



STRESS: THE THIEF THAT STEALS POTENTIAL

Undoubtedly, stress is a topic to which almost everyone can relate and is one of the top issues facing the cattle industry today. Management practices should always be targeted towards reducing the likelihood and severity of stress in cattle at every opportunity. Stressed cattle experience reduced performance, impaired reproduction and health, and even death. Exposure to stress can also result in significantly lower carcass quality and profit potential. Stress can completely negate an animal's ability to ever achieve its genetic potential. After working with Wagyu cattle for the past 25 years, I have witnessed that this amazing breed to be no more vulnerable to stress than any other breed, but they do have far more to lose when stressful events occur.

A comprehensive definition of stress is “symptoms arising from a situation or environment that is not normal for the animal.” Those factors contributing to stress known as stressors may be grouped into:

1. psychological stressors such as co-mingling or social mixing, novel environment, and fear;
2. physical stressors such as disease, injury, fatigue, hunger and dehydration; and

3. physiological stressors which entail a deviation from normal hormonal functions caused by psychological and physical stressors.

Upon a stress triggering episode, several responses are activated in the animal's brain, ultimately leading to the production and release of the “stress hormones” adrenalin and cortisol from the animal's adrenal glands.

Adrenalin acts primarily in the short-term as the fight or flight response is triggered resulting in increased heart rate, blood pressure and energy level. Cortisol is secreted in a more gradual manner throughout the day during extended periods of stress, and elevated circulating cortisol leads to severe physiological problems such as immunosuppression, impaired growth and reproduction, and suppressed milk yield.

Adrenalin acts as the primary culprit affecting carcass quality by causing the body to mobilise intramuscular fat (IMF) cells into readily available energy, primarily in the form of glycogen, thereby enabling muscles to “burst” into action. This process occurs whether the energy is actually needed or not.

Bottom line is adrenalin drains IMF out of cells resulting in less marbling.

Both adrenalin and cortisol levels will eventually return to normal levels after stressful events subside with recovery time, depending on the intensity and duration of stress incurred. Since cortisol is secreted more gradually, the time required to return to normal levels is also more gradual and may take as long as 8-12 weeks.

Researchers at Oregon State University were among the first to verify that cattle indeed remember stressful situations. When previously stressed cattle were simply exposed to the possibility of dealing with the same source of stress a second time, they became agitated and defensive with a 30% increase in cortisol levels. Cattle that had never been exposed to this same perceived stress did not show any signs of stress and even appeared highly curious about what was going on. So, cattle have excellent memories regarding stressful events and may become immediately stressed when confronted with the likelihood of having to deal with that particular stressor again.

POTENTIAL SOURCES OF STRESS INCLUDE:

1. **Lack of proper employee “buy-in”** and training in care and management of cattle
2. **Environment** - heat, cold, wind, humidity, precipitation, mud
3. **Physical discomfort** - pain
4. **Handling:** movement, transport
5. **Nutritional:** abrupt ration changes, feeding frequency, imbalances
6. **Fear:** fearful environment
7. **Weaning:** separation anxiety, new diet, new surroundings
8. **Disease or injury**
9. **Unfamiliar surroundings** giving uncertainty
10. **Lack of a consistent routine**
11. **Social competition**, overcrowding
12. **Noise**, bright lights
13. **Excitement**, running

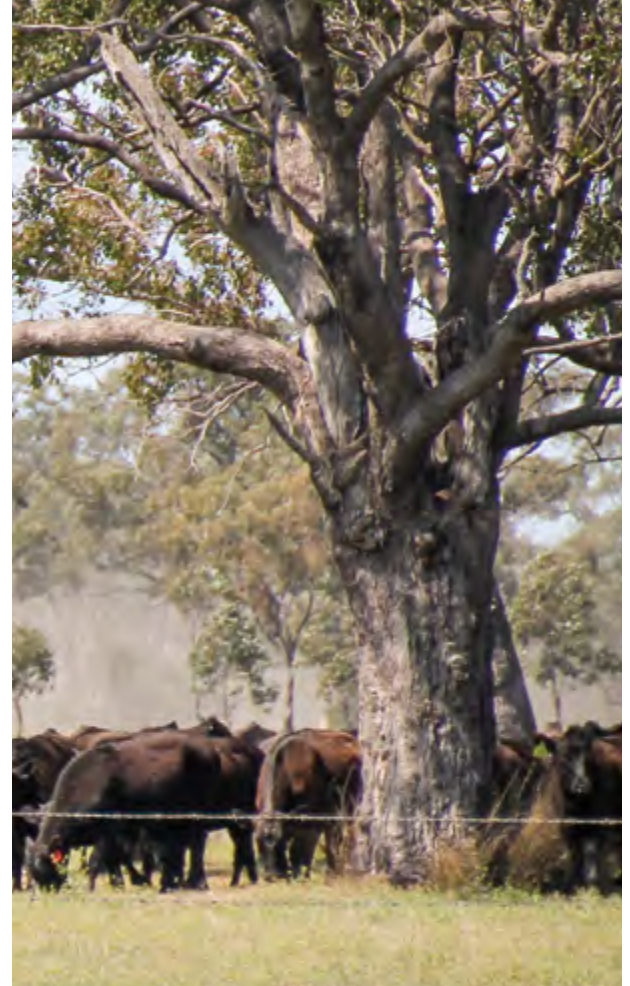
Though we can obviously never eradicate cattle stress, we can certainly minimise it.



