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Check sheep for signs of lice

FOLLOWING good winter rains in many parts of Queensland, livestock movements have increased significantly as producers buy and sell stock.

To mitigate biosecurity risks on-farm and maximise wool growing profitability, it is vital that producers are aware and vigilant with sheep lice checks.

Department of Agriculture and Fisheries (DAF) Leading Sheep Extension officer Milly Nolan, said whether you're buying or selling sheep, it's imperative you check for lice to mitigate spread across properties and livestock.

"The easiest way to check for lice, is to identify sheep that have rubbed wool across the commonly infected areas on the back, shoulders and mid-side," Miss Nolan said.

"A major cause of lice spread is through the purchase of sheep from other properties.

To lower this risk, all producers are encouraged to actively manage the treatment of lice to prevent their introduction."

Upon purchasing new stock, producers must take notice of key conditions of the sheep that would put them at higher risk of lice infestations.

These include sheep:

- with short wool which have a higher risk of transfer;
- that have been in close contact, including yarding;
- that have been exposed to warmer, shaded conditions that can encourage lice to move to the wool tip.

To mitigate biosecurity risks on-farm and maximise wool growing profitability, it is vital that producers are aware and vigilant with sheep lice checks.

Being aware of these risks when bringing new mobs of sheep onto the property is crucial.

Producers are urged to have effective biosecurity plans in place to maintain wool value, industry relationships and meet animal welfare standards.

"The implementation of biosecurity standards on-farm starts with a commitment to preventing the introduction of lice," Miss Nolan said.

"Good records and monitoring will control mass infestations and reduce the risk of lice spreading from property to property when stock are bought and sold.

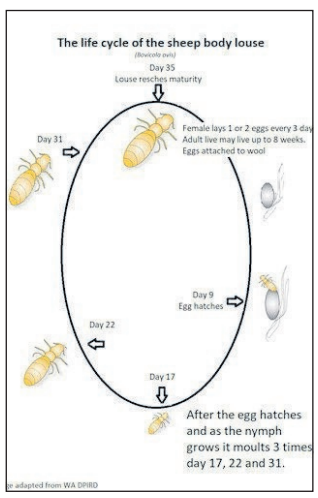
"To strengthen biosecurity and mitigate risk throughout the supply chain, it's vital that all sheep producers are aware of the risks and they share the information."

All purchased sheep should travel with a National Sheep Health Statement (NSHS), detailing any signs of lice at time of purchase or at last shearing, the date of last shearing, and the name and date of any external parasite treatment used.

There is a wide range of resources available, including treatment methods and lice lifecycles that producers can utilise to learn more about lice and assist in their management.

To learn more, access Australian Wool Innovation's 'LiceSense' guide online at wool.com, the LiceBoss website liceboss.com.au or you can email leadingsheep@daf.qld.gov.au.

SMALL LICE CAN HAVE BIG ANIMAL WELFARE AND ECONOMIC IMPLICATIONS



AS WINTER draws to a close and we move towards Australia's warmer months, it's important that producers are continually monitoring sheep for lice.

Sheep lice are small insects that can have significant animal welfare and economic implications for producers.

Department of Agriculture and Fisheries (DAF) Leading Sheep Extension officer Jed Sommerfield, said there are three species of lice that can impact flocks, with the most common being the sheep body louse.

"Often referred to as 'chewing lice', sheep body louse are small, pale insects with a reddish-brown head, that are generally less than 2 millimetres in length," Mr Sommerfield said.

"Spending their entire lifecycle on sheep, the sheep lice feed on skin cells, wax and bacteria on the skin surface causing severe irritation that leads to sheep biting, rubbing and pulling their fleece.

"Infestations can reduce the wool produced by up to 1 kilogram per head in sheep, decrease wool quality and yield and causing more wool to be placed in inferior lines because of colour and cotting."

Spreading almost exclusively through sheep to sheep contact, most sheep lice die within a week after separation from the host.

"Though sheep lice don't reduce body weight in sheep, those suffering from poor nutrition and disease often develop heavier infestations and as a result, greater wool loss," Mr Sommerfield said.

For more information, contact: leadingsheep@daf.qld.gov.au.

Leading Sheep is an important partnership between DAF and Australian Wool Innovation and is supported by AgForce.

