

SPRAY COOLING DAIRY COWS
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Dairy cattle produce less milk and experience reproduction difficulties when exposed to conditions causing excessive heat stress. Techniques to protect cows from heat stress are:

- X provide shade;
- X provide fresh, cool drinking water;
- X provide air exchange in confinement;
- X sprinkle (wet) cows with water;
- X increase air velocity.

In tie stall barns, increasing air velocity is more practical than sprinkling. Freestall barns, yards with outside bunks, and holding areas can benefit from sprinkling. Sprinkling systems should apply water in large droplets (not a mist) to the cows' backs, wetting the cows to the skin. Cooling occurs when body heat evaporates the water. Research in Florida, Kentucky and California has demonstrated positive benefits from this process. Increasing air velocity (using fans) aids the evaporation process and thus improves cooling. However, adding fans and controls increases the system's cost.

Several factors should be considered before installing a sprinkling system to cool dairy cows. The following management issues will affect the selection of system components.

Water in Feed and Stalls

Sprinklers should be positioned so as to wet the cows while keeping stall beds and feed dry. Prevailing winds and/or fans could cause water to drift into stalls or onto feed. Aim the fans used near nozzles to minimize drift problems or turn them off while the sprinklers operate.

Water in Manure and Runoff

Not all of the cooling water applied to cows will evaporate. Some sprinkled water will contact manure. Can the manure handling system cope with the extra volume of water in the manure? If the barn slopes, where will the contaminated water go? Will more frequent barn cleaning be needed to keep stall beds clean when the manure is wetter?

Water Supply and Delivery Capacity

When all sprinklers are operating, the water supply system must be able to deliver sufficient water at the design pressure and satisfy all other farmstead water needs (drinking water, flush water, parlor/milkhouse needs, farm home, etc.) which could occur simultaneously. When the water supply flow rate (gpm) is limited, consider a reservoir for water accumulation during off periods. See Figure 21, page 25 of *Heating, Cooling and Tempering Air for Livestock Housing* (MPS-34) for a schematic on how to arrange a reservoir system.

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