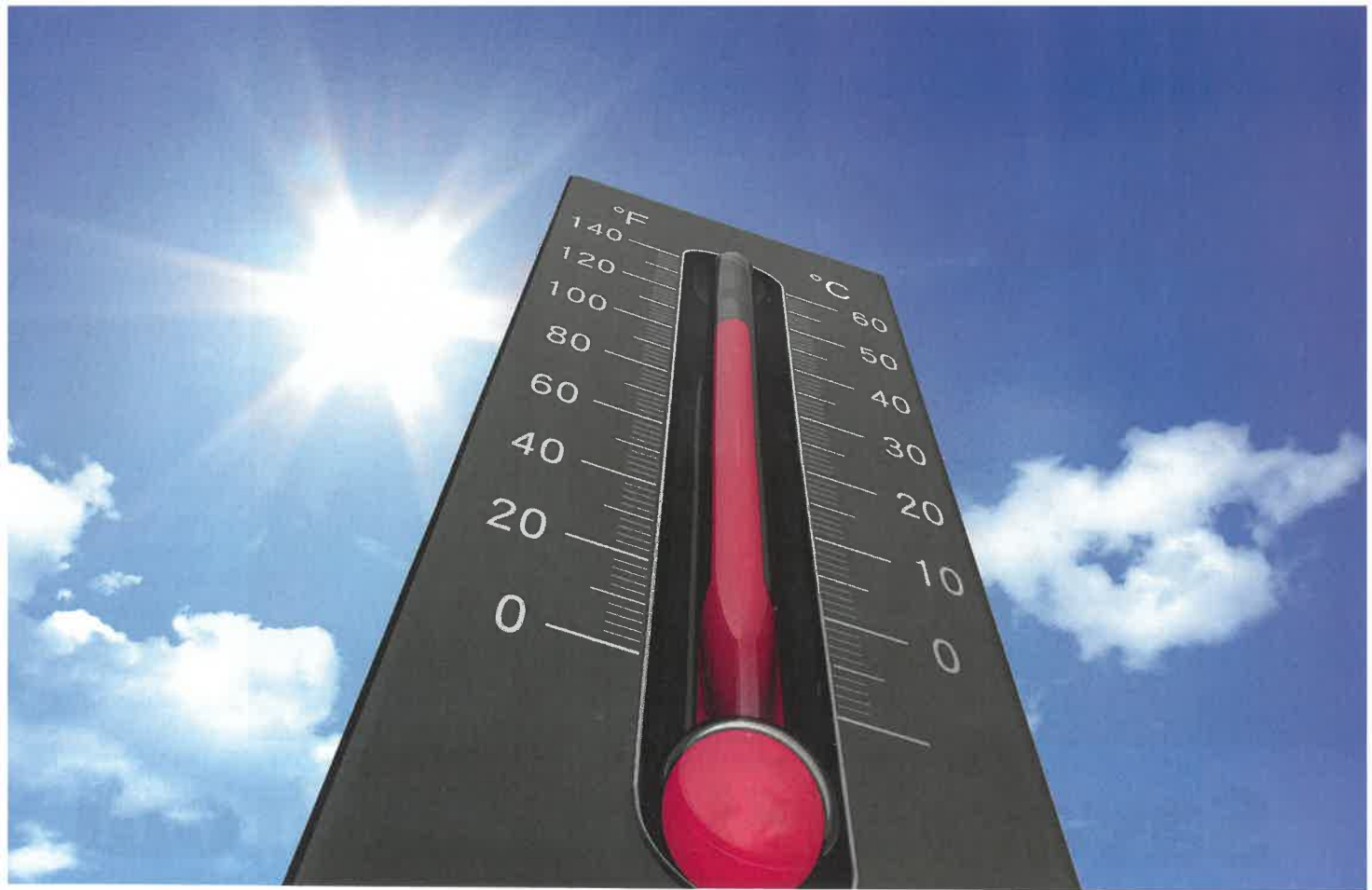
- As a specific blend of feed ingredients (with selected fenugrec and aroma), it supports dry matter intake, by increasing palatability and reducing satiety.
- Plant extracts namely sialagogue substances increase salivary production and pH, as buffering agents for the diet.
- Specific spices (chilli peppers, etc.) act also in the general metabolism regulation, with a reduction of the heart rate and body temperature of the animals through their action on TRPV1.

CCPA Group carried out numerous field trials on different diets, worldwide. In each country, milk yield increased for the batches of animals supplemented with Axion Thermoplus: from 0.5 to 3 litres more. Even in farms with existing cooling systems (for example in Vietnam), a gain was noticed with this solution. Farmers also noticed behavioural changes and signs of an animal welfare improvement, with dairy cows being more relaxed, spending more time resting and chewing.

**Table 1 – More growth and better FCR with supplemented\* feed.**

	Mexico		Vietnam		Costa Rica		Average effect
	Control	Supplement	Control	Supplement	Control	Supplement	
Number of animals	200	200	40	38	98	93	
Feed Intake (g)	2390	2440	2270	2440	2360	2490	5,10%
Feed Conversion Rate	2,77	2,71	2,92	2,77	2,61	2,61	-2,5”%
<b>Average daily gain (g/d)</b>	<b>864</b>	<b>900</b>	<b>805</b>	<b>885</b>	<b>906</b>	<b>953</b>	<b>6,40%</b>

\*Supplemented feed = Axion ThermoControl. Source: CCPA Group field trials, 2015-16



## Supporting poultry health/performance

Poultry are very sensitive to heat stress. A small temperature variation could quickly become dramatic as their body temperature is around 41°C and a variation of 4°C is lethal. Three specific nutritional specialties for poultry were designed to improve growth performance and limit mortality in the starter phase and during heat stress:

- Delta Stimflash, a liquid nutritional specialty, provides antioxidants and reduces oxidative stress. Composed of Vitamin C and plant extracts, this nutritional specialty maintains production performances (see Figure 1) and is used before and during heat stress.
- Delta Hydralac, as effervescent tablets, stimulates water consumption to prevent dehydration. It provides a balance of Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup> electrolytes and thickens the content of the digestive tract to limit electrolyte and water losses. During heat stress, it is recommended to provide feed during the night (when it is cooler) and only water and this solution to the animals at midday.
- Deltacarnitol, a liquid nutritional specialty delivering carnitine, sorbitol and plant extracts, boosts feed intake and increases feed digestibility. It could be also used after heat stress periods to help poultry recover.

## How to diagnose heat stress?

In order to evaluate the risk level of heat stress in farms, the CCPA Group has developed for livestock producers a specific heat stress application for smartphones (Iphone and Android)

entitled: ThermoTool, which can be downloaded for free on Apple Store and Google Play. Thanks to this application, breeders can anticipate heat stress over five days and quickly adapt and set up preventive measures, if necessary, in the management of their farm and for the animal nutrition. In addition, a dedicated sensor connected to the application ThermoTool was also developed by the company, in order to automatically record temperature and hygrometry in the farm buildings. This equipment is complementary to the application as it gives a real time heat stress risk from inside the farm buildings.

Figure 1 - Improved poultry weight (kg) with a supplemented\* diet.

