

# FEED TROUGH

VOLUME 4



Your Levy at Work

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## Feeding Heifers Over Summer

By Ian Bradshaw, Cattle Vet Services

Industry research consistently demonstrates that lifetime milk production is heavily influenced by heifer rearing practices and growth rates of replacement heifers. Achieving target body weights at key stages such as at first breeding and at calving are important steps in achieving good reproductive outcomes and lifetime milk production potential. First calvers that have not met their genetic potential for bodyweight and frame size, partition more nutrients to growth and less to milk production and body condition. In doing so, they achieve poorer health and reproductive outcomes than well-grown heifers. The simple fact is: 'BIG GIRLS DO BETTER'

One of the biggest challenges in dairy farming in WA is how to meet the nutritional demands of growing dairy replacements during the 8 months or so that pasture quality and quantity does not fully meet their needs. Dairy heifers need a controlled intake of an energy dense, high(ish) protein diet that pasture or hay over summer months simply can't provide. We need to maintain steady weight gains of around 0.8kg's per day, every day of the year, to achieve target weights in the average Holstein heifer. Easy in principle, not so easy in practice, and all too commonly heifer growth rates slip irretrievably over summer and autumn. This often means target calving weights are compromised, or age at first calving draws out, and heifers aren't necessarily calving when you need them.

Feeding heifers over summer is logistically challenging and labour, infrastructure and available feeds are different on every farm. Options include self-feeders, a PMR mix,

trail fed or trough fed pellets and hay or silage, or even feed lotting.

The following tips can be used to keep heifers on target;

### KNOW YOUR TARGET WEIGHTS:

Establish a target mature cow weight that accurately reflects your herd and your breeding objectives. Despite more balanced breeding objectives being adopted over the last several years, globally the Holstein breed just keeps getting bigger, and a 600kg cow is now a minnow in most herds... BUT every herd is different. Your target weights should reflect the current genetics in your herd (weigh a group of 'typical' mature springing cows in your herd, in score 4.5-5 body condition) and the type of cow you are trying to breed (sire's genetics for frame size). Heifers should be a minimum 55% of mature cow weight at mating, and 85% of mature cow at calving.

### SET YOUR HEIFER CALVING DATES:

Heifer calving pattern should be used to drive herd calving pattern where you want it to be, not the other way around. Every heifer should have a calving date set for her the day she is born, everything you feed her after that is aimed at achieving this goal. Set your target weight, subtract birthweight, calculate days to mating and calculate the required daily growth rate.

### DO A FEED BUDGET:

Sit down with your nutritionist and work out how many kg's and what quality you need to feed in each class of replacement heifer to meet their target growth rates. Evaluate

your infrastructure, labour availability and feed inputs that will allow you to deliver a controlled intake of an energy dense, high protein ration that is practical, suits your feeding system, achieves target weight gains and mitigates the risk of health issues such as acidosis. Make sure it's written down so you can refer back to it and make adjustments as needed.

### WALK THE TALK:

Don't just think about it or talk about it, implement the program, monitor feed intakes, body condition, rumen health and general health. Adjust and modify accordingly.

### STRATEGICALLY WEIGH HEIFERS:

Check your heifer's progress by weighing strategically. For example, weigh at weaning and then a month or so later to ensure your weaner ration is doing the job. Similarly weigh when you change to a new ration or feeding strategy, and do it again a month or so later, to ensure it is doing the job. Re-calculate average daily gain required and adjust nutrition up or down accordingly. Weigh heifers 2 months before joining and fine tune your feeding to hit your target mating weights.

### SEEK HELP:

If it's not working, or you are falling behind your targets, look for other ideas and strategies that might work on your farm, and re-evaluate your performance and feed budget with your nutritionist.

For more contact Ian Bradshaw at Cattle Vet Services [cvs@cattlevets.com.au](mailto:cvs@cattlevets.com.au)

## From the Field...

By Courtney Piesse, Senior Elders Agronomist Bunbury

### To keep ahead of the game for the next few months remember these agronomy tips.

Soil testing – Many farmers have a huge amount of data on their surface soils, but most have little to none on sub soils. These are of great importance as we begin to rely more on moisture in these variable seasons. By sub soil testing we can better establish our potential root zones through testing for pH and compaction. Getting the data is one thing, getting interpretation that is useful to you is even more important. Ideally sample November to February, test to soil types and complete sub surface samples.

