Beeftalk

Taking stock of your future

Prime news and views for beef producers of south-east Queensland

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Queensland Government
Department of Primary Industries

editorial

The decisions you make when purchasing a bull will affect your herd for many years. It is important to have clear breeding objectives and use all available tools to assist you to select a bull that will be a herd improver.

To help you with this decision, we have a series of articles in this issue, related to breeding objectives, bull and female selection, and using EBVs to select bulls.

Rebecca Farrell, a new member of the Beeftalk editorial team, has coordinated this group of articles. Rebecca is scientist with an interest in genetics and is based at the DPI's Animal Research Institute at Yeerongpilly.

The response to the drought management survey in the last issue of Beeftalk was very pleasing. As was expected, how people managed drought varied widely. The main points to come out of the survey were:

- People who conservatively stock and/or assessed the drought situation early and reduced cattle numbers were pleased with their decisions.
- People who weaned early and either fed or sold calves appear to have had less trouble with breeders and were pleased with their decision.
- Having sufficient paddocks and well distributed watering points allowed:
  - more even use of country
  - cattle to be segregated on the basis of need for feed
  - spelling of some paddocks
  - easier and more successful management.
- Most respondents said that their paddock feed (particularly for breeders) was in poor condition or worse.
- Hay was the most popular drought feed, with lick blocks being next most popular.

Remember, if there's something you would like us to cover, or you have a bit of news or a bright idea you'd like to pass on to other beef industry people, contact us through your feedback form or our phone, fax or email contacts.

Good reading!

The Eds

Hay as a drought feed- be realistic

While it is common for most properties to have some hay on hand to feed weaners while they are in the yard or to feed cattle that may have to be in the yards for longer than normal, to use hay beyond this for beef cattle requires serious consideration.

The feedback from Beeftalk 15 indicated hay was the most popular form of drought feed. But how cost-effective is hay as a primary source of cattle feed?

From the table below, apart from prime lucerne, good quality hay can only be expected to supply 6.5 megajoules of metabolisable energy (MJME) / kg dry matter (DM) at 5% Crude protein (CP). How much does a lactating cow or a 400 kg steer need to eat just to maintain weight?

Table 1 Average nutritive values of hay compared to barley and whole cottonseed

Hay	Digestibility %	Digestible protein %	Metabolisable energy MJ/kg DM
Lucerne	65	10-14	8.5
Forage sorghums	50	2-5	6.5
Cereal crops	55	1-3	7.5
Crop stubble	45	0.5-1	5.5
Sown pasture (green)	50	3-5	6.5
Native pasture (green)	50	2-4	6.5
Barley grain	85	10	12.5
Whole cottonseed	90	38-43	13.5

The steer requires about 46 MJME per day, which he would get if he ate 7 kg DM of hay (about 8 kg as fed). At 1.75 per cent of his bodyweight this is a feasible intake. The only problem is, at $150 per tonne ($0.15 per kg) it will cost you $1.00 per day just to feed him enough for him to maintain weight.

It is worse for the lactating cow. She requires 75 MJME per day and 864 g CP. She would need to eat 11.5 kg DM (13.5 kg as fed). This is 2.9 per cent of her bodyweight, which is more than she could physically eat. A more realistic intake is 9 kg (2.25 per cent of bodyweight). At this rate she is about 16

MJME short of her daily requirement. Furthermore, this amount is only supplying 450 g CP, so she falls about 400 g short for her CP requirement. You could be spending more than $1.00 per day, but still have her losing weight.

Apart from the productivity limitations of hay, you also need to be realistic about the economics of total hand feeding. Consider the following example of feeding fifty cows and calves for a month on hay:

1 cow and calf (under 3 months) will need up to 10 kg of good quality hay per day. Grassy lucerne hay sells for around $7 per bale or $280 per tonne (bales are approximately 25 kg).

1 cow eats 10 kg per day or 300 kg per month.

50 cows by 300 kg of hay per month equals 15 tonnes of hay per month. At $280 per tonne it costs $4,200 to feed 50 cows for a month.

For the true potential cost, remember to add transport, storage, time to feed the hay, and the fact that no drought lasts only one month.

Drought management involves honestly answering the following questions:

Should I feed or sell?

Why do I need to feed cattle?

What performance do I require from the cattle?

What are the feeding options to achieve my objective?

For each feeding option, what are the costs and logistics of feeding?

Do I have to buy equipment?

In summary

Generally hay is an expensive option for feeding beef cattle. It is often better to ensure you have adequate paddock feed available and provide a protein supplement in dry times. Leave full hay feeding to weaners and horses, and then only for short periods.

During a drought, there is probably more money from selling hay than feeding it.

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Tick fever: Prepare now for next year

More than 7 million cattle in northern and eastern parts of Australia are potentially at risk from tick fever *(Babesiosis or Anaplasmosis)*.

Obviously tick fever is only a problem if cattle ticks are present. Because of the recent drought, tick numbers in south-east Queensland have been low.

With less than normal tick and tick fever activity, **many calves** that would normally have been naturally immunised **are susceptible.** They will be at great risk if rainfall and other factors cause tick numbers to increase.

Key points:

- Dry conditions in south east Queensland in the last few years have meant less ticks and less tick fever.
- There is an increased risk of calves growing up being susceptible to the disease.
- Vaccination is the most reliable form of tick fever control.
- Weaner vaccination **now** will prevent problems next year.
- A single vaccination ensures peace of mind.
- Good saleyard prices confirm great returns on the cost of vaccination.

For more information on vaccination against tick fever, contact your local veterinary practitioner, stock inspector or the Tick Fever Research Centre (TFRC), or view the website http://www.dpi.qld.gov.au/tickfever/. Information kits are available from TFRC and other DPI offices. An instruction leaflet is provided with each order of vaccine.

Further information:
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Providing for the welfare of extensive livestock in dry periods

Livestock industries are still suffering from one of the worst dry seasons on record. To stay on top during drought, a potentially high-risk animal welfare situation, property managers need the knowledge and skills to develop an effective management plan that incorporates acceptable animal welfare standards and helps maintain the long-term viability of the business.

The DPI is the lead agency for animal welfare in Queensland and has a defined operational role in administering the *Animal Care and Protection Act 2001 (the Act)*.

Important principles in dry-season management

Legal 'Duty of Care'

The Act places a legal 'Duty of Care' on all persons in charge of animals to provide for the appropriate needs of the animals in their care. This includes providing suitable food and water.

When considering what is *appropriate,* regard must be given to the species, the environment and the circumstances of the animal, and the steps that a reasonable person would be expected to take at the time.

The 'Duty of Care' provisions place a clear obligation on producers to implement drought management strategies that address the welfare of their animals and are reasonable under the circumstances.

Model Codes of Practice

The Act recognises the Australian Model Codes of Practice for the Welfare of Animals (the Codes) as the accepted welfare standards for the various livestock species.

The Codes describe acceptable standards of animal husbandry and management and outline the obligations of livestock owners to maintain the wellbeing of their animals.

A basic principle of the Act and the Codes is that it is unacceptable to allow an animal to die due to lack of suitable feed and/or water.

Guidelines on acceptable animal welfare

It is important that DPI provides guidelines for the animal industries on what is acceptable and what is not acceptable animal welfare, especially in areas where animal welfare risks may be high.

Guidelines for best management

What is seasonal variation and what is severe rainfall deficiency?

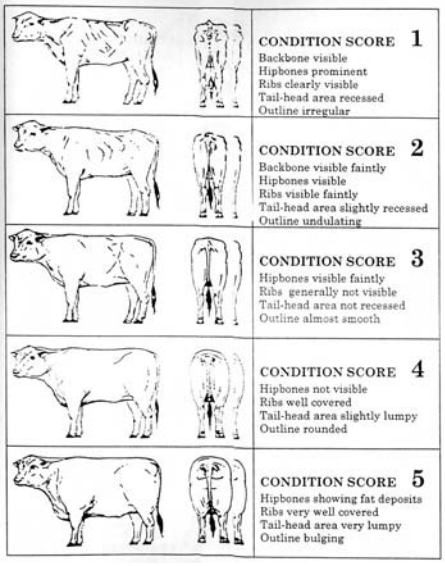
A distinction can be made between normal variation in seasonal rainfall and severe rainfall deficiency.

The relevant Codes define drought as a severe shortage of food and/or water, usually the result of prolonged periods of low rainfall. Drought is not a normal seasonal decline in the quantity and quality of food available. Although droughts are not predictable in the same way as seasonal variations, there are tools available to producers to help them assess the likelihood of drought and to provide guidance on appropriate risk management strategies.

Market information and climate forecasting tools are becoming more sophisticated and available to producers to assist with this decision-making.

Decisions to make

- Early decision-making increases management options.
- As seasonal conditions deteriorate, producers should decide to reduce stock numbers and/or provide supplementary feed to stock as part of normal dry season management arrangements.
- Producers should ensure they maintain livestock in at least strong store condition (minimum body condition score 2). When it appears there is a reasonable risk these minimal requirements will not be met, risk management plans should be put in place.