SHEEP LICE

- While biting lice are most commonly found on Merino sheep, they can be found in other breeds. Sheep breeds that produce hair or are self shedding, have a different type of skin and fibre which produces different conditions which means that they are poor hosts, however lice are still able to survive on some animals.

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Irrigation options in WA

CENTRE pivot irrigation developments in the Kimberley and Pilbara are creating new opportunities for pastoralists.

Small-scale irrigated agriculture is being developed to intensify cattle production in northern WA through the supply of high quality fodder or to diversify to high-value production.

The concept often referred to as 'mosaic agriculture', utilises small areas of irrigated forage to supplement the dry season feed gap either through cut and carry feeding systems (hay, haylage or silage) or through direct grazing.

Other drivers for this investment include reducing the need for purchasing expensive hay and the opportunity to access new markets.

The area under irrigation across the Pilbara and west Kimberley (outside the Ord River precinct) has increased from about 600 hectares in 2006 to over 4000ha in 2020.

Expansion is continuing in incremental stages, with several new developments being planned.

However, the area under irrigation will always remain a minor land use in spatial terms as it is constrained by water resources.

Potential water supplies include surface water capture, shallow or deep unpressurised groundwater (requires pumping) and artesian or semi-artesian groundwater systems, which generally do not require pumping.

Despite the comparatively small area under irrigation, the benefits and economic impact of mosaic agriculture can be substantial for the northern beef industry and the economy generally.

To assist this developing industry, the Department of Primary Industries and Regional Development (DPIRD) has conducted an applied agronomic R&D program with funding support from Meat & Livestock Australia (MLA) to help identify the most productive pasture and fodder crop options.

While there are a range of species that can potentially be grown in northern WA, many do not produce sufficient biomass (or grain) to be economically viable options.

DPIRD research scientists Geoff Moore and Clinton Revell and development officer Sam Crouch conducted field trials between 2016 and 2019 on commercial centre pivots and on a specialised pivot at Broome, that allowed more detailed experiments. The objective was to quantify the production potential, and feed quality, for a range of irrigated forage options and evaluate the economic benefits for pastoral businesses.

Tropical perennial grasses and forage sorghum are best adapted to the high temperatures experienced in the region from October to April.

When grazed these grasses are best utilised in short duration rotational grazing systems but can also be grown out for hay production. In rotational grazing systems the period of rest post grazing is longer in the cooler 'dry' season months than in the hotter 'wet' season months due to lower pasture growth rates.

DPIRD Development Officer Samuel Crouch inspects irrigated tropical grasses in the Pilbara region, Western Australia.

> Research work in northern WA is quantifying the production potential of irrigated forages and their potential to improve pastoral business profitability.

Rhodes grass (*Chloris gayana*) is the most widely grown species for perennial pastures, but a high level of management is required to maintain good feed quality.

In well-managed rotational grazing systems, Rhodes grass leaf has a metabolisable energy (ME) of 9-9.5MJ ME/kg dry matter and 200-400kg cattle typically achieve a growth rate of 0.6-0.7kg liveweight per day (up to 0.9 kg per day in some circumstances).

Annual hay yields (10-12 per cent moisture) of 30-35t/ha are readily achievable and over 40t/ha is possible with high applications of nitrogen fertiliser. However, there is a trade-off between forage production and quality because energy and protein levels decline as plants mature and produce more lignified stem relative to leaf material.

Panic grass (*Megathyrsus maximus*) was shown to be another perennial grass option in these systems. Although it has a higher fertility requirement than Rhodes grass, its nutritive value is consistently higher than Rhodes grass, partly because of it being slower to go to seed. Successful forage crops include hybrid sorghums (*Sorghum spp.*) and maize (*Zea mays*), but these crops need to be sown annually and are more likely to be used in a cut and carry system such as silage, rather than for direct grazing.

The project has defined seasonal production levels and nutritive value for a range of forages and management systems. The results are included in a comprehensive extension bulletin (DPIRD Bulletin 4915 "Mosaic Agriculture - a guide to irrigated crop and forage production in northern WA").

In collaboration with Masters' student Renata Tognelli at the University of WA, the team investigated the economics of small-scale irrigation developments. This study found that while a fully integrated irrigation system that produced high quality feed was profitable, it would take time to recoup the cost of investment.