### SUMMER WEEDS

These are always important to control for a number of reasons:

- **Allopathic toxins** in some species that will effect pasture germination
- **Moisture conservation** – These weeds use up stored summer moisture that would otherwise use to establish autumn and winter crops. Get them early!
- **Nutrient removal** – Most summer growing species are adept at obtaining soil nutrients, thus the paddock may need more applied fertiliser during the season.

- **Insect and disease transmission** – Some species can harbour both insects and disease that can directly infect sown pasture. For example radish harbour DBM, aphids, sclerotinia, grasses can carry rust, root disease & nematodes can also be carried over.
- **Seed set** – Some species have an ability to set extremely high seed number, making them hard to control over time.

### SUMMER SPRAYING

Standard summer spraying brews will almost always contain one of the basics;

- Glyphosate 450 @1-5L/ha OR Sprayseed or Paraquat @1-2L/ha.
- Add in products (spikes eg Carfentrazone, Oxyflurofen) depending on the target weeds, their size and also your proximity to sensitive crops.
- For spraying melons Triclopyr (Garlon) is particularly effective.

Caution with products with high drift and damage potential such as 24D Ester & Amine, MCPA Ester & Amine, Triclopyr (Garlon). Always read the label and check on plant back periods to avoid residual chemicals affecting the next crop.

### SUMMER CROPPING

By now the crops should be in and growing. You must consider :

- **Water requirements**, particularly at critical growth stages (eg tassling for maize)
- **Fertiliser planning** - apply nutrients to meet the yield potential, don't cut rates or you will lose production. These crops grow very quickly. Conduct plant leaf analysis for nutrient levels.
- **Pest control** - there are post emergent herbicide options for some weeds and crops. Use seed treatments and monitor for pests (watch for grubs in the maize)
- **Grazing management** - the correct grazing time and height of the crop will depend on the variety of millet or sorghum species. Adhere to variety recommendations as these are generally set for safe cow health.

For more please contact Courtney Piesse Elders Senior Agronomist/Horticulture Elders, 0429377608  
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## Plant Water Requirements - Irrigation

How much water will I need for summer crops? This was one of the big questions at the Smarter Irrigation Project workshop held at Bengier in October this year. Information presented showed a wide variation in the water use efficiency of crops in terms of tonnes of dry matter grown per Mega Litre of water applied. You must consider the daily plant water requirements when irrigating and keep this in mind when making decisions about summer crops and how they fit into your system.

CROP	SEASONAL WATER DEMAND ML/HA
Perennial pasture	7.5
Maize	5.5
Forage sorghum hybrid	5.5
Millet	4.5

Plant water requirements are driven by the type of plant and its sensitivity to water stress, canopy size (leaf area) and environmental conditions (solar radiation, wind, relative humidity and temperature). During the middle of Summer a high water use day is characterised by high solar radiation, high wind speed, high temperatures and low relative humidity. On the other extreme is a low water use day in winter with low levels of those parameters. The seasonal water demand requirements for a crop is determined by the change in canopy through the growing season, whether the crop is annual or perennial and the length of the variety growing season. Perennial pasture, maize, forage sorghum and millet all

have moderate tolerance to water stress and for the summer crops the water requirement varies with planting time.

### IRRIGATION SCHEDULING

1. Calculate the readily available water (RAW) in the rootzone of the crop. The rootzone RAW = the root depth x RAW. If the root depth is 0.3m and the RAW is 71mm/m. The rootzone RAW =  $0.3 \times 71 = 21\text{mm}$ . For RAW values go to [www.agric.wa.gov.au/citrus/calculating-readily-available-water](http://www.agric.wa.gov.au/citrus/calculating-readily-available-water)
2. Find the crop coefficient (Kc). The Kc is a factor for estimating crop water requirements based on reference crop evapotranspiration (ET0). It varies with the crop stages.
3. Calculate the daily water use. Daily water use =  $ET_0 \times K_c$ . For example maize Kc is 1 and the average ET0 in January is 9mm. Average daily crop water use =  $9 \times 1.0 = 9\text{mm/day}$

The rootzone RAW will last 2.3 days (21 divided by 9)

Calculate seasonal water demand at [www.agric.wa.gov.au/irrigation-calculator](http://www.agric.wa.gov.au/irrigation-calculator) and for irrigation scheduling apps visit [www.agric.wa.gov.au/irrigate-crops/irrigatewa](http://www.agric.wa.gov.au/irrigate-crops/irrigatewa)

For more contact James Dee, DAFWA Development Officer, [james.dee@agric.wa.gov.au](mailto:james.dee@agric.wa.gov.au) or 08 97806285.