What dry season/drought management plans should indicate

1. what decisions will be made and under what conditions
2. when and how animals will be supplemented, hand fed, agisted, sold or humanely destroyed.

Survival feeding

From time to time there are periods of prolonged and generalised drought when available management options are not sufficient to maintain core stock in strong store condition. This may occur, for example, when it is not possible to purchase supplementary feed or the cost of such feed is prohibitive. In these cases 'survival feeding' may be used as a last resort to maintain stock.

What is survival feeding?

- Survival feeding is providing less than the normal amount of food.
- Sufficient food is supplied to maintain body processes (i.e. the animal continues to be able to eat, drink, stand, walk, and maintain body temperature and sensibility).

The amount of food required to do this depends on various factors including sex, breed, age, environment, and activity level.

Close monitoring is required

- Where stock are fed a survival ration and are in a weakened condition, it is essential to monitor them closely.
- Animals that become recumbent or are not adapting to the feeding program should be humanely destroyed.

When feed becomes available stock should be fed and maintained in at least strong store condition (body score 2).

Remember: survival feeding is acceptable only in periods of genuine and prolonged drought and when other management options have been exhausted. These guidelines do not make it legitimate to overstock or mismanage properties during normal seasonal variations.

Sustainable stocking rates

Sustainable stocking rates and acceptable animal welfare standards are closely related. Producers should maintain sustainable stocking rates and develop property plans that incorporate effective drought management strategies.

Transport of drought-affected animals

The transport of drought-affected stock is an area of specific animal welfare concern. Owners have a responsibility to select only cattle that are fit for travel, taking into consideration the nature and duration of the proposed journey when determining the degree of fitness required. The DPI is currently drafting guidelines to assist stockowners, transporters and drivers to better prepare and assess the suitability of stock for transport.

For more information please contact your local DPI office or the DPI Drought Hotline on 1800 025 656. Alternatively telephone the DPI Call Centre on 13 25 23, 8 am to 6 pm, Monday to Friday, or email callweb@dpi.qld.gov.au. You can also access the DPI's Animal Welfare web site www.dpi.qld.gov.au/animalwelfare for further information on animal welfare matters.

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Worms in cattle

During April, May and June 2003, Queensland cattle producers submitted 51 Early Bird Wormcheck Kit samples for testing.

Of these:

- 22 had worm egg counts of more than 200 eggs per gram (epg). In young cattle, this level of infestation would probably be worth treating.
- 10 had egg counts between 500 and 2600 epg. These levels would result in reduced productivity and weight gains.

The samples were submitted from shires throughout Queensland, from Bendemere (Roma) where the highest count was recorded, to Sarina and Noosa. While significant worm burdens have been recorded in cattle from all shires in Queensland, worms are more prevalent in the higher rainfall areas of the State. For example, egg counts over 100 epg were recorded from Winton, an area not considered to be 'wormy'.

However more than half the samples had levels not worth treating These counts support the policy of checking for worms before treating.

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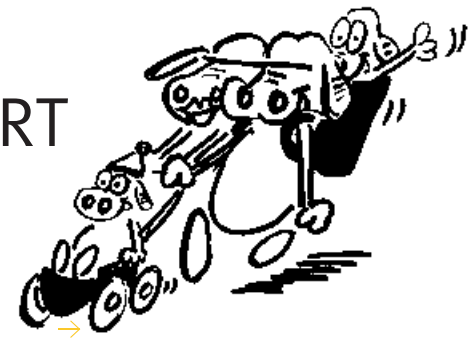
ALL PRODUCERS RUNNING A BREEDING OPERATION SHOULD HAVE CLEAR BREEDING OBJECTIVES FOR THEIR HERD. THESE OBJECTIVES SHOULD CONSIDER THE REQUIREMENTS OF THE TARGET MARKETS, THE CAPABILITIES OF THE PROPERTY, AND THE PERSONAL PREFERENCES OF THE OWNER. WITH THE BULL-BUYING SEASON UPON US, MANY PRODUCERS WILL BE THINKING ABOUT BUYING REPLACEMENT BULLS FOR USE IN THE COMING BREEDING YEAR.

IN THIS ISSUE OF BEEFTALK WE HAVE COMPILED ARTICLES ON BREEDING WITH TOPICS RANGING FROM BREEDING OBJECTIVES AND THE NEW AUSTRALIAN ASSOCIATION OF CATTLE VETS STANDARD BULL FERTILITY AND SOUNDNESS TEST REPORT TO FEMALE SELECTION.

WE HAVE ALSO INCLUDED A REFERENCE PAGE OF WEBSITES, PUBLICATIONS AND CONTACTS RELATING TO BEEF BREEDING AND GENETIC IMPROVEMENT FOR FURTHER READING.

Setting a SMART breeding objective



Are the genetics of your cattle going in the direction that you want? Are you satisfied with their fertility, growth, carcase and temperament?

Developing a SMART breeding objective that can be managed within the capabilities of your production environment is the first and most important step in planning a balanced breeding program.

A SMART breeding objective is Specific, Measurable, Achievable, Realistic and Time-framed.

Your breeding objective is a description of where you want to see your production at some point in the future. This objective will

- set a consistent, long-term breeding direction and production goals
- help make faster progress toward your production goals
- **provide the basis against which you can measure herd improvement.**

To set your breeding objective you need to list

1. traits that are of economic importance in your herd
2. customers' future requirements
3. future herd production targets
4. herd's current performance
5. breeding goals based on your current and target performance
6. selection criteria - the traits you base your selection decisions on to achieve your breeding goals (for example, increase 600-day-weight EBV) - in order of importance for your herd.

The following table is an example of a clearly defined breeding objective, showing the target and current herd performance, breeding goals, and how to get there.

Breeding objective	Target performance	Current performance	Breeding goal	Selection criteria	Additional strategies
▲ pregnancy rate	› 90%	= 75%	▲ bull and female fertility by 15%	▲ scrotal size EBV* ▼ Days to calving EBV	▲ Serving capacity Restrict mating period Cull non-pregnant cows
▲ growth rate	600 kg @ 36 months	550 kg @ 36 months	▲ live weight of steers by 50 kg	▲ 600 day weight EBV	gain from 0.48 to 0.52kg/hd/day
▲ carcase weight	325 kg @ 36 months	295 kg @ 36 months	▲ carcase weight of steers by 30 kg	▲ 600 day weight EBV ▲ carcase weight EBV	

*EBV = estimated breeding value ▲ = increase ▼ = decrease

Remember: your breeding objective needs to be specific (and profit-driven), measurable, achievable and time-framed and, of course, you need to monitor and evaluate the outcomes to make sure your breeding objective is on track.

DPI has two publications, *Beef Cattle Recording and Selection* and *Breeding for Profit,* that provide practical advice and useful tips. These are available from the DPI bookshop and you will find the contact and price details on the further reading pages included in this edition of *Beeftalk*.

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Meat & Livestock Australia Meat Profit Day

Kingaroy Town Hall Complex Wednesday, 24 March 2004

What is a Meat Profit Day?

A Meat Profit Day can be described as a cross between a field day, a conference, a rural expo and a trade show. Meat and Livestock Australia support Meat Profit Days to provide livestock producers with greater access to research results, market information and marketing activities.

The theme for the Kingaroy Meat Profit Day is 'Planning for tomorrow ... today'.

Thought-provoking and motivational speakers will start the day with presentations, encouraging you to plan and build your business for tomorrow, today.

Producers, researchers and other business people will deliver the program, to be presented in three modules:

1. **Mind your own business**
   - projections and market trends; export and domestic markets
2. **A changing environment**
   - environment management systems; native timber management; pastures and grazing; succession planning
3. **Back to basics**
   - new research projects and findings, including animal health, nutrition, genetics, and NLIS.

The program has been put together by a local working group representing diverse sectors of the beef industry. They are confident the program will inspire and inform you, while reinforcing the importance of the basics in your business.

At the Meat Profit Day, trade displays by sponsors and contributors will provide a 'one stop shop' of up-to-date research, products and services that can assist you with moving your beef business forward.

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DATE CLAIMER

In 2004 Brian Pastures Research Station, Gayndah will have been operating as a research facility for fifty years. To celebrate this occasion two events are being organised:

Thursday, 1 April 2004: 50th Anniversary Open Day
Saturday and Sunday, 3 & 4 April 2004: Reunion - social occasion involving reminiscing and story telling of all who have had some connection with Brian Pastures over the past 50 years.
Please pass this information on to anyone you know who has had a connection with Brian Pastures.
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Artificial insemination calf costs

Artificial insemination (AI) provides access to sires and genetics that may not otherwise be available. AI is widely used in the dairy and stud beef industries, but in commercial beef herds the cost per calf born usually means using AI for general mating is uneconomic. In a commercial herd, AI is only viable for specific purposes, such as

- to breed bulls using a sire that is too expensive to purchase or only available by AI
- to evaluate a new breed before purchasing bulls of that breed
- for small herds where the economics of buying a bull is questionable or where managing a bull may present problems.