Development costs may be as high as $25,000/ha depending on the location and system design. The study evaluated the impact of a single 40ha centre pivot irrigation system and found it would take between seven and 13 years to recoup the investment.

Although small-scale irrigation developments can be profitable, investment decisions need to be considered carefully, as profitability is highly sensitive to feed quality, yield, and market price of cattle.

Dr Clinton Revell, Senior research scientist, DPIRD South Perth, 0417 183 858.

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Extent of rural debt revealed

QUEENSLAND'S 2019 Rural Debt Survey released in August 2020 provides a snapshot of the financial state of rural industries for both industry and government.

The Queensland Rural Industry and Development Authority (QRIDA) undertakes the survey biannually with the Queensland Government Statisticians Office (QGSO) and all major rural lenders, to ascertain the extent, nature, and size of rural debt in Queensland.

The survey shows total rural debt reached $19.1 billion in 2019, an increase of 10.8 per cent since the 2017 survey. Over this period beef industry debt which represents 56pc of total rural debt, increased by 14.1pc.

Queensland's 2019 Rural Debt Survey shows total rural debt reached $19.1 billion in 2019, an increase of 10.8 per cent since the 2017 survey.

Average debt per beef borrower increased by 14pc to $1.4 million. Whilst a significant increase for the industry, the rating of the beef debt has remained similar to the 2017 survey, with the majority (93pc) of beef borrowers and the value of beef debt rated viable ('A') or long-term viable ('B+').

The Western Downs and Central Highlands regions had 33.4pc of Queensland beef borrowers and 35.6pc of beef debt or $3.8 billion. Debt in this region increased by 22.6pc.

In the Central North, Charleville to Longreach and Southern Coastal regions, debt increased by 15pc, 25pc and 22pc respectively. The Cape York and Gulf region saw the largest increase in debt (239pc); however, it only makes up 0.9pc of total beef debt. Three regions (Eastern Darling Downs, Northern Coastal-Mackay to Cairns, West and South West) had a decrease in beef debt.

Over the 2017-2019 period, drought had a major impact on the Queensland beef industry. The 2019 tropical monsoon event severely affected north west Queensland and recovery has been hampered by lack of follow up rain in the 2019-20 summer and poor pasture response.

Interestingly, even with the hardships the beef industry faced, Farm Management Deposits increased by 12pc since the 2017 survey with 3,073 beef accounts in Queensland having a total value of $460 million at December 2019. However, this strong position was not seen in all agricultural industries. Overall, Farm Management Deposits increasing by just 2pc over the same period.

Beef producers will continue to experience challenges including rapidly changing market conditions and supply chain constraints as well as opportunity for increased domestic demand due to the COVID-19 pandemic. The impacts are yet to be fully realised and may be seen in the 2021 Rural Debt Survey.

For a more detailed breakdown and analysis of Queensland rural debt including the beef industry, access the 2019 Queensland Rural Debt Survey at the QRIDA website www.qrida.qld.gov.au/news-and-events/RDS2019.

NOW IS THE TIME TO ENSURE YOUR HERD IS PROTECTED AGAINST VIBRIOSIS

WITH the start of mating approaching, now is the time to ensure your herd is protected against vibriosis with an effective bull vaccination program.

Vibriosis is a cattle venereal disease that causes embryonic losses and is a regular cause of poor pregnancy rates in herds with no bull vaccination program.

Maiden heifers are the most vulnerable females with reductions in pregnancy rates of 10-30 per cent commonly seen without any obvious symptoms. Most heifers recover and can reconceive, but conceptions are delayed. Bulls carry and transmit the disease with no effect on themselves.

In most situations the disease can be controlled by bull vaccination. Maiden bulls require two initial vaccinations prior to mating to ensure they have effective immunity. A significant number of sale bulls are not vaccinated, it is therefore critical to know their vaccination status and to vaccinate accordingly. To maintain immunity an annual booster is required.

It is recommended that maiden bulls are joined to maiden heifers as older bulls are more likely to carry the disease. Culling bulls at seven years is a good risk management strategy.

Some infected females can become persistently infected and act as disease reservoirs. Pregnancy testing and or culling cows which fail to wean a calf will remove potential carriers.

