

The Effects of Heat Stress on the High Producing Dairy Cow

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Introduction



- Cows are most efficient at 40 to 70°F
- Daily temperatures above 85°F
 - Reduce milk production
 - Milk fat depression
- High humidity increases these effects

Heat Stress & High Humidity

- Profound effects on the dairy cow

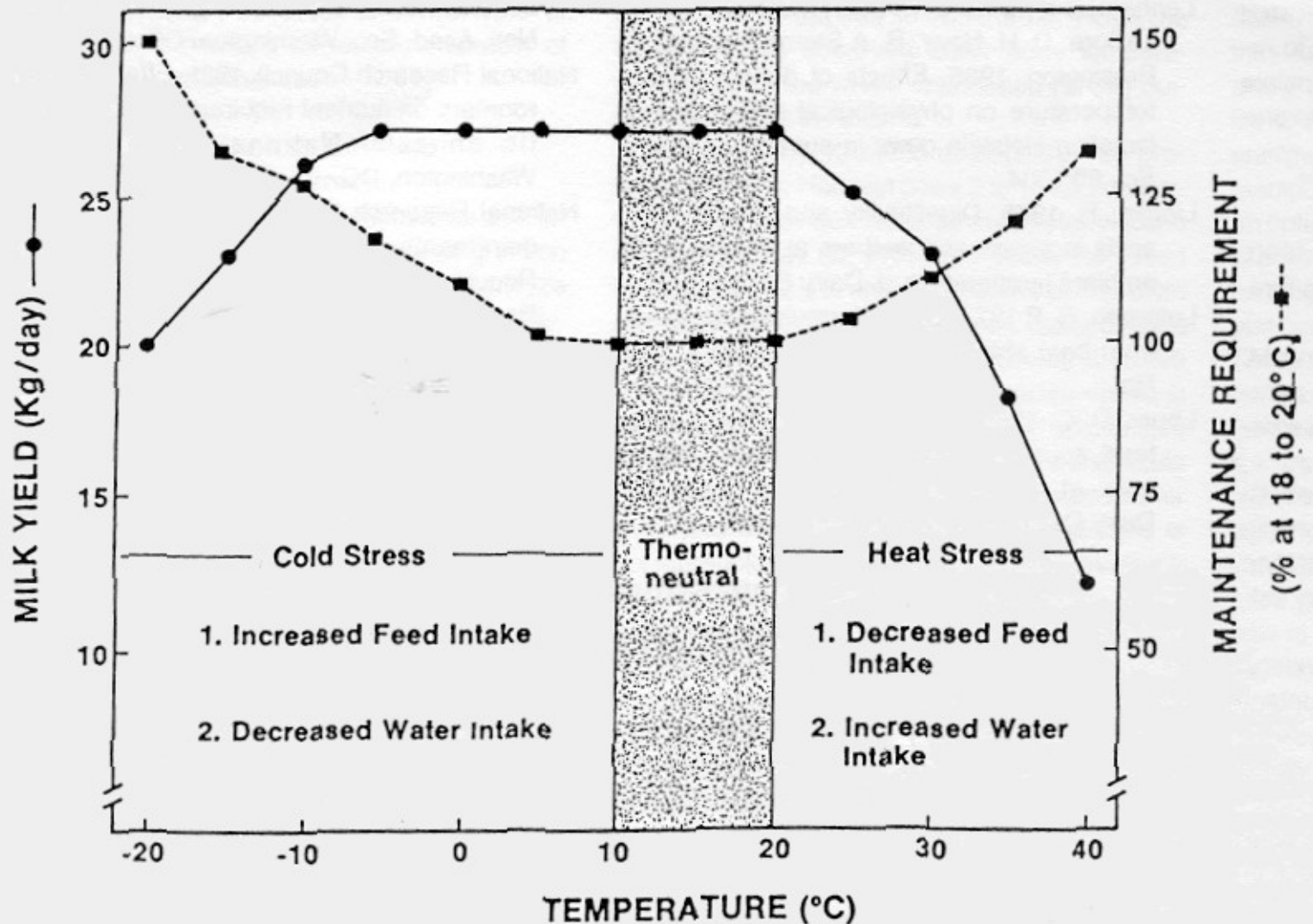
- ↓ Appetite
- ↓ Current production
- ↓ Milk fat production
- ↓ Future milk production