Artificial breeding programmes must be thoroughly planned to select sires and females for insemination, to meet females' nutritional needs, and to determine whether a synchronisation programme will be used. The average conception rate for beef AI programs is 50 per cent - one calf for every 2 straws of semen used. Higher conception rates are possible with well-run synchronised programs. However conception rates below 50 per cent are common. Effective 'heat detection' is essential for success.

An AI sire will influence many more calves than in a natural mating situation, so it is essential to select a sire that meets your breeding objectives. It is important to consider measured genetic differences between available bulls (i.e. EBVs) and to check the sire's breeding soundness evaluation as an indication of fertility.

Below are cost estimates for conducting a 100-cow AI program. Many factors can vary greatly with circumstances so these are only approximate figures, discussed in more detail below.

1. Semen	$1700
2. Incidentals	$80
3. Labour	$400
4. Drugs (10-day program)	$150
5. Heat detection aids	$170
Total cost for a 100-cow program	**$2500**~50 calves = $50/calf

1. Semen costs - Although price often does not reflect quality, good commercial bulls are usually $10 to $20 per straw. Cheaper straws are around $5 and home-collected semen is around $2.50 to $3. The total cost of semen and buying or hiring a liquid nitrogen tank for a 100-cow program is approximately $1700.
2. Incidental costs - $80 for consumables such as gloves, sheaths, lubricant and paper towel, and for depreciation on guns, scissors, kit box, etc.
3. Labour - AI programs are hard work and require skilled labour. Using heat (or oestrus) synchronising drugs can reduce labour costs but add the cost of the drugs. Even with the strategic use of synchronising drugs, a minimum of 40 hours labour is needed for heat detection, drafting, insemination and other stock handling procedures. Costs of $1000 or more are common.
4. Synchronising drugs - $150 minimum. Costs will vary greatly depending on the type of synchronising program attempted. Programs that attempt to eliminate or greatly reduce the need for heat detection (reducing labour costs) are costly for drugs and reduce the conception rate. Some of these may use up to $20 worth of drugs per animal. These types of programs also require frequent and intensive handling of stock. For most Queensland AI programs, especially those using Bos indicus or Bos indicus-derived cattle, a 10-day program using prostaglandin is recommended. Prostaglandin must be obtained from a veterinarian.
5. Heat detection costs - $1.70 each for heat mount detectors. Specialist commercial operators can justify AI calf costs of $50 to $70 in situations such as tapping into specialist marketing opportunities (such as Wagyu genotypes) or using an expensive easy-calving high-growth-rate bull on large numbers of maiden heifers. Some breeders collect semen from their expensive sires and use it in well-conducted AI programs over large numbers of maiden heifers to get large numbers of calves on the ground in a short time. The sires are then used as the 'clean up' sires after the AI program.

The cost of a calf by natural mating is described in the article **'How much to pay for a bull'** and is given as approximately $10 to $25. It would be expected, though, that AI sires would offer superior genetics.

Stud or seed stock cattle breeders

It is becoming increasingly difficult to sell bulls without some sort of performance recording. GROUP BREEDPLAN, the most advanced and proven system of performance recording and analysis available, relies on using AI to create 'link' sires so meaningful comparisons can be made between bulls on different properties. GROUP BREEDPLAN would not be possible on a large scale without the use of AI. Costs of $50 to $70 per calf are a small price to pay for studs wishing to utilise this particular benefit of AI.

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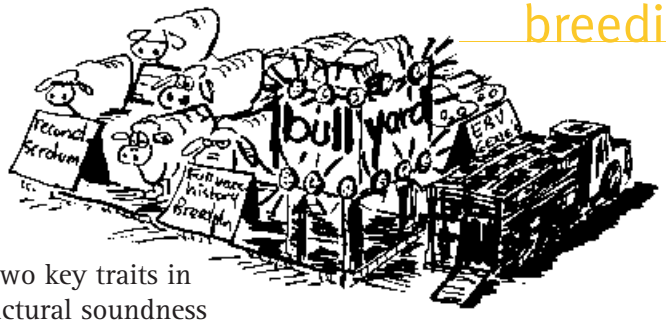
How much to pay for a bull?



Herd bull selection is a major cost for cattle producers. How much does it cost to provide the bull power to put a calf on the ground?

The bull cost per calf is relatively easy to calculate and depends on:

1. Bull purchase price (or cost of breeding your own bulls)
2. Bull salvage value at the end of his working life
3. Number of years the bull stays in the herd
4. Bull losses from deaths, straying, and mustering failure (can be similar to insurance costs)
5. Number of cows per bull
6. Branding percentage achieved.

Table 1 compares three situations in which bull cost per calf is varied by bull management.

Situation 1:

In this case, the purchase price of the bull is $2000, he has a working life of 3 years, is mated at 4 per cent and achieves a branding rate of 75 per cent. Taking into account his salvage value at the end of his working life, the bull cost per calf is $24.29.

By improving two key traits in your bull - structural soundness and reproductive performance - it is possible to significantly change the bull cost per calf or the amount you can pay for bull. The next two examples will demonstrate this.

Situation 2:

In this situation, the purchase price of the bull is the same as for Situation 1. Through better bull management (health and nutrition) and improvements in reproductive performance and structural soundness, the bull is in the herd for 5 years, can be mated at 3 per cent and achieve a branding rate of 85 per cent - making it possible to reduce the bull cost per calf from $24.29 to $9.71.

Situation 3:

The same bull management improvements made in Situation 2 have been applied in this example, so effectively you could almost double ($2,000 to $3,980) the price you pay for a bull with virtually no increase in the bull cost per calf over Situation 1.

Try your own figures in the last column to determine your bull cost per calf.

A better bull produces:

* more calves
* more progeny that grow faster
* progeny that have desirable carcase traits
* future breeders that will produce more valuable offspring
* cattle that repeatedly meet market specifications.

The improvements made through genetic selection are permanent and as long as high performing sires meeting your breeding objectives are selected, these improvements will continue to accumulate in your herd. Buying better bulls is an investment in your future.

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Table 1: Bull costs per calf as related to the initial cost, management and performance

	Situation 1	Situation 2	Situation 3	Your Situation
Purchase price of bull	$2000	$2000	$3980	.....
Bull insurance cost	3% ($60)	3% ($60)	3% ($120)	3%
Transport cost	$100	$100	$100	$100
Effective cost of bull landed on property	**$2160**	**$2160**	**$4200**	
Number of years bull is used	3	5	5	.....
Number of cows mated to bull per year	25 (4%)	33 (3%)	33 (3%)	.....
Branding %	75	85	85	.....
Number of calves produced by bull during its lifetime	56	140	140	.....
Salvage value of bull	$800	$800	$800	$800
Effective cost of bull less salvage value	$2160-800	$2160-800	$4200-800	.....
Net cost of bull	$1360	$1360	$3400	.....
Number of calves in lifetime	56	140	140	.....
Bull cost per calf	**$24.29**	**$9.71**	**$24.29**	.....

Bull fertility evaluation and reporting

This year many bulls will again be presented at sales in Queensland with limited reproductive information. Furthermore, until last year, many catalogues contained a brief introductory comment about all bulls to the effect that they have been 'fertility tested' by a particular veterinarian. Most frequently there has been NO indication of the individual difference in fertility of each bull on offer in the catalogue. Bull buyers are faced with putting a value on each bull they intend to purchase in the absence of accurate fertility information. Without good fertility, the potential for any bull to pass on all his desirable traits can be severely limited.

The Australian Association of Cattle Veterinarians (AACV) has recognised the need to standardise the system of bull fertility testing and the opportunity to provide its members and buyers with a consistent descriptor of bull fertility. The AACV has refined their bull-testing format with the development of this standard system, which emanated from the July 2002 Bull Fertility Conference for cattle vets in Darwin.

The primary objective is to have an affordable, accurate reporting system with an easy-to-read format that is the same nationwide. Vets want a system that meets industry needs, is consistent with their own professional opinions, enables them to produce business-linked reports, and facilitates electronic storage of data. Everyone wants a system that suits bull transactions, purchase and claim of insurance, and routine screening of herd bulls.

This new system comprises:

1. *Evaluating and Reporting Bull Fertility* - a book outlining the standards to be used and is available for sale from the AACV for $55 (+ $7 p&h)
2. Bull Reporter - a computer program for cattle vets and associated fertility laboratories for managing data and producing reports.

Bull Reporter has two components:

→ a summary of the tests conducted (see example below)

→ a full report identifying the bull, the date of testing, by whom, where and comments associated with each test.

An important new concept of Bull Reporter is that it reports whether a bull meets a set of standards for five bull fertility components, rather than attempting to define whether a bull is fertile (sound) or not. These components are scrotal size, physical/structural condition, semen motility, semen morphology and serving capacity. These standards have been selected as those indicating a bull has a high probability, **not a guarantee**, of being fertile at the time of testing.

