MLA R&D update

Productivity benefits of shade

Meat & Livestock Australia funded project B.FLT.0345 during the summer of 2007/2008 to examine the effects of shade on feedlot cattle performance in Central Queensland

Location

- Research was conducted at the former Brigalow Research Station, Theodore, Queensland
  - Non-implanted Angus steers (397 kg) were fed a dry-rolled wheat-based diet for 120 days on feed
  - Shade (3.3 m^2/steer) was provided by 80% solar block-out shade cloth aligned in a north-south orientation at 4 m height.
  - A 21-d period of increased heat load (d 71 to 91) induced significant heat load in the cattle. Cattle were exposed to ambient temperatures in excess of 30°C for 8 to 10 h each day during the heat wave.
  - The mean ambient temperature for the 21-d period was 29.7°C between 0800 h and 1800 h, and 23.4°C between 1830 h and 0730 h. Thus, there was only minimal night time cooling.

Treatments

- There were two experimental treatments (main effects compared):
  - **Control** – open feedlot pens with no shade
  - **Shade** – shade provided at 3.3 m^2/steer

Results

Treatment	No Shade	Shade	% Change	*P < 0.05*
Pens, n	10	10	-	-
DOF	120	120	-	-
Initial body weight, kg	396	398	-	-
Final body weight, kg	578	596	+3.1%	*
Dry matter intake, kg/d	10.0	10.3	+3.0%	*
Average daily gain, kg/d	1.51	1.65	+9.3%	*
G:F	0.152	0.160	+ 5.2%	*
Hot carcase weight, kg	315	321	+ 1.9%	*
Water intake	53.1	49.3	-	-

Further Information: Gaughan, J. B., S. Bonner, I. Loxton, T. L. Mader, A. Lisle, and R. Lawrence. 2010. Effect of shade on body temperature and performance of feedlot steers. J. Anim. Sci. 88:4056–4067.

MLA Project B.FLT.0345 https://www.mla.com.au/research-and-development/reports/2009/assessment-of-betaine-and-glycerol-as-ameliorants-of-heat-load-in-feedlo-t-cattle/

Animal Welfare

- Shaded pens had lower body temperatures and mean panting scores during hot conditions.

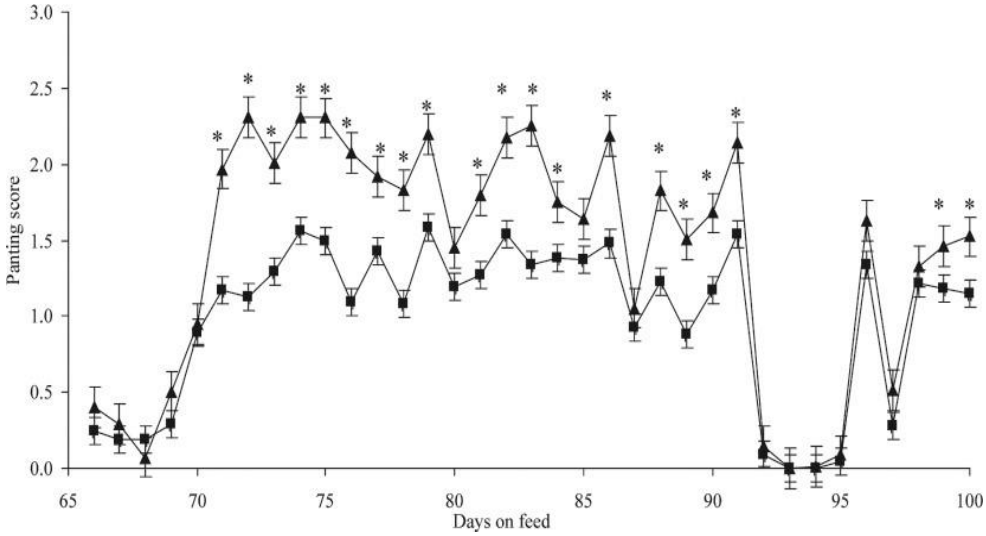

*Figure 1. Panting scores at 1200 h of feedlot steers with (■) and without (▲) access to shade over a 45-d period, which includes a 21-d period (d 71 to 91) of increased heat load. *Indicates a significant difference among treatments within a day (P < 0.05).*

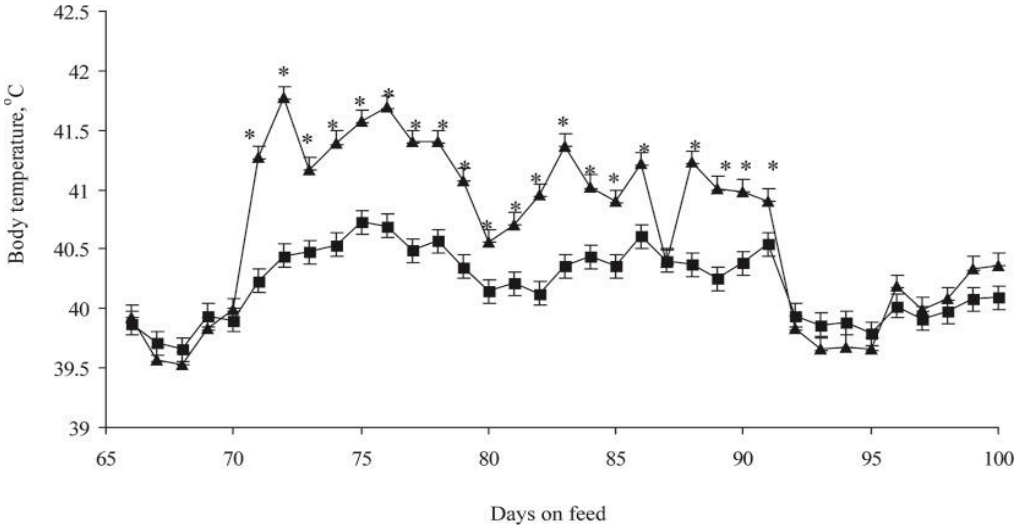

*Figure 2. Maximum body temperature of feedlot steers with (■) and without (▲) access to shade over a 45-d period, which includes a 21-d period (d 71 to 91) of increased heat load. *Indicates a significant difference among treatments within a day (P < 0.01).*

Conclusions

- Shade is beneficial for animal performance and welfare.
- Cattle in shaded pens have lower panting scores and body temperature.
- Providing shade to cattle at 3.3 m^2/head resulted in an extra 6 kg of hot carcase weight revenue. This was driven by an extra 36 kg per head of dry matter intake over the feeding period.
- Lot feeders should apply site-specific values to determine economic feasibility, including advice from your consultant veterinarian on shade's effect on morbidity and mortality.