These strategies also reduce the risk of trichomoniasis, another fertility disease that has a similar impact to vibriosis and for which there is no vaccine.

- Contact Mick Sullivan, Principal beef extension officer, DAF Rockhampton, 0428 104 374.

VIBRIOSIS

- Vibriosis is a common cattle venereal disease that causes reduced pregnancy rates through embryonic losses.
- The disease is managed in most situations with bull vaccination.
- Maiden bulls require two initial vaccinations prior to mating.
- Bulls require an annual booster to maintain immunity.

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Cattle performance data aids grazing decisions

LATEST results from walk-over-weighing (WOW) technology being used near Charters Towers provides fascinating data on how animal performance is affected by management and rainfall.

The work is part of a project developing decision support tools to help managers respond faster to changing seasonal conditions.

The project, co-funded by the Department of Agriculture and Fisheries (DAF) and Meat and Livestock Australia (MLA), is part of the long-term Wambiana grazing trial established in 1997 to develop strategies to manage rainfall variability.

The two WOWs monitor steer weight changes in adjacent paddocks under different stocking strategies.

Weekly weight change data will be combined with other long-term trial data and satellite imagery to develop models to predict changes in diet quality and weight gains.

Early warning of poor forage quality or weight loss would allow managers to respond faster in terms of supplementation or marketing animals.

Work on the decision tools is still in development, but data collected from the two WOWs provide insights into how animal weight changes in response to rainfall and management.

The data shown is from a WOW unit monitoring a heavy stocking rate (HSR) paddock and an adjacent 'flexible stocking' strategy (flexible) paddock.

Cattle from both paddocks access a common water point by spear traps and leave via the WOW unit which drafts them into their respective paddocks.

The HSR paddock is stocked at 6 hectares per animal equivalent (AE) while the stocking rate in the flexible paddock is adjusted to match available forage and is currently 12ha/AE.

Stocking rates are assessed and adjusted if required at the end of the growing season, end of the dry season and mid growing season.

A second WOW unit compares another HSR paddock with a 'flexible stocking plus spelling' strategy, but these results are not shown.

Steers weights declined steadily through the long 2019 dry season with steers in the HSR paddock losing the most weight (Figure 1).

Following good rain in late January 2020, weights temporally dipped due to changing gut fill, but thereafter increased rapidly through the wet season. However, with the below average rainfall and short-wet season, weight gain had stopped by mid-May.

Pasture yields at this stage were low with only 790kg/ha in the flexible paddock and 230kg/ha in the HSR paddock.

Following 56 millimetres of rain in the last week of May the pastures greened up, but the steers lost weight in both paddocks. While gut fill would have been a factor, the cold weather potentially contributed to the weight loss. By late June animals had resumed gaining weight in the moderately stocked flexible strategy. However, in the HSR paddock animals continued to lose weight.

A similar response under heavy stocking was also observed at the second WOW unit. The poor response to the autumn rain is a result of the decline in land condition and loss of perennial grasses that has occurred over time in the two HSR paddocks.

As a result, by late August 2020 steers in the 'flexible' strategy were nearly 115kg heavier than those in the adjacent HSR paddock. At the second WOW unit, the difference was less, but the steers in the HSR strategy were still 50kg lighter than those in the moderately stocked flexible plus spelling strategy.

These results show how stocking rate directly affects animal performance across the year and how a decline in land condition reduces the capacity of country to respond to rainfall and drive animal production.

Conversely, they demonstrate how managing for land condition can improve the response to rainfall and so increase productivity.

- Peter O'Reagain, Principal scientist (Grazing), DAF Charters Towers, 0428 100 493.
- John Bushell, Senior technical officer, DAF Charters Towers, 0476 851 511.