The following is an example of what a summary report would look like.

Bull	Age
Number/name	Yr:Mn
AACV Top of the Rack	2.02

	Scrotum	Physical	Semen	Morphology	Serving
	37.0	✗	✓	✓	✓

The report indicators mean:

✓	For this component, the bull met fertility standards as published by the Australian Association of Cattle Veterinarians.	✗	The bull did not meet the standards for this fertility component.
P	For 'Morphology' only: The samples taken do not meet full standards but indicate that the bull is very likely to be fertile under natural mating. The client should seek advice from their cattle vet.		
na	Not applicable, e.g. Certificate not required to indicate status for this fertility component.	nt	This fertility component was not fully tested/ evaluated.

In this example, AACV Top of the Rack fails his fertility test on the physical component, but meets the baseline standards in the 4 other components.

The components that AACV Top of the Rack was tested on are as follows:

1. Scrotum - Scrotal circumference or size (SS) in centimetres where the testes shape is within normal range. Reference standards are available.

2. Physical - Within the constraints of a standard examination, there is no evidence of any general physical or structural condition or of a physical condition of the reproductive tract indicating sub-fertility or infertility.

3. Semen - Crush-side assessment indicates that the semen is within normal range for motility, colour and percent progressively motile and is suitable for laboratory evaluation.

4. Morphology - Semen examination of percent normal sperm using high power magnification to ensure minimum standards for normal function are achieved.

5. Serving - The bull is able to serve normally as demonstrated in a standard test and shows no evidence of fertility-limiting defects.

It is hoped this new system will enable more advanced bull-management practices to be adopted. Industry will have better information on a bull's ability to be functional, maximising the number of calves produced and passing on the genetics for improved performance. At the same time it is hoped the new system will greatly reduce the incidence of costly disagreements following transactions where bulls have subsequently been found to be sub-fertile (not part of the usual sale conditions for bulls in Australia) or infertile.

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Hay supplies - consider your options

Much has been written over the years about the economics of storing hay for dry times. Generally the consensus has been it is far cheaper to sell the stock during a drought rather than have capital tied up in hay and hay sheds (see previous article).

If you can justify the use of hay in your beef business (in good seasons or drought), then determine the quality and quantity required and whether it is best to buy hay or grow your own.

Buying hay

A quick glance at the commodity graphs in the rural press usually indicates high prices for hay in winter and low prices in the main summer growing season. So an investment in hay purchase and storage in the summer growing season may be the best option. Remember though that hay should be bought by the tonne as moisture levels and bale compaction vary considerably.

Growing your own

Hay can be made from a wide range of crops. In many cases the quantity and quality of hay required will determine the crop you need to grow.

Summer forage

Forage sorghums are used most commonly for summer haymaking. Most seed companies have particular lines they recommend for haymaking. Varieties with soft, thin stems are best. The crop should be cut before the head starts to form at a height of about one metre. As the crop gets older yield increases but stems become 'woody' and quality declines (Figure 1).

If a large area is to be baled, it may be best to stagger plantings to avoid all the hay being spoilt by bad weather. Conditioning of the crop to crush the stems for drying is recommended. If rainfall is adequate, two to three cuts from the same crop may be possible. Prussic acid and nitrate poisoning have to be considered when baling forage sorghums. Hay from crops that have been heavily fertilised with nitrogen and crops that have been stressed and frosted may contain prussic acid. Damp and improperly cured forage is most likely to cause nitrate poisoning.

Millets make useful hay but generally their yields are lower than yields from forage sorghums.

Winter cereal crop

Dryland winter crop production is heavily dependent on winter rainfall. Irrigation certainly reduces the risk of failed crops but it will have an impact on economics.

Cereal crops should be cut just as the first seed heads emerge to minimise the development of awns on the seed heads. Awned cereals are difficult for animals to eat. Often there are large quantities of cereal stubble hay available but they are useful only as roughage and further protein and energy supplements need to be fed. There is always the risk of rust in cereal crops, decreasing crop production and palatability.

Failed grain crops are often available and the nutritive value of the hay will depend on the stage at which the crop was baled and the presence of any grain.

Sown pastures

Sown pastures are suitable for hay, particularly if they include a legume to increase the protein levels of the hay. Time of cutting markedly affects the quality and yield of sown pasture hay. For maximum quality the grass should be cut early in its growth cycle while the leaf is still green and before seed heads have begun to form. Cutting the hay later will maximise bulk and yield but quality will be lower. Some producers find it economical to fertilise sown pastures to cut for hay. There can be up to two cuts per year, or the regrowth can be used later in the season to feed weaners or finish cull cows.

Native pastures

Native pastures can be baled into hay of adequate quality. Native pastures generally provide lower yields and are usually baled late in their life cycle. Consequently the hay quality is only moderate to poor and is regarded as roughage only. Native pasture should be cut when the leaf is still green and seed heads are just beginning to form.

Lucerne

Without doubt, lucerne is the king of fodders when it comes to hay. A well-managed irrigated block of lucerne will have six to eight cuttings per season with an average of 2.5 tonne per hectare per cut. However production costs are high and you either need to invest in baling equipment or rely on a contractor to cut, condition and bale the crop. Usually the best returns from lucerne hay are for on-selling rather than feeding to cattle. Growing lucerne requires fairly specific soil types and considerable production expertise.

Baling the crop

Choosing when to cut the crop for hay is a matter of balancing nutritive value with yield. The weather is also a key determining factor. With the exception of lucerne, the younger the crop when cut, the higher the protein will be and the lower the overall yield. Energy levels (carbohydrates in Figure 1) increase to the seed forming stage then decline rapidly.

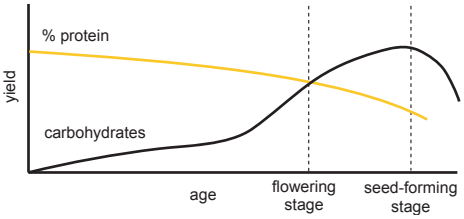

Figure 1: Nutrients of hay depending on growth stage (Source: Haymaking by B. Mills 1993 DPI)

For more detailed information on haymaking, there is an excellent DPI publication called Haymaking by Bill Mills. Contact the Call Centre on 13 25 23 and ask the bookshop for more details.

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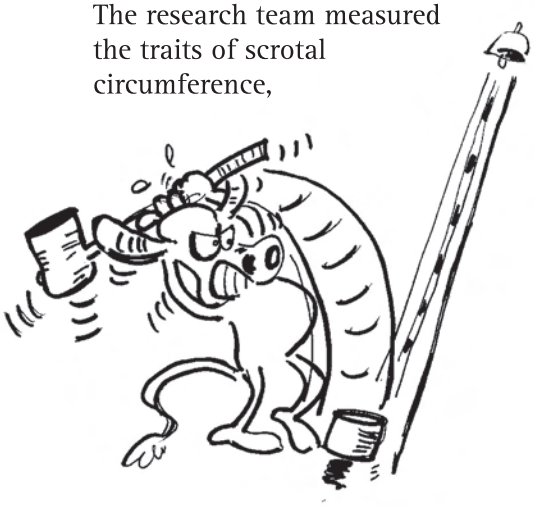
The Bull Power project

Bulls are selected for the influence they will have on the genetics of a herd, so it is important to make sure they are capable of getting cows pregnant to pass their genetics on. The calf-getting ability of a bull is influenced by a number of traits.

To determine the relative contribution of a range of fertility traits in tropically adapted bulls, the Department of Primary Industries led the state-wide Bull Power project. This project was funded by the Queensland Department of Primary Industries, Santa Gertrudis Breeders' Association, University of Queensland, James Cook University, CSIRO, Primary Industries and Fisheries Northern Territory, and Meat and Livestock Australia.

Bull Power was conducted on eight commercial properties and four research stations in Queensland and the Northern Territory. One thousand bulls (182 Brahman, 22 Brahman cross, 523 Santa Gertrudis and 335 Belmont Red) were sourced from properties throughout Queensland and the top-end of the Northern Territory. Bulls with undesirable structural characteristics were excluded. Bulls were paddock-mated in herds of up to 500 cows at mating rates of up to 6 per cent.

The research team measured the traits of scrotal circumference, semen quality, sheath and prepuce structure, umbilical size and mating performance.



Key results were

1. 58 per cent of the bulls sired less than 10 per cent of the calves.
2. 13 per cent of the bulls sired more than 30 per cent of the calves within the mating groups.
3. 7 per cent of the bulls sired no calves.

No single trait consistently predicted the fertility of a bull.

When bulls met the minimum requirements of a BBSE, bull percentages of 2.5 per cent did not jeopardise the branding rates on large pastoral holdings where waters were spread out and in large paddock sizes.

