

# **Bulls: power up!**

## **Adviser Handbook**

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*InCalf is Dairy Australia's national extension project, aimed at helping farmers improve the reproductive performance of their herds.*

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# Bulls: power up! A kit for advisers to use in discussions with dairy farmers

Thank you for accepting this **Bulls: power up!** adviser kit.

The resources in this kit will help you start a conversation with your clients about their bull management. Not only does it add value to a farm visit, it could easily reduce the number of empty cows they have, increase production and help make their business more profitable.

## Why Bulls: power up! is useful to you

What's different about **Bulls: power up!** is that our message is super simple. All you have to remember is two rules of thumb – one for seasonal or split calving herds and one for year-round calving herds:

*Seasonal/split calving herds:* a team of three bulls for every 100 cows at mating start date or four per hundred if synchrony is used.

*Year-round calving herds:* a team of two bulls for every 100 milking cows.

This kit is all about ensuring dairy farmers get more cows in calf by improving bull power and bull management. Often farmers don't have enough bulls on their team to adequately rotate and rest bulls.

## What is in this kit

- An adviser's booklet – your master copy of information on bull management.
- Farmer A4 fact sheet – bulk copies to give to farmers.
- Reminder card for farmers to pin up in their dairy – bulk copies to give to farmers.

The adviser's booklet contains:

- A copy of the two farmer handouts (fact sheet and reminder card).
- A newsletter grab for your business publications.
- A bull management discussion points to support any conversation about bulls.
- An update of the bull management chapter from *The InCalf Book*.
- A re-order form for the fact sheet and reminder card.

And

- A magnetic notepad for you to hand out to your farmer clients to remind them of why good bull power is important (and they will find the notepad useful along the way).

Thanks and good luck with using this kit with your clients.



Regards  
Dr Barry Zimmermann  
Project Leader

# Bulls: power up!

Having enough 'mop-up' bulls on hand is a simple, cheap and effective way to improve dairy herd fertility.

Many dairy farms don't use enough bulls. With InCalf's **Bulls: power up!** it is easier than ever to make sure you have enough bulls for the coming mating season.

## **Rule of thumb**

*Seasonal/split calving herds:* a team of three bulls for every 100 cows at mating start date or four per hundred if synchrony is used.

*Year-round calving herds:* a team of two bulls for every 100 milking cows.

Sounds like a lot? That's because you need to allow enough bulls to rotate and spell. It's why many dairy herds are under-powered with bulls.

## **It's easy to get it right**

Once you've got the right total number of bulls on hand, it's easy to manage them for good results.

1. Have the bulls on the farm by mating start date.
2. Run half the bulls with the herd at any one time; spell the rest; rotate the group weekly.
3. Avoid fighting by grouping bulls of similar size, age and temperament.
4. Always run a minimum of two bulls with a small mob.
5. Use bulls aged between 15 months and four years.
6. Vaccinate, especially for Vibrio.



