

Drought and climate adaptation program

GrazingFutures Case Study

Humpyback havoc in sheep

Background

Humpyback disease has been observed in Queensland sheep for many years, yet there is limited knowledge and research available about the cause and treatment of this condition. Humpyback most commonly occurs in western areas of Queensland when sheep are mustered in the hot and humid months. Significant stock and production losses from this disease have been recorded. With an increasing number of producers re-entering the sheep and wool industry, particularly in western Queensland, understanding the disease is a critical first step in preventing and mitigating the industry impacts of humpyback.

The disease is generally characterised in sheep by difficulty moving the hind limbs, arching of the back, lowering of the neck, shortened steps and an inability to walk. The animals appear to be more susceptible to heat and typically seek shade. Reports vary significantly about the recovery rates regardless of treatment. Experienced producers and industry representatives have observed the disease appears to have developed new clinical symptoms in recent years, becoming more prevalent and with higher mortalities.

The cause of humpyback is unknown. One theory is that the disease occurs when animals consume specific plants which are more readily available during humid periods with above average temperatures. There are no scientific findings that support these hypotheses, emphasising the need for further research to be conducted.

At the beginning of 2020, Longreach based GrazingFutures team member, Amelia (Milly) Nolan, developed a short survey for producers who have observed humpyback on their properties. The main areas of enquiry were around location of properties, number and classes of sheep affected as well as the grazing environment and management practices. This GrazingFutures led investigation focused on determining the extent of the problem and disease patterns, while providing industry data to support future research funding submissions.

Note: With the small pool of survey participants (<20) this data is limited and should only be used in conjunction with other information when forming decisions around sheep management.

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Survey results

Location of diseased sheep:



Figure 1. Locations where humpyback was observed. Sheep affected by humpyback appear to be mostly clustered in western Queensland.

- 60% of affected sheep were homebred and 40% were purchased from elsewhere. Locations of purchased sheep varied across eastern Queensland and New South Wales.
- Affected purchased sheep had been on property as little as four months and as long as 2.5 years.



Figure 2. Humpyback was observed in a paddock with this pasture yield and feed quality. However, it is worth noting that sheep running in similar paddock conditions appeared to be free from humpyback.

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Humpyback incidence by class of sheep:

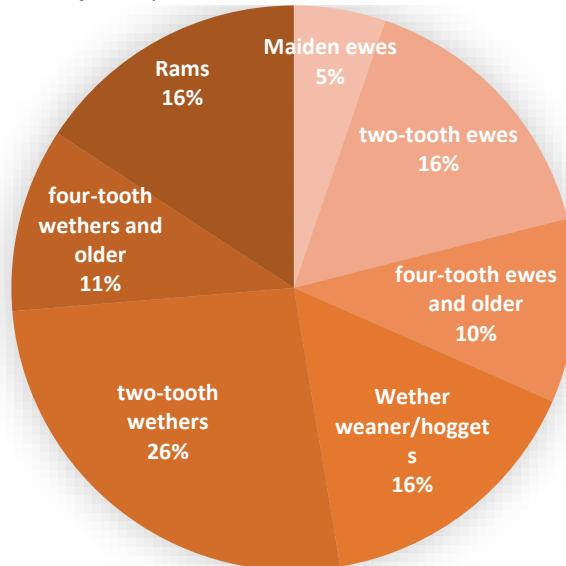


Figure 3. Distribution of classes of sheep affected by humpyback. Classes excluded from this graph (e.g. ewe weaners) indicate no reports of diseased sheep in that class.

- The majority of animals affected were two-tooth wethers. Prevalence of humpyback in males was greater than in females (Figure 3).
- On average, 10% of sheep in a mob were affected by humpyback. The maximum prevalence of humpyback in a single mob was 71% (in rams).
- 70% of mortalities recorded were ≤ 20 head, however there were also reports of 300–500 and more than 500 sheep deaths from single properties.
- 63% of participants reported that sheep affected by humpyback did not completely recover.
- 75% of affected ewes were dry, 25% were pregnant and none were lactating.
- 50% of properties reported multiple mobs affected and 50% reported a single mob affected.



Figure 4. Sheep showing clinical signs of humpyback.