To identify the 7 per cent of bulls siring no calves, a veterinarian should conduct a routine Bull Breeding Soundness Evaluation (BBSE). Bull Breeding Soundness Evaluations (BBSE) are used to categorise bulls as fertile, sub-fertile or infertile. A BBSE will not guarantee fertility, but it will indicate whether a bull has a high probability of doing his job, and it will assist in identifying infertile and sub-fertile bulls. (BBSEs are discussed in more detail in the Bull fertility and evaluation article in this edition of Beeftalk.)

Important traits, most of which can be measured in a BBSE, were as follows:

1. Scrotal circumference

Scrotal circumference was positively related to calf-getting ability - the bigger the scrotal circumference, the more calves a bull will sire. However excessive

Scrotal circumference measurement (Source: JB...)

scrotal size may be due to factors not related to increased sperm production, requiring examination of the morphology of the sperm cells.

2. Semen quality

The percent normal sperm is a much better predictor of calf output than percent motile sperm and should always be determined in a BBSE. Bulls with less than 50 per cent normal sperm usually sire few calves. Bulls being purchased at sale should have a minimum of 70 per cent normal sperm.

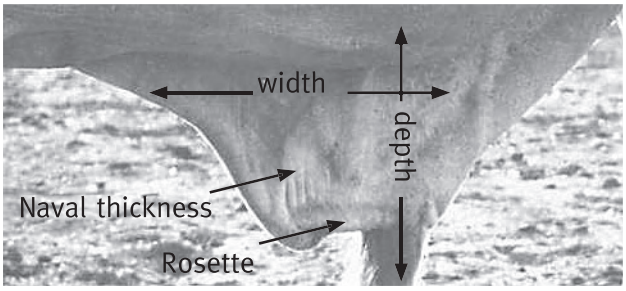
3. Serving capacity

Serving capacity was measured in a controlled 20-minute yard test with restrained females. In extensive environments, measures of sexual behaviour (interest, mounts and serves) only predicted the variation in calf output between bulls in five of the 10 multiple sire mating groups in which they were measured. However, serving ability is a beneficial tool in determining whether a bull is capable of serving the female.

4. Umbilical size

In *Bos indicus*-derived breeds, a thickened umbilical cord is often associated with an enlarged rosette (or larger inverted fold of skin where the umbilical cord originally attached to the bull.) A very thick umbilical residue was related to reduced calf output in two of the multiple sire mating groups.

research update



Sheath structure and measurement (Source: JB...)

Dominance was another factor noted. Dominance can be important in multiple sire matings because an infertile dominant bull will dramatically reduce calf numbers, making a BBSE essential. Dominance is frequently related to the age and weight of bulls. However dominance can not be measured prior to purchase because it is determined within the mating group established on property.

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Buffalo fly trap

The buffalo fly tunnel trap was evaluated on five commercial properties sites throughout Queensland last summer (Gympie, Bundaberg, Rockhampton, Mackay and Charters Towers). The evaluation demonstrated that buffalo fly populations could be reduced by 60 to 80 per cent using this simple tunnel trapping system.
Plans for the buffalo fly tunnel trap are available in the DPI note on the DPI website - www.dpi.qld.gov.au/beef/11925.html
In the next edition of Beeftalk we will report on further progress in the project.
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handy hint

Vaccinations - Getting the needle right

Like most people who have injected a mob of cattle with a repeat-vaccinator gun, you will probably have experienced two common problems:

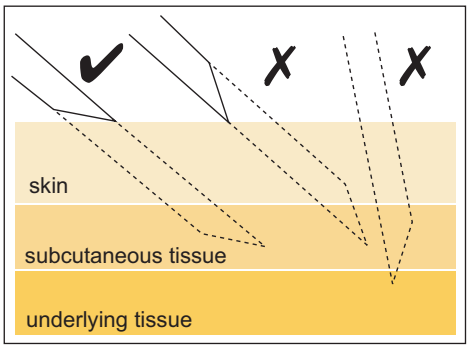
- persistent post-vaccination lumps, especially after using oil-based vaccines
- high resistance (in the vaccinating gun) to injection on the first attempt, rectified by deeper insertion of the needle at a more perpendicular angle.

Both of these problems are usually caused by incorrect orientation of the needle on the syringe.

The objective is to get the opening of the needle resting between the skin and the underlying tissues. To achieve this, orientate the needle so that at entry it is about 45o to the skin with the bevel parallel with the skin.

If the bevel faces away from the skin, the opening of the needle may still be in the dermis (skin), resulting in high resistance in the gun. To counter this, a more perpendicular entry is often used on the second attempt. This results in the leading edge of the needle cutting into underlying tissues, with potential for intramuscular vaccine injection - thus the lumps.

Always have a pair of pliers in the vaccination kit to correctly orientate the needle. This is easily done with robust metal guns but can be a challenge with disposable guns.



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Buying bulls using Estimated Breeding Values

How do you know if one bull is better than another? This is a dilemma many commercial beef producers face. Bulls are purchased according to many factors including breed, muscling, pedigree, temperament and structural soundness. There are certain traits, however, for which visual assessment is not the best indicator of a bull's potential as a sire. These include fertility, growth and carcase traits. For these traits, Estimated Breeding Values (EBVs) can help! They provide bull buyers with the opportunity to make objective choices about a bull.

EBVs explained

EBVs indicate the genetic potential of an animal for a particular trait and remove the effect of the environment on that animal's performance in the particular trait. BREEDPLAN EBVs indicate the genetic worth of a particular bull compared with his contemporaries within the same herd. GROUP BREEDPLAN EBVs indicate a bull's genetic worth compared across herds with all other recorded bulls in that breed.

BREEDPLAN currently calculates EBVs for six growth traits, five fertility traits and six carcase traits (Table 1).

Table 1 BREEDPLAN EBVs

Growth (kg)	Fertility	Carcase
1. Birth weight	1. Scrotal size (cm)	1. Carcase weight (kg)
2. 200-day milk	2. Days to calving	2. Eye Muscle Area (EMA)
3. 200-day weight	3. Gestation length (days)	3. Rib fat
4. 400-day weight	4. Calving ease (direct)	4. Rump fat (P8)
5. 600-day weight	5. Calving ease (of daughters)	5. Retail Beef Yield percentage (RBY%)
6. Mature cow weight		6. Intramuscular Fat percentage (IMF %)

How to use EBVs

Often, bull buyers will attend a sale with a particular type of bull in mind. They will select those bulls that suit their requirements and then use EBV information to make a final decision.

An alternative approach is for a bull buyer to select a list of bulls from the catalogue based on the EBVs for particular traits. At the sale, the buyer assesses the selected bulls for conformation, structural soundness and temperament before making a final selection.

The two bulls in Table 2 are an example of how a producer might use EBVs in selecting a bull.

Table 2 Using EBVs to select a bull

Bull	EBV			
	200-day milk	200-day weight	400-day weight	600-day weight
A	-8	+17	+28	+48
B	+7	+10	+15	+30

Calves get half their genes from the bull (and the other half from the cow), so the expected difference in the average performance of the progeny is half the bull's EBV for that trait. For example, the average performance of calves from Bull A for 600-day growth would be expected to be 24 kg above breed average, and for Bull B, 15 kg. Therefore progeny from Bull A would be 9 kg heavier than the progeny of Bull B at 600 days.

A Jap Ox breeder would select Bull A because its higher EBV for 600-day weight is more suitable for the Jap Ox breeding objective.

However if the breeder's objective is to produce veal, Bull B would be the more suitable selection because it has a higher EBV for 200-day milk and a reasonable EBV for 200-day weight.

Limitations when using EBVs in bull selection

EBVs only provide information about the traits to which they refer. Bull buyers should use EBV information in conjunction with visual assessment for traits such as temperament and structural and reproductive soundness (which are essential factors to consider). If a bull cannot walk around and get cows into calf, he is of no value to your herd, no matter how good his EBV is.

You can't compare apples and oranges - GROUP BREEDPLAN EBVs can only be used to compare bulls within the one breed. Your selection decisions need to be based on which breed or breeds match your breeding objectives best and then selecting animals from within the breed to do the job for you.

The ABRI website (www.abri.une.edu.au) has detailed information on BREEDPLAN and GROUP BREEDPLAN EBVs. The DPI conducts a one-day workshop on BREEDPLAN. Please contact us if you are keen to learn more and we can tailor a workshop to suit your group.

Article written by Dr Mick Tierney, Animal Genetics Consultant.

Further information:

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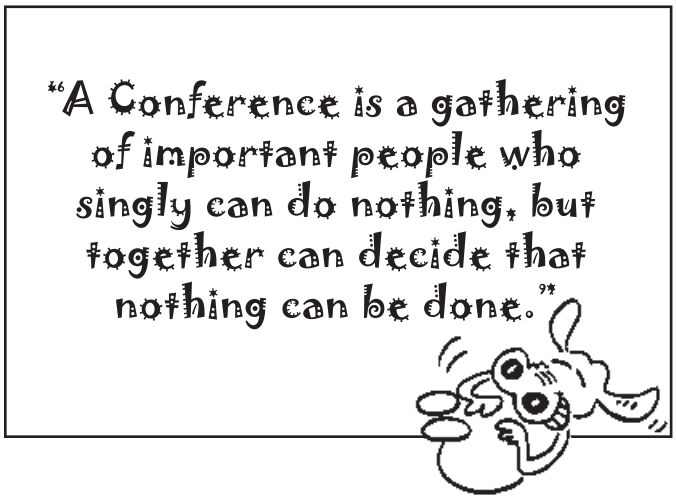

EBVs really work!