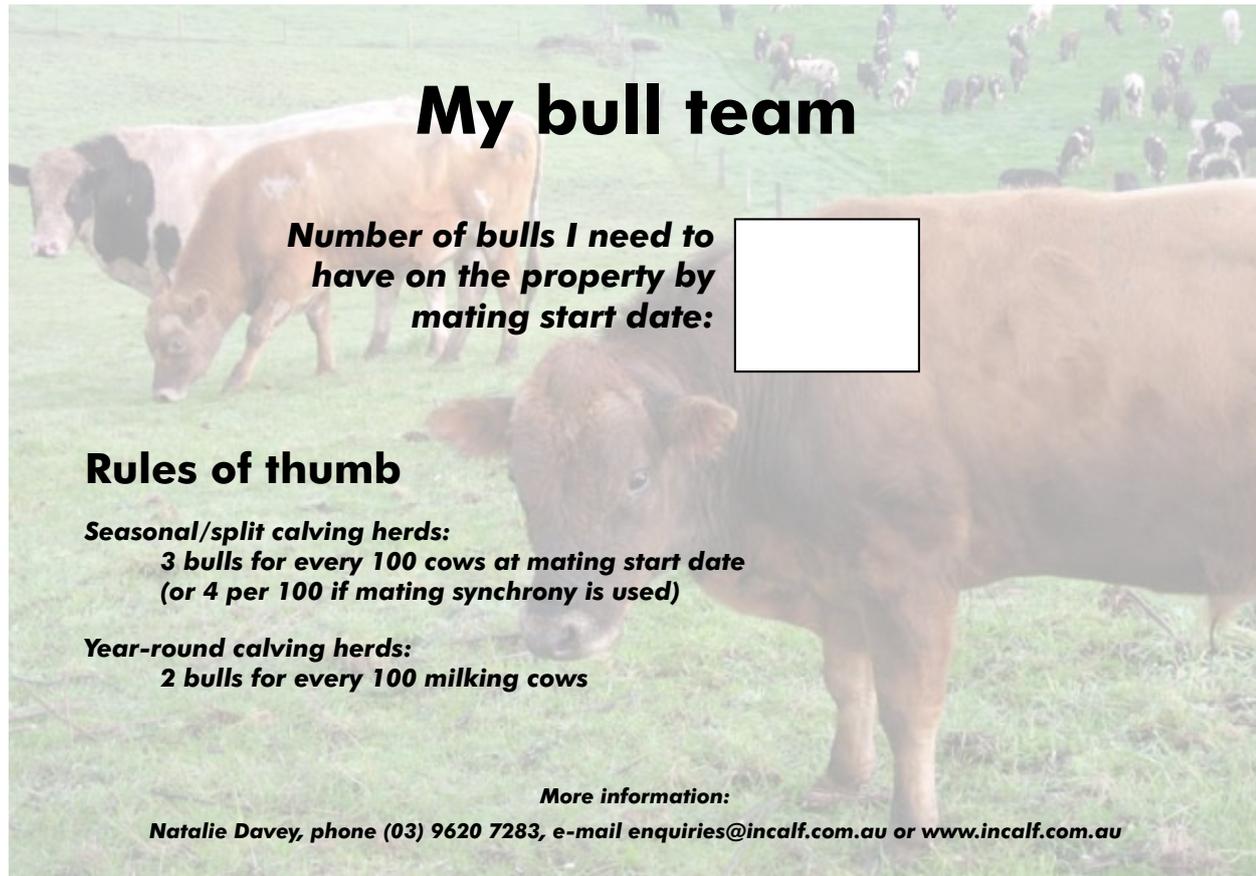
## **Synchrony, a special case**

If you are synchronising, there's one more thing to plan for: lots of returns within a few days. Run all the bulls the week you expect returns, then go back to rotating and spelling.

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# Help farmers have the right number of bulls on farm at mating

You will receive multiple copies of this reminder card. Calculate the number of bulls needed on a farm, write the figure in the box and pin it to the noticeboard in the dairy.



## My bull team

**Number of bulls I need to have on the property by mating start date:**

### Rules of thumb

**Seasonal/split calving herds:**  
3 bulls for every 100 cows at mating start date  
(or 4 per 100 if mating synchrony is used)

**Year-round calving herds:**  
2 bulls for every 100 milking cows

**More information:**  
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## Bulls: Power Up! rule of thumb makes life easy

Making sure you have enough bulls with your dairy herd is a low-cost way to get more cows in calf, and this year it's even easier with InCalf's rule of thumb:

- Seasonal or split calving herds need a team of three bulls for every 100 cows at mating start date or four per hundred if synchrony is used.
- Year-round calving herds need a team of two bulls for every 100 milking cows.

InCalf's Dr Barry Zimmermann said many dairy farmers will be surprised that they need more bulls than expected.

"That's because you need to allow enough bulls to run in two groups – one group with the herd while the others rest – which are rotated weekly. Many dairy herds are under powered with bulls because not enough allowance has been made for rotating and resting," he said.

Once you've got the right total number of bulls on hand, it's easy to manage them for good results.

- Have the bulls on the farm by mating start date.
- Run half the bulls with the herd at any one time; spell the rest; rotate the group weekly.
- Avoid fighting by grouping bulls of similar size, age and temperament.
- Always run a minimum of two bulls with a small mob.
- Use bulls aged between 15 months and four years.
- Vaccinate, especially for Vibrio.