Depressed Dry Matter Intake

- Degree of DMI depression depends on the digestibility of the diet – especially the forage component
 - If fed separately, forage intake will be selectively reduced compared to grain

Effect of Heat Stress on Milk Yield and Maintenance Requirements



Other Effects of Hot Weather

- ↓ Rumen pH (more acidic)
- ↓ Cud chewing and gut motility
 - Reduces milk fat
 - At temperatures above 70°F
 - 10° increase in daily high causes a 0.1% drop in milk fat
- ↑ Sweating and panting
 - Water and electrolyte loss

What to do? – Feeding

- Feed TMR or forage more frequently during cooler periods of the day
- Feed a TMR to avoid selective eating
- Provide a cool area for forage feeding
- Possibly sprinklers over feeding areas



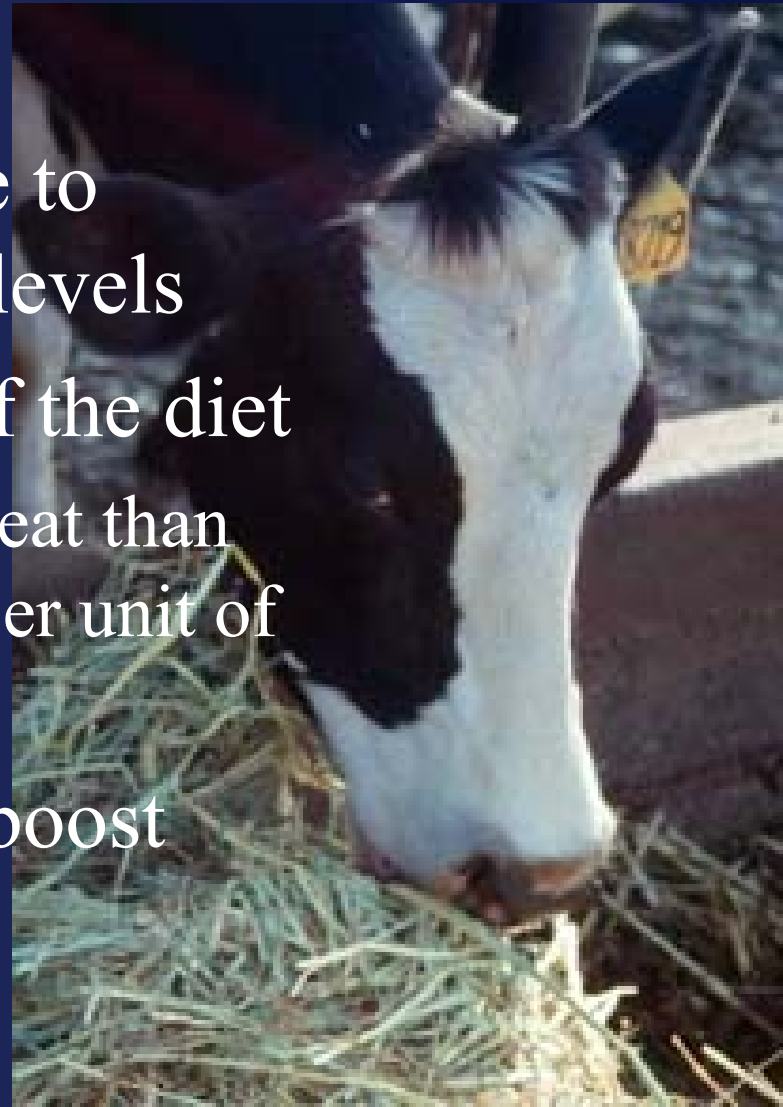
What to do? – Feeding, cont.

- Check the bunk often
 - Once in the feed bunk, silages (especially wetter silages) heat and mold quickly in the summer



What to do? – Ration

- Use best forage possible to maintain required fiber levels
- Raise nutrient density of the diet
 - Forages generate more heat than grain during digestion (per unit of energy consumed)
- Add fat to the ration to boost energy intake



What to do? – Ration cont.

- Feed sodium bicarb to partially make up for decreased rumination (0.25 to 0.33 lb/d or .75% of total ration DM)
- Increase these minerals to make up for losses in sweat
 - Requirements are not well-defined
 - K up to 1.5%
 - Na up to 0.4%



What to do? – Facilities

- Keep cows as cool as possible
- Provide plenty of cool, clean water
 - Close to feeding areas
 - Near milking areas



Final Points

- Maintain forage quality and intake
- Maintain water quality and availability

