Around the Rabbit Barn:
Keeping Rabbits Cool

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In the summer, heat is an enemy of commercial producers. It can lead to decreased production through a drop in feed intake. The drop in intake slows the growth of fryers, reduces milk production in does, limits the doe's ability to replenish body stores of nutrients lost during lactation and can reduce conception. The reduce conception can be the result of the poor condition of the doe and due to a reduction in male fertility brought on by high temperature.

Excessive heat can also kill pregnant does, especially those in their last trimester of gestation. Body heat is constantly generated as a waste product of normal metabolism in animals. This heat can be used to keep an animal warm in cool weather, but must be removed from an animal in warmer temperatures. Rabbits, unlike humans, get rid of excess body heat through radiation from the ears and skin. Humans radiate heat through their skin to a limited extent, but when the body temperature rises above the set point, they sweat. The water in sweat will evaporate from the skin, drawing excessive heat with it.

One problem with relying on radiation for removing excess body heat, is that heat flows from warmer to cooler. That is, if the air temperature is cooler than the rabbit, body heat is lost. If the air temperature is hotter than the rabbit, not only is body heat not lost, but some heat may actually be taken up by the rabbit. As the air temperature and the rabbit's body temperature come closer to matching, the flow of body heat from the rabbit is reduced. As a secondary response to remove excess body heat, rabbits will start to pant. Heat is lost in the air the rabbit exhales. As a means of removing excess body heat, panting is not very efficient.

As rabbits pant, they can begin to rupture the capillaries in their lungs leading them to literally drown in their own blood (Figure 1).

As the air temperature rises, rabbits exhibit different stages to indicate the degree of heat related problem developing. Starting at an air temperature around 80-85^{o} F, rabbits will reduce their feed intake and activity, stretching out in the cage to try to present the maximum surface area to radiate heat (Figure 2). As the temperature climbs to 85-95^{o} F, rabbits will begin panting. Above 95^{o} F, rabbits will be panting furiously often exhibiting water around their nose and mouth (Figure 3). Rabbits will tilt their heads arching their back in an effort to increase air flow to the lungs. By the time rabbits exhibit this posture they are at a crisis stage for overheating.

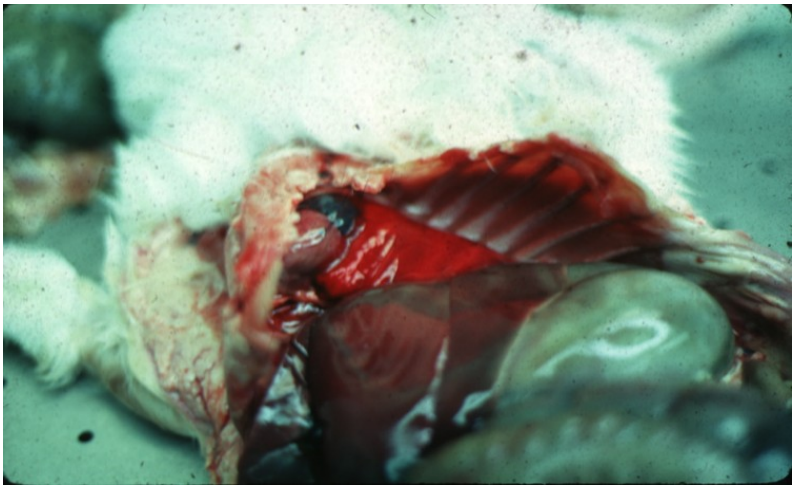

Figure 1. Notice the bright red rather than pink lungs on this rabbit that has died due to overheating.

Figure 2. A warm rabbit stretched out in her cage.

Figure 3. Rabbit panting with water around the nose and mouth.

It is critical to get the body temperature of rabbits panting with their head back and water around their mouths, these are rabbits on the brink of crisis. There are several things that can be done to keep rabbits cool, it is better to try to keep them cool than to cool down an

already hot rabbit. I use a misting system in my barns to keep the rabbits cool. Several other ideas presented by Pat Vaneck are listed at the end of this article.

To start off, the misting system is more effective in dry climates, like we experience in California, than in more humid ones. Water evaporation is the key to removing heat and in areas of high humidity, the air is already saturated with water and evaporation is a slow process.

I place the misters so that the spray is directed into a portion of the cage. As you can see from the spray pattern in Figure 4, the spray is directed at the back corners of four adjoining cages so that each cage has approximately ¼ of its floor space in the mist. This provides an area for the rabbits to lay and get wet while providing ample room for them to dry off. This also prevents the food and next box from getting wet. As can be seen in the picture, some rabbits are in the mist, some are stretched out in dry areas and some are actually at the feeders eating. This is during the heat of the day.

Figure 4. Position of a mister at the intersection of four cages in a back to back arrangement. The spray covers about ¼ of the cage. Rabbits can be seen both laying in the direct line of the water and in dry areas of the cage. Note the rabbits at the feeder, this during outside temperatures above 100º F.

In my A-frame barns, where the lower sides are open, I place the misters along the roof, just above the back of the cages (Figure 5). The spray is directed to the corners of two adjoining cages covering about ¼ the floor area of each cage, the same coverage in the back-to-back cages. The rest of the mist is directed under the roof and away from the isles. This not only provides the rabbits the opportunity to get wet, but also cools the air being drawn up from below the cages, cooling the entire barn. I have recorded temperatures 15 degrees lower inside the barn than in the shade outside when the misters are on.

I have my misters on a thermostat that will turn them on when the temperature rises and off when things cool off. I generally start them around 80º F early in summer, once the rabbits get use to the heat, I change this to 85º F. As the summer progresses, the length of time the misters are on increases and the slight adjustment in starting temperature helps reduce the amount of time they are on.

The down side to mist systems is there is a lot of water in and around the barn. In the large barn with back-to-back cages, there were concrete floors. The excess water simply ran out of the buildings. In the A-frames, excess water soaked into the ground under the eves. The cages do tend to get wet and care must be taken to make sure the rabbits feet are not staying wet for long periods of time. The wet fur on the feet does increase the likelihood of developing sore hocks. Under the misters there also tends to be accumulations of hair that if not removed will remain wet and can also lead to the development of sore hocks. These two minor nuisances are outweighed by the potential loss of animals due to heat stress.

Figure 5. The position of the misters in the A-Frame barn.

I have also planted fast growing willow trees around my barns to help shade them. Shade can make a world of difference by reducing the amount of sunlight reaching the barns (Figure 6). The barns and ground around the barns are a source of radiant heat if the sun is allowed to make direct contact. The trees you see grew from 3-4 foot cuttings in one summer to shade all the barns.

Figure 6. Trees planted between the A-frame barns provide shade to cool the barns and ground around them.