If you are synchronising, there's one more thing to plan for: lots of returns within a few days. Run all the bulls the week you expect returns, then go back to rotating and resting.

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(275 words)

*This newsletter article can be downloaded in Word format from [www.incalf.com.au](http://www.incalf.com.au)*



**InCalf's rule of thumb makes it easy to know how many bulls you'll need this season.**

## Bull management: down to details

### **Managing working bulls on a day-to-day basis**

- *Immediately* remove lame, injured or sick bulls from the herd and replace with healthy bulls.
- Avoid making bulls walk long distances on stony tracks.
- Train bulls not to come onto concrete yards. This helps reduce their risk of lameness.
- Prevent bulls from coming into the dairy. They can consume large amounts of concentrates and can become sick or have reduced fertility.
- Don't feed more than 2-3 kg concentrates per day to bulls. There is a risk of acidosis and lameness problems.
- Monitor both working and resting bulls for their ability to perform service on a regular basis.
- Rotate your bulls, preferably every week. This helps to rest their feet and maintain libido.
- Run at least two bulls with the herd (and heifers) at any one time.
- Get rid of aggressive or difficult bulls before someone or another bull gets injured.
- Have an area where bulls can be yarded and handled safely for routine procedures such as vaccinations, lameness treatment or examination.

- Provide water and shade for bulls before and during joining in hot climates. Heat stress can reduce a bull's fertility (and it takes two months for sperm to recover).

### **Selecting your bull team**

- Use bulls aged between 18 months and four years old. Young bulls may not yet be fertile and older bulls carry more risk of lower fertility.
- Keep bulls of similar age groups together. They need to be well socialised before joining to avoid fighting so they can establish their pecking order in the herd.
- Have all your bulls on-farm before AI starts.
- Use virgin bulls where possible to reduce the risk of introducing *Vibrio* into your herd.
- Match bulls of similar size, or slightly smaller, to the cows or heifers to be mated. Bulls that are heavier are more likely to injure cows or themselves.
- Select the breeds and type of bulls that are more likely to minimise the number of calvings that will require assistance.
- Consider the bull's genetic merit and pedigree if you are planning to keep heifer calves from the bulls.
- Avoid sharing bulls between farms – it carries a risk of disease transfer.



**Run at least two bulls with the herd at any one time.**

### Rearing bulls on farm

- Vaccinate bulls against Vibrio each year.
- Follow the same drenching and vaccination programs as for the heifers.
- Check the bull team prior to the breeding season weekly for general health and soundness. Don't wait till you need them to find out you have a problem!
- Ensure bulls are in good body condition at mating. Aim for a body condition score of 4.5-5.5. Feed young bulls to reach 50% mature weight by 15 months and 85% mature weight by two years of age.
- Check your bull team for soundness before the season starts, especially if you have small numbers of bulls.

This checklist has been compiled from *The InCalf Book* and the Bull Management Herd Assessment Pack Tool. Further details can be found at [www.incalf.com.au](http://www.incalf.com.au)



**When rearing young bulls, follow the same drenching and vaccination program as for heifers.**

**Have bulls on the farm before AI starts. It allows time for them to be well socialised before joining and avoids fighting when with the herd to establish pecking order.**



## Bull management

Good bull management means running adequate numbers of healthy, fertile, well-grown bulls with the herd; reducing the stresses caused by heat, over-working or dominant animals; and handling bulls to minimise the risk of injury to people and animals.



Vibriosis is a venereal disease in cattle that causes infertility and occasional abortion. Signs most commonly seen with *Vibrio* infections are poor conception rates after the introduction of bulls, cows and heifers returning to heat, occasional abortions around 6 months of pregnancy and a spread out calving pattern.

### Growing bulls

As in rearing heifers, monitoring bull liveweights is important to ensure adequate growth from birth. By the time a bull reaches 14–15 months, he should have achieved 50% of his mature weight. This should increase to 85% by two years of age.

If rearing your own bulls, growing them to the recommended targets is the best way to ensure their future performance. If purchasing bulls, buy virgin bulls whenever possible as they are less likely to introduce venereal diseases to the herd.