Results from a North Queensland Producer Demonstration Site

A demonstration on 'Birralee', Collinsville, owned by Gill and Andrew MacNicol, showed the benefits of using EBVs to select bulls in a commercial situation.

Brahman heifers were mated (by AI) to bulls with either high or low EBVs for 600-day growth. The average difference in EBVs between the two groups of bulls was 40 kg, which means the average difference in weight between the two groups of steer progeny at 600 days (approximately 20 months) should have been half this (about 20 kg).

The heifers and their calves were all run in the same paddock until weaning; steer progeny were all run in the same paddock from weaning to turnoff.

Steer liveweight from weaning to 30 months.

	High EBV Steers (+27.4 kg)	Low EBV Steers (-12.6 kg)	Weight advantage (kg)
Weaning weight	186.5	179	+7.5 ns
18 month weight	283	267	+16*
30 month weight	481	460	+21*

Notes:
The figures in brackets ( ) are the average EBV for that group of bulls.
The asterisks (*) indicate significant results. 'ns' means the weight differences were not statistically significant.

The steer progeny from the bulls with the higher 600-day EBV did indeed have a weight advantage - 16 kg at 18 months and 21 kg at 30 months.
This demonstration only looked at the one trait, growth rate. EBVs are generated for a number of other traits of benefit to the commercial producer that should be considered in relation to breeding objectives and target markets.
DPI acknowledges the excellent support provided by Andrew and Gill MacNicol in hosting this demonstration.

For further information and complete results for this PDS project:
Rod Thompson or Alan Laing
via the DPI Call Centre
Phone: 13 25 23

Silage - Improve feed value and reduce waste

Beef producers use silage in feedlot rations, as a production feed, and for drought feeding. While the silage crop and stage of maturity at harvest have a major bearing on the nutritional value of silage, appropriate storage and handling methods will help to maintain nutritional value and reduce losses between harvest to feeding.

Dairy Australia (formerly Dairy Research and Development Corporation), working with state organisations, has developed a comprehensive four-day course on improving silage making, storage and feeding methods.

The course, known as TOPFODDER® Silage, is open to all dairy, beef and sheep producers as well as contract feed growers and harvesters. The course attracts a 75 per cent subsidy from Farmbis for eligible primary producers.

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Or visit the website:
www.topfodder.com.au

Backrubbers the good oil

Sump oil is no longer recommended for use in backrubbers. The label directions on Supona® have changed in response to this change in recommendation. The change was prompted by concern that potentially cancer-causing chemicals are formed in sump oil by high temperature combustion engines. Therefore the use of sump oil is NOT consistent with Australia's 'Clean and Green' marketing position. Recycled engine oils are also not recommended, because the recycling process may not remove the carcinogenic chemicals.
Furthermore, vegetable oils can no longer be recommended as an alternative. Some vegetable oils are very palatable to cattle and encourage more self and mutual grooming. This leads to the increased ingestion of the chemical, which may increase the chemical residue level within the animal. There are also reports that some vegetable oils degenerate into a gluggy mess on the coat of the cattle or in the backrubber, and that some vegetable oils may ignite spontaneously. Clean unused mineral oils are recommended. Bimrose Lubrications have specially formulated a mineral oil product for use in backrubbers. DPI officers have observed the use of this product on three properties throughout the State and reported they have not found any problems with it. The supplier is now promoting the product to the industry.

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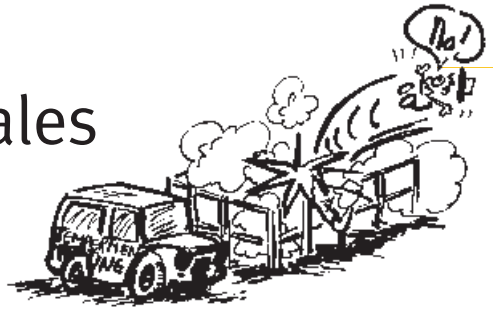
Camel Stew

3 medium size camels
1 ton of salt
1 ton of pepper
500 bushels of potatoes
200 bushels of carrots
3000 sprigs of parsley
2 small rabbits

Cut camels into bite size pieces. This should take about two months. Cut vegetables into cubes (another two months). Place meat in pan and cover with 1000 gallons of brown gravy. Simmer for 4 weeks. Shovel in pepper and salt to taste. When meat is tender, add vegetables. Simmer slowly for another 4 weeks. Garnish with parsley. Will serve 3800 people. If more are expected, add two rabbits.

These recipes were given to Jack Absalom by a manager of one of Kidman's Stations. He told him that the Head Office in Adelaide sent this recipe to all his stations. Printed in *Outback Cooking in the Camp Oven* by Jack and Reg Absalom 1999.

Selecting the right females for your herd



While bull selection has the most impact on the genetic progress in your herd, female selection still plays a very important role in overall herd genetic improvement. Female selection should be based on sound breeding objectives and include traits of economic importance, for example:

- fertility
- growth rate
- structural soundness
- temperament, and
- environmental adaptation.

The relative importance of these traits depends on your target market and the current performance of your herd. Remember that the traits included in your breeding objective also need to be heritable, measurable and display variation.

For most beef herds, reproduction rate is a key factor in determining profitability, so planned selection and culling is a significant component of breeder management. The heritability of fertility traits is generally quite low (10 to 20 per cent) so genetic progress is slow. Fertility traits, however, are highly repeatable and profitable so should not be ignored.

There are two opportunities to select females for the breeding operation: pre-mating and post-mating.

During pre-mating selection, identify cows that match your breeding objective and have the maximum potential to conceive. Cows with obvious bad temperament and structural faults should be culled.

Most commercial producers use liveweight to help select replacement females. A heavier female has a better chance of having reached puberty. These are often earlier calves out of the more fertile cows. Females that are selected for earlier puberty have the potential to reach puberty at lighter liveweights. Research shows that Bos indicus females that suffer a setback earlier in their life will not reach puberty until a heavier liveweight.

Post-mating selection has its biggest influence on herd profitability by culling non-productive females from the breeding herd. Because genetic improvement is cumulative, selection and retention of productive females has a flow-on effect for future generations.

Restricted mating periods promote better selection practices through limited opportunities for females to conceive, more uniform age of pregnancy for management imposed treatments and a shorter subsequent calving period during which selection pressure can be applied to progeny of a similar age.

The intensity of post-mating selection can vary from:

- retaining all pregnant and lactating cows (in harsh environments)
- retaining only lactating pregnant cows
- retaining only those pregnant or lactating cows that are expected to wean calves within a defined period (this criterion is often applied to maiden heifers when more than the required number of replacements are mated and become pregnant).

Further information on this topic can be found in Female Selection in Beef Cattle, available from the DPI Bookshop (phone 13 25 23) or at selected DPI offices.

Article written by Dr Mick Tierney, Animal Genetics Consultant

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The Beef Quality Cooperative Research Centre

The Beef Quality Cooperative Research Centre (Beef CRC) brought together CSIRO, University of New England, NSW Agriculture and the Queensland Department of Primary Industries (DPI) to conduct research into beef quality which otherwise would not have been possible.

The Beef CRC began in 1993 and used a whole-supply-chain approach to understand factors affecting the supply of quality beef. Genetics, meat science, nutrition, health and welfare, and feedlot waste management were investigated and researched.

Many Beef CRC outcomes were incorporated into BREEDPLAN and Meat Standards Australia (MSA). MSA technology is now used to great effect along the entire supply chain to guarantee tender beef for consumers. MSA has been instrumental in providing production and processing guidelines and in helping regain consumer confidence in beef. If breeding and supplying quality beef is important to you, then BREEDPLAN and MSA hold many opportunities for your business. Plentiful information is available on BREEDPLAN and MSA on the internet or by contacting BREEDPLAN, Meat and Livestock Australia (MLA) or DPI direct.

Research conducted by the Beef CRC confirmed that bulls rank the same whether their progeny are finished on grass or on grain. Some gene markers for marbling and tenderness are now commercially available and more will follow.

Growth path research showed that if calves have a 'growth check' early in life (e.g. below 200 kg), they are likely to produce an earlier maturing carcase. That is, they tend to grow slower, run to fat earlier, have less muscle and produce less marbling. If a growth check occurs later in life, cattle are more likely to show compensatory growth and resume their normal maturity pattern. Best marbling occurs with best all-of-life growth and no setbacks.