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Temperature and humidity:

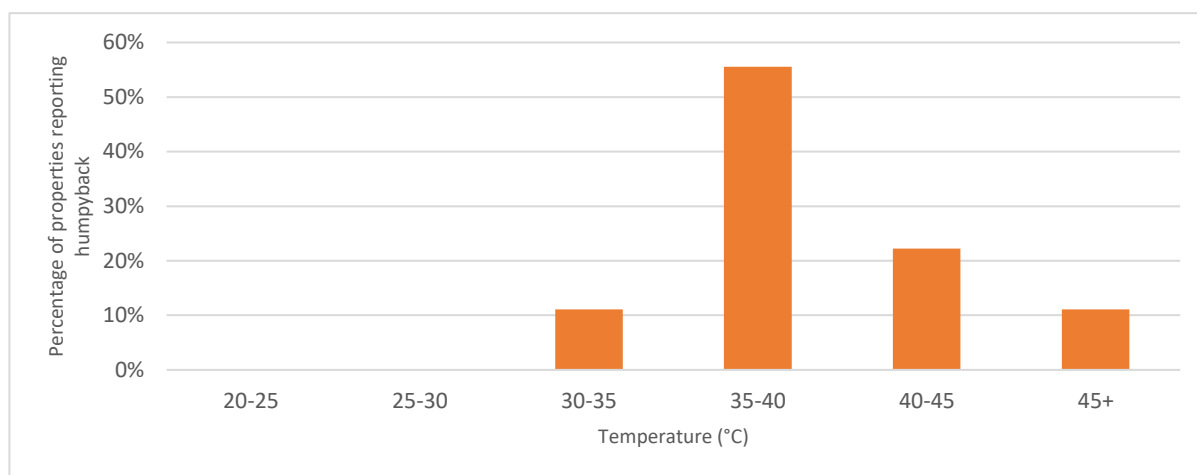


Figure 5. Temperatures recorded when humpyback was observed.

- Over half (56%) of the participants reported the highest incidence of humpyback when temperatures ranged from 35-40°C. 90% of the last 30 years recorded temperatures exceeding 40°C for one-day maximums throughout January, February and March (Figure 6).
- 78% of properties reported high humidity when humpyback was observed.
- Reports of recent rain varied significantly.
- Survey participants observed animals grazing pigweed, button grass, Mitchell grass, buffel grass, gidyea burr, tar vine, annual saltbush and Flinders grass.
- Note: There is no known correlation between these plant species and humpyback.

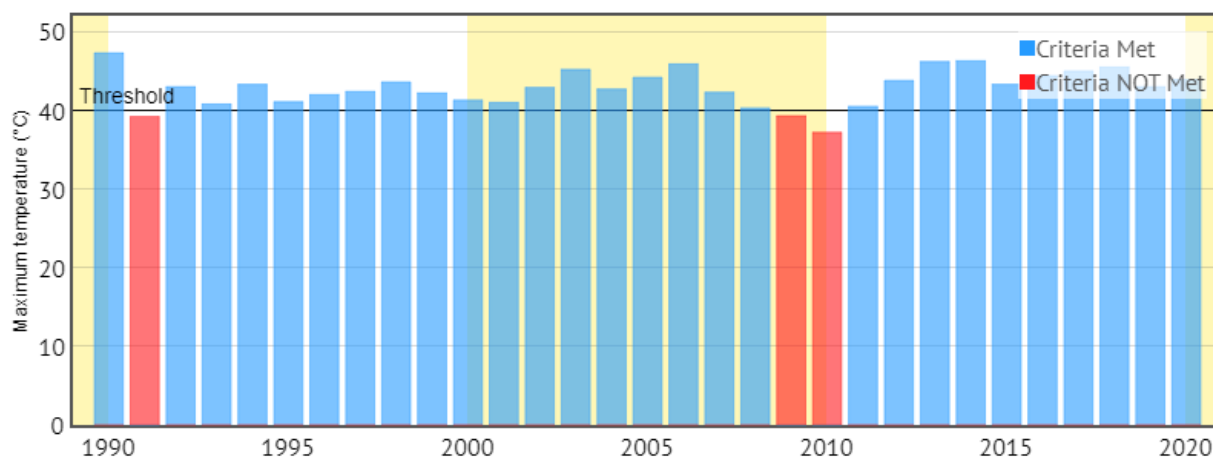


Figure 6. Graph displaying the average 1-day maximum temperature in January, February and March for the last 30 years. More than 90% of years' experience maximums above 40°C.