Look out for further activities from the Smarter Irrigation Project. Sam Taylor, [sam@agvivo.com.au](mailto:sam@agvivo.com.au) or 0429 332 593 or visit [www.dairyfortomorrow.com.au/tackling-specific-issues/water/smarter-irrigation-for-profit/](http://www.dairyfortomorrow.com.au/tackling-specific-issues/water/smarter-irrigation-for-profit/)

# Grain and Hay Prices for Dairy Farmers

By Tammy Negus, Agronomist

Oaten hay yields have been excellent throughout the state. The quality in the northern and eastern hay belt have been affected by rain. Cereal hay and straw will be in high supply for those looking to purchase it. The large areas of frosted crops means a huge amount of cereals crops have been cut as hay in a salvage operation to get some return off the paddocks. There will be a huge variation in quality of hay and straw on the market so you must buy wisely. Feed testing fodder of your own and bought in grain and fodder is essential. Export hay buyers have taken a reasonable amount of the quality product from the market. There is a great opportunity to secure hay 'off the baler' at prices well below last year. Cereal hay \$160-220/T, straw \$60-90 and pasture \$150-200/T.

Grain harvest is progressing across the state and the series of frosts is showing its effects with lower yields and some grain quality issues, particularly in the eastern and southern grain belt. CBH has reduced its estimate for WA from 19 to 13 MT, however we won't know the full story until the harvest is completed. Grain growers will be looking to off load

quantities of 'feed grade' cereal to feedlots and dairy farmers. It is almost certain that frost affected grain quality will have been compromised so you MUST evaluate the energy and crude protein before either purchasing or feeding the product.

CBH classifies wheat with 10% or more frosted grain as 'feed' grade. Frosted grain will likely have a low test weight and you must know the bulk density of the grain to convert its weight to volume.

FEED	ESTIMATED COST (EX GST, PER T, DELIVERED)*
Feed Barley	\$225-235
APW Wheat	\$270 - \$275
ASW Wheat	\$250 - \$255
Lupins	\$310 - \$320
Canola meal	\$375
Oats	\$245
Straw	\$60 - \$90
Cereal Hay	\$160- \$220
Pasture Hay	\$150 - \$200

\* This allows for freight, will be variable, as per 4th December 2016, taken from Bunge Bunbury, Grainlink, CBH Dairy Australia prices. All exc. GST

Grain prices from Bunge Port Bunbury offer a good indication of the cost to south west dairy farmers. AP Wheat is listed as \$249/T, add delivery it will cost you approximately \$270/T depending on your farm location. Feed Barley is listed as \$205/T, so delivered it will cost you about \$225/T. See the cost table.

The cost of lupins and canola meal are less than this time last year. Lupins are approximately \$310/T including a higher freight from northern regions. Canola meal is \$375-380/T from WA sources. It's also worth considering pellets as the price of these will likely decrease as the raw ingredients decrease.

Dairy Australia produces a fortnightly state Hay and Grain Report showing average prices. You can subscribe to this and get the report emailed by contacting Amy Bellhouse, Industry Analyst at [abellhouse@dairyaustralia.com.au](mailto:abellhouse@dairyaustralia.com.au)

## Seasonal Reminders

By Tammy Negus, Agronomist

### FEED TEST - DON'T GUESS

Test the quality of your home grown fodder and purchased feed so that you can quantify what you are feeding. Feed testing is useful to confirm whether a particular feed source is worth buying, or compare the nutritional value of alternative feeds. It is also essential when using lab results to understand the results and what they mean for you. There is always a certain degree of variation in feed lab results. The greatest source of variation is due to sampling method.

There's not much point using a feed lab analysis report to guide your feed buying decisions unless the feed sample collected for analysis was truly representative of the feed on offer. The aim should always be to collect the most representative sample possible.

For more see the Fact Sheets: Feed lab testing - getting a good sample, Rapid Feed analysis for dairy farmers fact sheet, Feed lab testing - understanding the results. All can be found at [www.dairyaustralia.com.au](http://www.dairyaustralia.com.au)

### FEEDING FACT SHEETS

Plan for Profit - feed budgeting, Buy Right - feed contracts, Buy Right - don't gamble with quality. Visit the DA website for these and more.



### RUMEN8 - ITS FARMER FRIENDLY!

Use Western Dairy's own Rumen8 software to check your cows diet is balanced and meeting the herds requirements. Visit [www.rumen8.com.au](http://www.rumen8.com.au) to learn more.