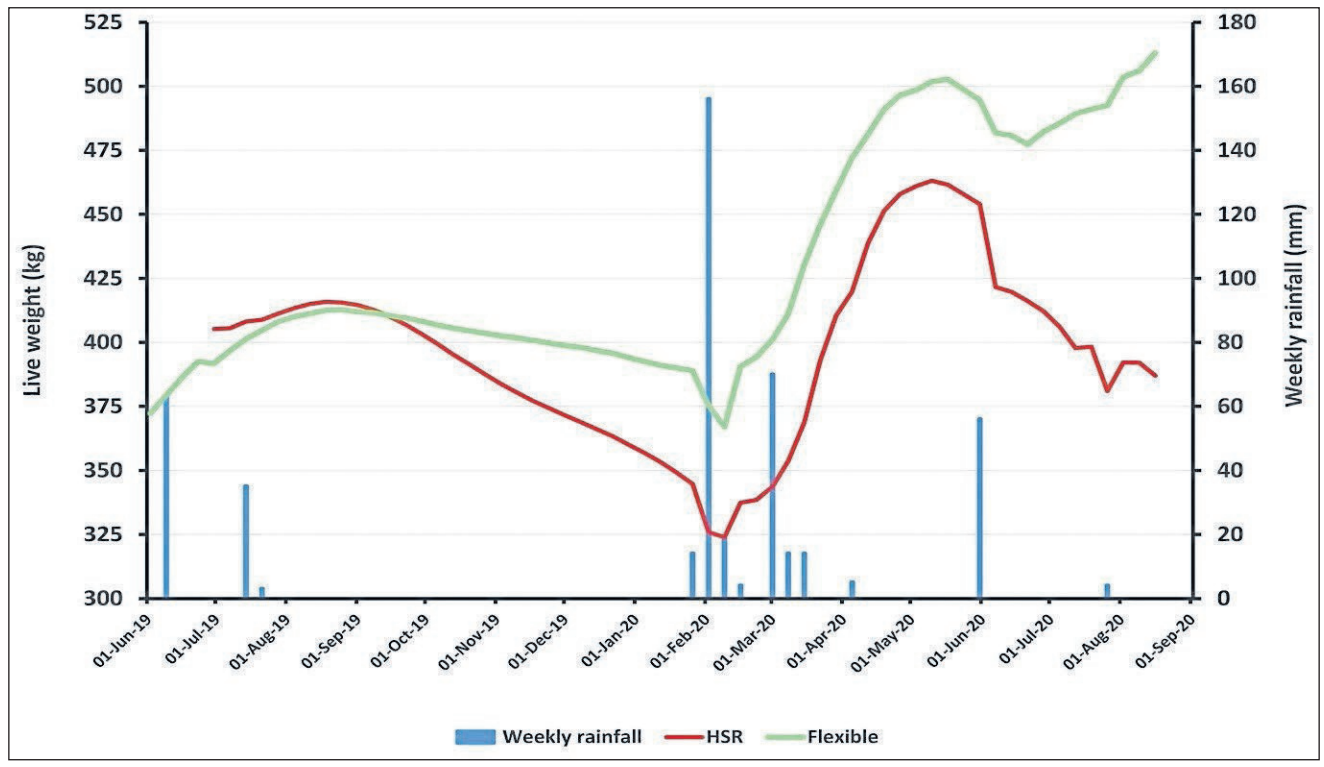

FIGURE 1: Weekly rainfall and weight change for the number eight steers in the Wambiana flexible stocked and heavily stocked paddocks June 2019 to August 2020.

Looking back 30 years: an historical analysis of pasture condition change at QGraze sites

Department of Agriculture and Fisheries (DAF) staff have commenced revisiting historic QGraze sites as part of a jointly funded Meat & Livestock Australia and DAF project to investigate the invasion of pastures by Indian couch (*Bothriochloa pertusa*).

Couch invasion is a major issue in eastern Queensland.

QGraze is a long-term monitoring system implemented by DAF in 1991 to monitor pasture condition and measure pasture species change in Queensland's grazing lands.

There are 446, four hectare QGraze sites in Queensland, of which 286 are in the Burdekin, Fitzroy, and Burnett-Mary catchments.

Previous records will be compared to new surveys of pasture species to determine the extent of Indian couch increase over the last 25 to 30 years.

Recording of Indian couch cover and yield contribution, along with soil sampling, will take place to investigate the relationships between Indian couch spread and pasture composition, soil fertility and soil texture.

This work will provide up-to-date information on the extent of Indian couch in pastures, the rate of spread and factors responsible for this expansion.

Landholders with QGraze sites will be contacted seeking prior permission and assistance with questionnaires on management histories and paddock observations.

- Nicole Spiegel, Grazing land management scientist, DAF Charters Towers, 0436 951 988.