**Longreach is used as an example of temperatures in Central West Queensland in the months humpyback is most prevalent.*

**Data sourced from CliMate Australia.*

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Management practices:

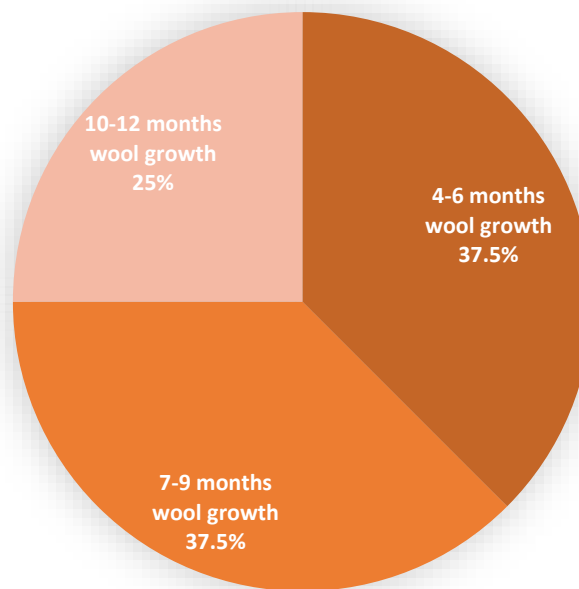


Figure 7. Amount of wool growth on sheep affected by humpyback. No incidences of humpyback in sheep with less than 4 months wool growth were reported.

- 11% of properties reported supplementation was provided to the affected sheep
- 11% of properties reported predator activity
- All properties who responded to the survey observed the onset of humpyback when mustering for shearing or crutching, however in some cases it was observed the animals already had the condition.
- Leaving animals alone was the most typical form of treatment. Other treatment included providing hay, providing water and shearing the animals to aid recovery.

Other key producer observations:

“Seems to be more prevalent in recent years” – Producer from Longreach.

“More common in longer wool sheep” – Producer from Stonehenge.

“All sheep were in good condition” – Producer from Moonie.

“Affected sheep had more access to shorter summer herbage and weeds” Producer from Stonehenge.

“When the animal is stressed the condition worsens” – Producer from Ilfracombe.

“If left alone losses can be light” – Producer from Barcaldine.

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Key survey findings

This survey provided the following insights into the humpyback condition:

- The condition is mostly prevalent in hot and/or humid conditions.
- It mostly occurs in western Queensland.
- Mustering has been known to trigger clinical signs of humpyback.
- The only known management is to leave affected animals alone and reduce stress.

Where to from here?

There are still many unanswered questions and the GrazingFutures team will continue to capture industry information and experience to identify the cause and conditions leading to humpyback. Once more is known about this condition, management and mitigation strategies can be developed.

Moving forward, the survey will be expanded by the GrazingFutures team to encourage more property owners to participate, including those that have not observed humpyback. Identifying where humpyback is *not* occurring is equally as important as determining where it *is* prevalent.

Autopsies are of vital importance to determine cause and manner of death and detect any other signs of disease and injury. There have been minimal autopsies performed in the past on animals exhibiting clinical signs of humpyback. However, Wallerian degeneration of the central nervous system, particularly the spinal cord, has been a common feature in previous reports. GrazingFutures team members, local vets and Biosecurity Queensland staff will continue to collaborate to perform autopsies on animals that exhibit clinical signs of humpyback. Producers with sheep showing clinical signs of humpyback will be encouraged to communicate with these organisations. Plans can be developed to capture disease history and producer observations, and where possible, perform autopsies on affected animals. It is understood that sheep are a valuable commodity and producers may be reluctant to perform autopsies when there is a chance they will recover. However, in order to progress our understanding of humpyback, there is a real need in the Queensland sheep industry for more autopsies and detailed investigation on the disease.

Gathering observations and autopsy reports is the first step in identifying the cause and successful treatment of humpyback, as well as building a case to attract research funding in the future. Producers observing humpyback are urged to record observations and contact the local DAF staff or veterinary practice.

Created by: Amelia Nolan, DAF Longreach

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