To maintain bull health, ensure that bulls receive the same vaccination program as the heifers and cows. In addition, vaccinate bulls against Vibriosis and develop a drenching program with your vet.

Bulls need to be kept in good body condition, particularly prior to mating. Several weeks before the bulls will be used, make any required diet changes to ensure bulls are not too fat or too thin. They should be in body condition score 4.5 to 5.5.

- > **Don't forget to vaccinate and drench the bulls.**
- > **Reduce fighting by grouping bulls well before mating.**
- > **Body condition score bulls well before mating to give you time to make diet changes.**



## Selecting the best bulls to use

When choosing bulls to use, you must consider their age, size, health and the breed-related risk of assisted calvings. If you plan to rear heifer calves from the bulls, you also need to consider the bulls' genetic merit and pedigree.

- Older bulls can be difficult to manage and are more likely to have injuries to the penis, back or legs. Use bulls that are no more than 4 years old.
- Avoid using bulls that are less than 15 months old.
- Select bulls of similar size and age. This will reduce fighting when they are with the herd.
- Avoid using bulls with deformed feet.
- Select bulls of similar size to the cows or heifers to be mated, always preferring smaller bull size (Jersey bulls with Holstein-Friesian cows). If bulls are heavier than the cows or heifers, then injuries to both bulls and cows are more likely. Observe bulls serving tall cows; ensure they are able to serve correctly.
- Use bulls that are likely to minimise the number of calvings requiring assistance, especially with Holstein-Friesian heifers.



Make calving easier by avoiding bulls whose calves required assistance in previous years, as well as bulls with prominent shoulder blades.

### Bull breeds and risk of assisted calving.

Low risk of assisted calvings
Jersey
Medium risk of assisted calvings
Holstein-Friesian
Murray Grey
Angus
Hereford
Poll Hereford
Red Poll
High risk of assisted calvings
Limousin
Charolais
Simmental
Belgian Blue



### *Can I skimp on feed for the bulls until the break comes?*

Sexual maturation in bulls is a continuous process starting from before birth. However, there is particularly rapid testicular growth between 7 and 10 months of age. Underfeeding at this time significantly reduces testicular growth with a delay in the onset of puberty. Underfeeding in older bulls will reduce their stamina.



## Managing working bulls



Relocating bulls can cause a period of reduced bull fertility (up to two months). Transport and handling stress, feed and water restrictions, and social stresses associated with mixing bulls that are not familiar with each other can all contribute to this problem.

Good bull management requires planning to ensure bulls are well adjusted to their environment prior to mating. Move bulls to your farm 2–3 months before they are required for work. If moving bulls from a dry, cool climate to a warm, humid environment, move them an extra two months before they are required for work. Run bulls to be used in the herd as one group for 2–3 months before introducing them to the herd. This will reduce fighting.

Consider arranging for veterinary examination of all bulls at least a month before you wish to put them with the herd. This can reduce the risk of reduced reproductive performance due to poor bull performance. Several types of examination are possible ranging from a simple physical exam, to a serving ability test, or a full assessment of semen quality. Discuss the options with your vet.

Heat stress can reduce bull performance. During hot periods, minimise heat stress in bulls by providing adequate supplies of cool water and shade. Other strategies to manage heat include extra rests and using more bulls so that bulls only run with the herd for two days before a break.



### ***Sometimes bulls can be really hard to handle on the farm. What do you do to make it safer for people and other animals?***

Start by clearly explaining the risks associated with bulls to your farm team. Don't expect your relief milkers to work with bulls that they have not been trained to handle.

Get rid of overly aggressive bulls; bulls that become obstructive and block the herd's progress from the paddock to the shed; or bulls that show stalking behaviour towards farm staff. Aggressive bulls will spend time fighting with other bulls, especially when they are running with the herd. They can injure other bulls, cows, people, as well as themselves.

Tasks like fitting chinball harness or trimming feet will require special care facilities to protect bulls and people.

***The last thing you want is an injury that could have been prevented!***



When bulls are running with the herd, you can take several steps to increase bull activity and reduce health risks.

