

Why

Due to global warming, an increase in the number of summer days (over 25 degrees) and tropical days (over 30 degrees) is expected. Periods of prolonged and high temperatures lead to heat stress in farm animals.

Within the poultry sector, heat stress is a hot topic with increasing concern. Indeed, chickens are more sensitive to higher temperatures than other farm animals due to their physiology. Heat stress has a direct effect on mortality rates and affects feed intake as well as nutrient utilization, reducing the number of eggs produced and kilograms of chicken meat. Moreover, heat stress also has an additional negative effect on egg and meat quality.

To reduce heat stress, several measures can be taken:

- **Optimizing barn climate through ventilation and cooling**
- Adjusting nutrition
- Administration of drinking water supplements
- Lowering occupancy density

During hot summer days, it is important to keep the climate in the barn optimal for poultry. Water-based cooling systems can prevent excessive mortality and better maintain technical results.

What

Poultry houses can be cooled with water during warm periods with high outside temperatures. There are 2 common systems for this in practice: **spray cooling** where a fine spray of water is introduced into the house and **pad cooling** where the incoming house air flows through a wet package (plastic or cellulose) placed in front of the air intake.

Spray cooling

Spray cooling is a common cooling system in practice. With spray cooling, a high-pressure spray system is usually chosen inside the barn. A low-pressure system can also be placed outside the barn. Both systems have the same operating principle: by introducing water into the air in the form of fine water droplets, the water evaporates. For this purpose, heat is extracted from the air and cools the air. In addition, the spray also has a cooling effect on the chickens themselves.

Spraying is controlled with pulse pauses, with more being sprayed as it gets warmer. In this way, you do not have to wait until the barn temperature is high, but can start from 24°C, for example, and systematically build up the spraying duration as the temperature rises.

Pad cooling

The pad cooling system works by evaporating water in the warm outside air. The outside air is drawn through a wet pad of treated cellulose or plastic. Above the pad unit hangs a tube that distributes the water evenly. At the bottom of the unit, the water is collected and reused. The outside air absorbs the water by evaporation, cooling about 6-10 degrees. This depends on the temperature difference between the outside air

and the barn air and the relative humidity.

It is important to closely monitor the relative humidity in the barn. After all, as with spray cooling, this system brings extra moisture into the house. If humidity is too high, the chickens can no longer release their excess heat. Also make sure the house is airtight, because the more air that passes through the pad cooling system, the greater the cooling effect on the warm outside air.

Cost

Prices for the installation of a spray cooling or pad cooling system depend on the size of the barn and the type (broilers, laying hens).

Spray cooling:

Broiler house (regular house – 50,000 birds):
€11,500

Laying hen house (aviary house – 30,000 birds):
€8,500

Path cooling:

Broiler house (regular house – 50,000 birds):
€29,500

Laying hen house (aviary house – 30,000 birds):
€16,000

Prices listed are indicative and based on July 2022 target prices.

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