### COOL COWS

As the summer heats up remember there are many things you can do to manage the herd with heat stress. Visit [www.coolcows.com.au](http://www.coolcows.com.au) for a variety of tools. Register for site specific heat warnings on the Dairy Forecast Service at [www.dairy.katestone.com.au/register/](http://www.dairy.katestone.com.au/register/)

# Not All Starch for Dairy Cows is Created Equal

By Martin Staines and Ruairi McDonnell, Western Dairy

## This study looked at possible alternatives to wheat to provide starch in a safer manner for our dairy cows.

Starch is an important part of the diet of most dairy cows. The main source of dietary starch for WA dairy cows is cereal grain, in particular wheat (typically 66% starch) and barley (typically 57% starch). Wheat and barley starch are beneficial because of their high 'digestibility' but this very feature also makes starch a potential risk to rumen health.

## STARCH CAN BE BOTH FRIEND AND FOE!

Wheat or barley starch are broken down rapidly in the rumen by microbes to produce large amounts of volatile fatty acids which provide energy to the cow. When too much starch is fed, too much acid is produced too quickly, and too little saliva is produced to buffer it. This can cause subclinical acidosis which reduces milk production and milk fat content while in clinical cases acidosis can kill cows.

## NOT ALL STARCH FOR DAIRY COWS IS CREATED EQUAL.

Other starch types like maize grain are broken down more slowly in the rumen, which can be beneficial as it reduces the risk of acidosis. Some maize starch escapes breakdown in the rumen altogether and becomes bypass starch, which is absorbed in the small intestine, which can be used directly to supply the cow with glucose to produce milk. But maize grain is prohibitively expensive in WA so not commercially viable.

## THE STUDY

We looked at two possible alternatives to wheat or maize grain: soda wheat and Maximise pellets. Soda-wheat was developed as an alternative to milling grain. The whole wheat is treated with 3% caustic soda to weaken the seed coat of the kernels. This allows the starch to become slowly available within the rumen and reduce the risk of subclinical acidosis.

Maximize is a pellet that has been developed by Milne Feeds. It is marketed as a high energy, high starch feed, designed to increase the energy intake of cows grazing high quality pastures without the risk of acidosis.

We carried out an experiment to measure the rumen degradability of wheat, maize grain, soda wheat and Maximize, to quantify how quickly their starch is broken down in the rumen and how much starch bypasses the rumen. The main results are summarised in the table below.

## THE RESULTS

The starch content was 73% in maize grain, around 65% in wheat/soda wheat and 55% in Maximize. One reason that Maximize is a 'safer feed' than wheat is the lower starch content. It contains 9% canola meal for bypass protein and this does reduce the overall starch content. How the starch is broken down is a key factor.

The % of starch broken down in the rumen was 95% in wheat, 69% in maize and 83-87% for soda wheat and Maximize. Wheat carried the highest potential risk of causing acidosis in the rumen and maize the lowest risk, with soda wheat and Maximize intermediate. This all depends on how much is being fed, how it is being fed and in combination with what other feeds (lush pasture vs fibrous silage/hay).

Another factor to consider is how much starch escapes breakdown in the rumen (bypasses the rumen). Bypass starch is beneficial for increasing milk protein content. Wheat supplied very little bypass starch (31 g/kg DM), Maximize was next (73 g), followed by soda wheat (112 g) and maize grain (225 g/kg DM). Maize grain, soda wheat and Maximize are similar in effectiveness in reducing the 'acidic whammy' in the rumen, but differ by a fair bit in their ability to provide bypass starch. In this regard maize grain was king.

## SO WHAT DOES IT ALL COST?

We assume typical costs for our feeds as follows (\$/t): wheat \$250, soda wheat \$330, Maximize \$400 and maize grain \$600. On this basis, per kg of starch, wheat costs 41 cents, soda wheat 55 cents, Maximize 78 cents and maize grain 88 cents. Soda wheat is likely to be cheaper than Maximize, but requires proper precautions and dedicated infrastructure for farm-scale production as caustic soda is a hazardous material.

For more contact Ruairi:  
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FEED	STARCH % IN FEED DRY MATTER (DM)	STARCH % BROKEN DOWN IN RUMEN	G OF STARCH AVAILABLE IN RUMEN PER KG FEED DM	G OF BYPASS STARCH PER KG FEED DM	RUMEN STARCH BROKEN DOWN RELATIVE TO WHEAT %	BYPASS STARCH RELATIVE TO WHEAT %
Wheat	66	95	629	31	100	100
Maize grain	73	69	503	225	80	725
Soda wheat	64	83	528	112	84	361
Maximize	55	87	479	73	76	235

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To contribute to the Feedtrough please email Tammy at [tammy.negus@gmail.com](mailto:tammy.negus@gmail.com) or call her on 0448 532 028

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