- Ensure there are at least two sexually active bulls running with the herd at all times, except in some circumstances in year-round herds where less than five cows are expected to be on heat in a week.
- Avoid using overly aggressive, dominant bulls.
- Swap bulls in the milking herd throughout the bull mating period; rest bulls for several days to a week before returning them to the herd. This will help maintain sexual interest.
- Do not allow bulls to enter the concrete milking yard with the milking herd as concrete can cause excess hoof wear and lameness.
- Ensure bulls do not gain access to the dairy and consume excessive amounts of concentrate rations. This can disrupt rumen function, causing sickness and reduced fertility.
- Monitor bulls for lameness each day. Remove lame bulls immediately and replace with healthy bulls.
- Regularly observe bulls serving to ensure they are serving correctly. Immediately remove bulls that are unable to serve properly and replace them with more capable bulls.



The optimum temperature for sperm production is 33–36° (3–6° below body temperature). Higher temperatures caused by fever or heat stress affect sperm production and increase the number of abnormal sperm. Even slight increases in temperature (1–2°) can cause major disturbances in semen production. Sperm production takes two months; once a bull recovers from fever or sickness, it can be two months before normal fertility is regained.

## Assessing bull performance

Bull performance is difficult to measure directly so begin by assessing herd reproductive performance during the time when natural bull mating was used in the herd. If the herd's reproductive performance during this period is less than satisfactory, one possible cause is poor bull performance.

### ***Bull mating of heifers***

To check bull performance in heifers, start by assessing how quickly the heifers became pregnant after the bulls were introduced. Consider using pregnancy testing 12 weeks after the group's Mating Start Date and calculating the percentage of heifers that became pregnant in the first three and six weeks of mating.



*71% of heifers conceive in the first three weeks of mating, and 89% conceive in the first six weeks, when managed by top farmers.*



*If less than 49% of heifers conceive in the first three weeks of mating or less than 82% in the first six weeks, review:*

- *calf and heifer management; and*
- *bull management.*

### Year-round calving herds

#### ***Bull mating in the herd***

- Use regular (preferable) or occasional pregnancy testing.
- Regularly calculate the 100-day in-calf rate.
- Review bull management if bulls ran with the herd or if many cows on heat were mated to bulls and the 100-day in-calf rate is less than 58%.
- Seek professional assistance if the 100-day in-calf rate is less than 45%.

Seasonal/split calving herds

**Bull mating in the herd**

In many herds, the period following the first six weeks of mating reflects the bull mating period. Herd reproductive performance during this time is an indicator of bull performance. By assessing performance at this time, you may be alerted that changes to bull management may be required.

- Obtain the six-week in-calf rate and the not-in-calf rate for your herd.
- Identify the total weeks of mating (AI period plus bull mating period).
- Look up the expected not-in-calf rate for your herd using the table below.
- If the actual not-in-calf rate for your herd is higher than expected, this indicates that herd reproductive performance after week 6 of mating was unexpectedly low. If bulls were running with the herd for *most of this time*, poor bull performance is one possible cause.



***If I use my 6-week in-calf rate of 70% and look up my mating period, 6 weeks of AI and 6 weeks of bulls, I should expect 15% not-in-calf. But we had 20% not-in-calf when we preg. tested.***

***I'd better check my bull team as it doesn't look like they were up to it and I don't want a repeat performance next mating!***



**Expected not-in-calf rate (%), given six-week in-calf rate and length of mating.**

6-week in-calf rate	Total weeks of mating (AI period plus bull mating period)					
	9	12	15	18	21	24
30%	43%	28%	20%	15%	12%	10%
40%	38%	25%	18%	14%	11%	10%
50%	32%	22%	16%	12%	11%	9%
60%	26%	18%	14%	11%	10%	9%
70%	21%	15%	12%	10%	9%	9%
80%	15%	12%	10%	9%	9%	8%



The InCalf Fertility Focus report for seasonal/split calving herds calculates reproductive performance after week six and allows comparison with the expected not-in-calf rate, based on the six-week in-calf rate and the total length of mating.