The benefits of minimising stress to reduce disease and improve feedlot performance were measured in both weaning and temperament trials. Yard-weaned cattle, as opposed to paddock-weaned, have less disease and gain weight faster in the feedlot. Similar results were achieved by selecting cattle on temperament using flight speed (see *Beeftalk 13,* page 23). Nervous cattle with fast flight times have more illness and lower performance in the feedlot and produce less tender beef. Temperament is moderately heritable so selection on temperament will give genetic gains and easier handling cattle.

Significant Beef CRC outcomes are listed below. (A comprehensive list is provided on the website www.beef.crc.org.au.)

Industry Outcomes 1993-2003

- A 'blueprint' for straightbreeding and crossbreeding strategies to improve retail beef yield, intramuscular fat percentage, tenderness, eating quality and feed efficiency of Australian beef cattle was developed.
- Outstanding sires in seven Australian beef breeds were identified, enabling beef breeders to rapidly improve carcase and meat quality traits by using BREEDPLAN figures.
- EBVs were calculated for net feed efficiency of sires of steers finished on a standard feedlot diet (a world-first).
- A strong genetic correlation was found between cattle finished on grass versus grain diets, meaning only one genetic improvement scheme is needed by producers, not two (another world-first).
- The relative contributions of genetics, growth path, meat processing and beef ageing to beef eating quality were identified.
- Sire breed effects on beef eating quality in outcrossing programs in Queensland, based on Brahman females, were identified.
- Linked gene markers for retail beef yield, marbling and tenderness in temperate and tropically adapted cattle were discovered.
- A direct gene marker for tenderness (GeneSTAR Tenderness) in beef cattle was developed (another world-first) and subsequently commercialised by Genetic Solutions.
- Two new vaccines against *Pasteurella* and pestivirus, which causes bovine respirator disease (BRD) in feedlot cattle, were developed (firsts for Australia.)

- The effects of hormone growth promotants on beef eating quality were definitively demonstrated.
- Education and training courses to create a more skilled beef industry workforce were developed and are now available to students and producers through UNE.

The publication *Producing and Processing Quality Beef from Australian Cattle Herds* documents industry outcomes from the Beef CRC. It is available from the CRC for $30 (including GST).

More information is available from the following contacts:

- Beef CRC website www.beef.crc.org.au or phone (02) 6773 3501
- BREEDPLAN website www.breedplan.une.edu.au or phone (02) 6773 3555
- MSA website www.msagrading.com or phone (07) 3620 5200 or 1800 111 672
- MLA website www.mla.com.au or phone (02) 9463 9333 or 1800 023 100
- DPI website www.dpi.qld.gov.au or phone 13 25 24.

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Further reading

Books

Artificial breeding of cattle. *(1995). D. Boothby and G. Fahey. AGMedia Melbourne. ISBN 0-7306-6427-9. Available from DPI Bookshop, 127 pages, illustrated - $30.95. Describes the reproductive systems of cows and bulls and the mechanics of artificial insemination. Covers all aspects of a successful breeding program, including bull selection, oestrus detection and synchronisation, record keeping, reproductive disorders, avoiding problems and economic factors.*

Beef cattle recording and selection. *(2000). Queensland Beef Industry Institute, Department of Primary Industries, Queensland. ISBN 0-7345-0071-8. Available from DPI Bookshop, 51 page softcover - $17.55. Provides an overview of basic beef cattle genetics and the basic principles of planned breeding and selection in practice. Includes producers' experiences using BREEDPLAN EBVs.*

Breeding for profit. *(1993). J. Bertram, M. Carrick, R. Holroyd, M. Lake, W. Lehman, K. Taylor, R. Thompson, M. Tierney, R. Tyler, M. Sullivan and R. Whittle. Department of Primary Industries, Queensland. ISBN 0-7242-5400-5. Available from DPI Bookshop, 44 page softcover - $17.55. Written for tropical beef producers, this book assists with defining target markets, determining breeding goals to serve those markets and planning breeding programs to meet the breeding goals. Covers achievable gains, performance analysis, breeding methods, and crossbred herd management.*

Bull selection. *(1995). J. Bertram, K. Entwistle, G. Fordyce, R. Holroyd, M. Lake, M. McGowan, J. Shorter, K. Taylor, M. Tierney and R. Whittle. Department of Primary Industries, Queensland. ISBN 0-7242-5435-8. Available from DPI Bookshop, 44 pages softcover - $17.55. Covers a what a bull is worth; basis of genetic selection and herd genetic improvement; selecting for fertility, structural soundness, growth, carcase attributes and temperament; and bull management.*

Female selection in beef cattle. *(2000). G. Fahey, D. Boothby, G. Fordyce and M. Sullivan. Department of PrimaryIndustries, Queensland. ISBN 0-7345-0094-7. Available from DPI Bookshop, 46 pages softcover - $17.55. Practical overview of the principles of female cattle selection and management practices.*

Evaluating and reporting bull fertility. *(2003). K. Entwistle and G. Fordyce. Australian Association of Cattle Veterinarians. ISBN 0-9585654-4-9. Available from AACV (phone Anne Cover on 07 3378 7944) - $55 plus $7 p&h.*

Beef cattle performance in northern Australia. *(2001). Compiled by P. Hasker. QX01002. Available from DPI Bookshop, 377 pages softcover - $95. A summary of recent research in northern Australia.*

Bull selection and use in northern Australia. *(Final Report, Bull Power). Holroyd et al. Available from DPI Rockhampton (phone Dr Dick Holroyd on 07 4936 0334) - $8.50. Results of a major project conducted on three research stations and eight cooperator properties. Over 1000 bulls were subjected to physical and reproductive examinations prior to mating.*

Producing and processing quality beef from Australian cattle herds. *P. Dundon et al. Available from the Beef CRC - $30. Documents industry outcomes from the Beef CRC.*

DPI notes

Beef, breeding and genetics: Refer to Department of Primary Industries website - www.dpi.qld.gov.au/beef - or contact your local DPI office.

Web addresses

<http://www.dpi.qld.gov.au>
www.beef.crc.org.au <http://www.beef.crc.org.au>
www.mla.com.au <http://www.mla.com.au>
www.cattlecouncil.com.au <http://www.cattlecouncil.com.au>
www.infarmation.com.au/alfa <http://www.infarmation.com.au/alfa>
www.geneticsolutions.com.au <http://www.geneticsolutions.com.au>
<http://agbu.une.edu.au>
<http://abri.une.edu.au>
www.une.edu.au <http://www.une.edu.au>
http://www.csiro.au
http://www.agric.nsw.gov.au

timely tips for south east queensland

october-november

Dry Season Management

- Re-assess pasture quantity and quality in relation to ground cover and feed values (see *Beeftalk 15*, 'Land condition', p.12).
- Review supplementary feeding program. Is it worth the cost, time and effort versus benefits?
- Feed supplements to maintain good breeder condition, particularly first calf cows (and second calf cows if yearly mating). Lactating cows have high nutritional needs to maintain liveweight and milk.
- Estimate future supplement needs and contract supply where necessary.

Breeders

- Assess breeder condition for mating. Heifers and first calf cows may need extra care.
- Move pregnant breeders to calving paddock, close to homestead and yard facilities.
- Check calving cows, especially heifers, regularly.
- Record all cows and heifers that have calving problems and cull them and their calves.
- Order NLIS tags for calves branded this year (Queensland implementation by 1 July 2005). See articles in this edition of *Beeftalk*.

Bulls

- Purchase bulls according to guidelines (see articles in this edition of Beeftalk).
- Have breeding soundness evaluations done on all bulls prior to mating.
- Vaccinate bulls for three-day sickness and vibriosis (two doses one month apart initially, then annual booster).
- Check:- that purchased bulls are in working condition, not show or sale condition
  - whether purchased bulls have been vaccinated against tick fever and vaccinate if necessary.
  - for any injuries, stiffness of gait, cuts or swelling.

Pastures

- Check pasture yields following the spring break - is there enough ground cover? If you have enough standing dry feed to carry a fire (you don't have to burn), then your ground cover and stocking rate are about right.
- Consider spelling pastures early in the growing season for a positive impact on pasture composition. Prolonged heavy grazing of fresh growth will have a serious detrimental effect on the desirable grasses.
- Check firebreaks and fire fighting equipment.
- Implement a planned burning program for native pasture where appropriate. Only burn for a specific reason, that is, to:
  - control woody weeds and regrowth
  - even out patch grazing
  - positively change species composition
  - remove moribund pasture.
- If pasture development is a part of your overall plan, sow pastures if seasonal conditions are favourable. If you can't get the pasture in by the beginning of October, it is best to wait until the New Year. This reduces the risk of failed establishment due to heatwave and drought conditions.
- Weed control is most successful if implemented early. Following the first rains of the season, keep an eye out for weeds generally and actively patrol known 'hot spots'.