MANAGEMENT STRATEGIES TO HELP MITIGATE STRESS ARE

1. **Investing in those individuals** responsible for the daily care and management of your cattle. Proper training and education of employees seasoned with genuine respect and appreciation can pay huge dividends and cannot be undervalued. Any “expert” or consultant retained by a producer is only as effective as those caring for the cattle on a daily basis.
2. **Protection from environmental stress.** Environmental stress can obviously be a strong initiator of stress in cattle. Though producers do not need to build mansions for their herds, cattle should at least have adequate shelters/structures in place to help minimise the harmful effects of harsh weather. Our company participated in a feedlot study in 2014 in the Midwest in which F1 Wagyu x Angus cattle lost nearly 12% of their marbling when exposed to 14 days of blizzard-like conditions without any shelter. That 12% loss in marbling could never be re-captured as the cattle were harvested after the 2-week period.
3. **Low-stress handling.** This approach to handling Wagyu cattle is a must for every Wagyu operation as these very docile cattle respond to handlers whose approach is just as docile. Learning to take the time to truly observe and interpret what your cattle are telling you is also so very critical in learning to recognize the triggers of stress. Factors such as mobility (walking with ease versus a stiff gait), appearance (body condition, hair coat, dull or bright eyes), aggressiveness when eating or foraging, cud chewing when resting, manure texture, and others can provide excellent signs of potential stress in cattle.

4. **Develop the mindset of your cattle.** This type of mindset can go a long way in helping producers protect their cattle from various sources of stress. When I tell producers to not expect their cattle to drink the water if they're not willing to do so, I usually get a funny look, yet we know cattle do much better and are much healthier with access to fresh, clean drinking water.
5. **Avoiding sudden changes in feeding/feed.** Abrupt changes in diet or the method in which it is delivered can induce nutritional stress. Gradual transition to new feeds or rations is always the best policy. Ideally, cattle should also be fed at the same time(s) each day as well.
6. **Feeding high quality and properly balanced rations** at every production stage also prevents potential nutritional stress and results in a healthier animal that always performs better whether gaining weight, breeding back or producing as high a quality carcass as possible. This approach requires the regular testing of forages and water.
7. **Strive for consistency in every facet of the operation.** Much like children, cattle also thrive in consistent and structured environments. To become a truly successful producer, consistency in caring for your cattle must always be placed over your own or your employee's convenience.
8. **Avoiding overcrowding** is always recommended to minimise competition and social stress while maximising consumption and weight gain. Overcrowding is also highly correlated with increased incidence of disease and injury.
9. **Minimise social stress.** Any Wagyu breeder can attest to the fact that Wagyu cattle are very social creatures. Managing them to accommodate this trait can be very beneficial including the practice of never moving an animal by themselves to another group if possible. Most successful finishing operations move cattle by pens throughout the feeding period with the same pen remaining together through the duration.
10. **Avoiding bright lights and noise.** I've visited numerous Japanese Wagyu finishing operations that maintain dimly lit barns as they have learned bright lighting can trigger stress. These same producers also attempt to minimise any source of noise and some even have classical music playing in their finishing barns.





Top Wagyu producers worldwide understand the consequences of stress on their cattle and attempt to minimise any and all potential sources of stress which might exist since they have learned that stress is like a thief seeking to steal potential profits whenever possible.

AUTHOR
Dr Jimmy L. Horner, Ph.D., P.A.S.

Diplomate ACAN Protocol Technologies/Protocol Naturals, USA

MORE INFORMATION

Contact the Australian Wagyu Association for further information or if you wish to republish any part of this article

 Communications@wagyu.org.au or  +61 2 8880 7700