## Using sufficient bull power

Knowing that enough bulls are available when cows are likely to be on heat is important in ensuring good reproductive performance. The number of bulls required will depend on the number of cows or heifers likely to come on heat during the period the bulls are with the group.

### **Heifers**

Run one bull per 30 non-pregnant heifers. Ensure there are always at least two sexually active bulls running with heifers from the start of the mating period. In year-round calving herds, run at least two bulls until most are pregnant.

Keep extra bulls around in case any need to be replaced during the mating period.

### **Managing synchronised heats**

Remember, if you are using a heat synchronising program, and returns will occur when bulls are running, you need to double the ratio of bulls during this period (one bull per 15 non-pregnant heifers). Alternatively, recommence heat detection and AI.

### Seasonal/split calving herds

#### **Ensuring sufficient bull power in the herd**

Use the rule of thumb at right to estimate the number of bulls required. Put half the bulls in with the herd at any one time and rotate them weekly.

If you use a heat synchronising program, allow four bulls per 100 cows and put them all in with the herd for the short period around the time those cows are due back on heat.

Seek professional advice on the management of large bull teams if more than six bulls are required with your herd.

As mating progresses, fewer bulls will be needed as the number of non-pregnant cows decreases, but never run less than two bulls with the herd.

When bulls are running with the herd, keep track of cows on heat. This can provide early warning of poor herd reproductive performance, and helps determine which cows may be empty and when cows became pregnant.

- Record dates of all cows observed on heat wherever possible. This is essential if you do not use pregnancy testing or if you choose a pregnancy testing option that relies on heat detection to identify when cows became pregnant.
- Use heat records to provide early warning of poor herd reproductive performance.

#### **Rule of thumb**

#### **Seasonal/split calving herds:**

**a team of three bulls for every 100 cows at mating start date, or four per 100 if synchrony is used.**

### Rule of thumb

**Year-round calving herds:  
a team of two bulls for every 100 milking cows.**

### T

The InCalf Bull Management Risk Assessment Tool may be useful in helping identify areas of bull management that may increase your risk of reduced herd reproductive performance.

### Year-round calving herds

#### **Ensuring sufficient bull power in the herd**

Use the rule of thumb at left as a guide to determine the number of bulls required.

Put half the bulls in with the herd at any one time and rotate them weekly.

Don't forget: if you use heat synchrony, you'll need extra bulls for a short period around the time those cows are due back on heat. Double the recommended number of bulls for the period when synchronised returns to heat are expected.

Generally, it is recommended that there are always at least two sexually active bulls running in the herd at all times. However, good reproductive performance can be achieved by running only one bull when fewer than five cows are expected to be on heat over a period of a week.

When bulls are running with the herd, keep track of cows on heat. This can be used to provide early warning of poor herd reproductive performance, and to determine which cows may be empty and estimate when cows became pregnant.

- Record dates of all cows observed on heat unless monthly or bi-monthly pregnancy testing of cows not previously diagnosed as being pregnant is being done.
- Consider using chin-ball harnesses on bulls to help you detect more of the cows that are on heat during this period.



***I've already put five straws of semen in this cow. It's time for the bull.  
How do you hand mate?***

With those cows that have failed to get in calf to AI, hand mating can reduce costs. Cows that have a low chance of conceiving, like those not in calf after five inseminations, are drafted out and yarded with a single bull.

The key is to:

- not yard cows with a bull on concrete or stony ground;
- return the cow to the herd once the cow has been served; and
- re-mate only those cows still on heat at the following milking.

***Good luck with her!***





**Photocopy, fill out and send to:**

Printworks: fax (03) 5822 2142

(ph 03 5822 2925)

**Bulls: power up! farmer handouts**

Please send me more handout materials for **Bulls: power up!**

Fact sheet (A4) \_\_\_\_\_ copies

Reminder card (A5) \_\_\_\_\_ copies

Name \_\_\_\_\_

Postal address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Phone number \_\_\_\_\_

# Bulls: power up!

## Rule of thumb

**Seasonal/split calving herds:** A team of 3 bulls for every 100 cows at mating start date or 4 per 100 if synchrony is used.

**Year-round calving herds:** A team of 2 bulls for every 100 milking cows.

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