Parasites

- Start tick control program (see DPI Note - Cattle tick control strategies - South East Queensland).
- Obtain cattle dip analysis.
- Check early calves (late winter) for scrub ticks.
- Check weaners for worms (Wormcheck program) one month after season has broken.

Property management

- Check mating paddocks are secure.
- Check fence lines, creek crossings, etc.
- Check firebreaks.

november-march

Breeders

- Assess breeder condition for mating. Heifers and first calf cows may need extra care. Are cows cycling?
- Put bulls out with breeders:
  - Mate heifers one month before the main herd where nutrition is adequate.
  - Mate young bulls with young cows.
  - Avoid mixing different aged bulls if possible.
- Brand, dehorn, castrate, tag and vaccinate ('5 in 1' or '7 in 1') calves.
- Assess individual calf performance. Consider culling dams of poorly grown calves.
- Enter new calves onto herd performance recording program.

Bulls

- Check that bulls are in working condition (ready to mate):
  - Check for any injuries, stiffness of gait, cuts or swelling.
  - Check for signs of tick fever or three-day sickness.

Growing cattle

- Weigh growing cattle: assess them individually rather then on average.
- Consider HGP implants for steer calves for non-EU sale.
- Evaluate markets and plan sales. Do you need to book cattle in to meatworks or feedlots?

Supplements

- Start phosphorus supplementation program where deficiency exists. Continue until the end of the growing season.
- Evaluate effectiveness and cost benefit of last winter's supplementation program and plan for next winter.

Pastures

- Consider spelling native pastures. Spelling native pastures for a full wet season once every four or five years will have a very positive impact on species composition. Paddocks can be spelled on an annual rotation.
- Consider spelling leucaena. Leucaena should be spelled annually for at least 2 months. However in the event of psyllid attack (which usually occurs in wet, humid weather), it probably pays to graze the leucaena anyway.
- Consider applying maintenance fertiliser to sown pastures (eg. Superphosphate).
- Consider growing a summer forage crop to carry cattle while pasture paddocks are being spelled. Generally, cattle performance on forage sorghums is not very good. The benefit lies with the higher carrying capacity. Smaller areas of forage sorghum crops can be used to spell sown and native pastures.

Parasites

- Continue tick control program.
- Control buffalo fly where applicable.
- Insecticidal ear tags or buffalo fly traps (see *Beeftalk 14,* page 29).
- Check young cattle for worms (Wormcheck program).

Personal

Try to have some quality time with family and friends over Christmas / New Year.

Further information:
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Yeerongpilly
Phone: 07 3362 9521 or 3362 9424
Email:
jim.kidd@dpi.qld.gov.au

New pestivirus vaccine

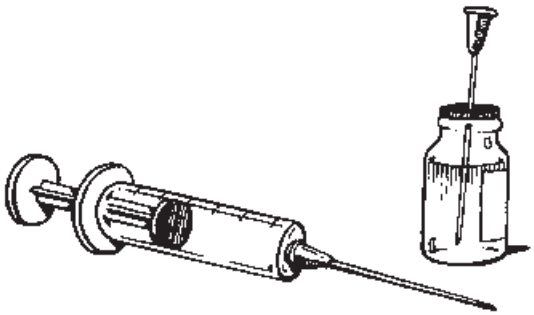
Australia> ‘> s first vaccine to control bovine pestivirus was launched recently by NSW Agriculture, the Cooperative Research Centre for Cattle and Beef Quality and CSL. It is the culmination of 25 years of research.

Pestigard> (tm)> vaccine will, if used correctly with two initial doses followed up by an annual dose, substantially reduce the impact of pestivirus on beef production. Pestigard> (tm)> offers beef producers the opportunity to break the infection cycle, improve conception rates, and increase the number of calves on the ground.

Research by Dr Lee Taylor, DPI veterinarian, shows that 90% of Queensland beef herds show evidence of past bovine pestivirus infection. At least 25% percent of herds are at risk of a serious outbreak because they do not have active infection - with 25-50% production losses in the worst cases in the calf crop born after infection.

Pestivirus has its biggest impact on pregnant cows, affecting the developing foetus. Pregnant cows can act as “Trojan horses” carrying potential virus spreading carrier calves onto a property. Likewise it is not much good paying good money for pregnancy tested in calf (PITC) cows, only to bring them home and expose them to pestivirus with associated losses.

The virus persists on the farm in carrier animals that may show no signs of disease. These carriers were infected as developing foetuses. If pregnant animals are exposed to the virus during the critical first two trimesters of pregnancy, then there’s a high risk of abortion, abnormal calves and weak calves or the subsequent birth of carrier calves.



Traditionally pestivirus was known as bovine mucosal disease and was not regarded as a major livestock disease. But research around the world has shown that pestivirus can have a massive impact on farm production. In the 1980s large-scale field trials were conducted involving over 300 animals. These trials revealed that pestivirus was causing much larger production losses than expected. For example, fertility and pregnancy rates can be cut by 30-50% if naïve animals (those that haven’t been exposed to the virus before) are exposed to pestivirus during early pregnancy.

Until now, isolating pregnant animals from other cattle during early pregnancy was the only way of managing losses. Pestigard> (tm)> can be used as part of an overall biosecurity plan / management plan to avoid costly pestivirus related losses. The key steps in biosecurity plan for managing pestivirus include:

- Don’t put introduced cattle with your pregnant animals and be careful buying pregnant cows
- If pestivirus is endemic in your herd, expose replacement heifers to carrier animals after weaning by boxing weaners together
- Vaccinate.

For more information please contact Lee Taylor, DPI Biloela, phone 4992 9182. More information about pestivirus is available from the DPI Note Cattle Diseases - bovine pestivirus at <http://www.dpi.qld.gov.au/health/3563.html>

If you would like a copy of Beeftalk mailed to you, please complete the following form and send to Editor, Beeftalk, DPI, PO Box 395, Gympie 4570.

Name: .....

Address: .....

..... Postcode: ..... Shire: .....

Property Number: ..... No. of cattle: .....

Phone:.....Fax:.....Email:.....

Which of the following best describes you?

❑ Beef producer ❑ Agribusiness outlet ❑ Education ❑ Other (please state)

NLIS overview

To improve the accuracy of identifying and tracking cattle, the National Livestock Identification Scheme (NLIS) commenced on a voluntary basis in Australia in early 1999. NLIS is a permanent whole-of-life identification system that enables individual animals to be tracked from property of birth through to slaughter.

Food safety is a major issue for red meat industries throughout the developed world following a series of chemical residue and disease incidents in recent years. Assurances about the integrity of red meat products are increasingly being challenged unless livestock can be reliably traced from the breeder through subsequent owners to slaughter.

Until recently Australia relied on a compulsory 'tail tagging' system (complemented in northern Australia by fire branding) for traceback purposes. Tail tags, printed with the code for the last property of residence (known as the Property Identification Code or PIC), typically remain attached to cattle for several weeks. However once tail tags are lost, traceability becomes difficult, particularly when cattle are mixed.

NLIS uses machine-readable Radio Frequency Identification (RFID) devices to identify cattle. NLIS-endorsed devices come in the form of an ear tag or rumen bolus/ear tag combination. Each device contains a microchip encoded with a unique number linked to the PIC of the property of origin. Cattle are tagged with NLIS devices only once in their life.

Cattle identified with NLIS devices can be electronically tracked as they move through the livestock chain.

Each time the device is read, the current owner's PIC can be recorded and linked to the NLIS device. This transaction information is then stored in the secure NLIS central database.

Once full transaction recording is in place, a life record of an animals' residency, and which animals it has interacted with, will be established. This centrally stored electronic history of individual animals will enable rapid and accurate traceability.

NLIS operates under the auspices of SAFEMEAT, the national industry/government partnership responsible for developing and implementing food safety policy within the Australian red meat industries. SAFEMEAT reports to the Primary Industries Ministerial Committee (PIMC). Through this mechanism, NLIS policy is developed and implemented in a uniform manner throughout Australia. State and Territory legislation supporting the NLIS is now in place throughout Australia.

Meat and Livestock Australia (MLA) has been engaged by SAFEMEAT to develop and operate the NLIS database. MLA also plays an important role in research, implementation and extension in relation to the NLIS.

Article reproduced with slight modifications from the Meat & Livestock Industry Journal, 'Feedback', May 2003.

Further information:
Meat & Livestock Australia
Phone: 1800 023 100
Website: www.mla.com.au

National Livestock Identification Scheme choosing the right equipment

When setting yourself up to participate in the National Livestock Identification Scheme (NLIS), you will find a wide range of equipment options are available.

After deciding on the level of participation you are comfortable with, you will need to select the equipment and software package that best fits your requirements.

To assist you in your decisions, a comprehensive NLIS equipment guide is available.

The guide covers all the components that make up an electronic on-farm system. It includes information on all types of devices, readers, weigh scales, data loggers and on-farm software.

To order your copy of the guide or for any other information regarding the NLIS, call the NLIS Helpdesk on 1800 654 743 or visit the MLA website www.mla.com.au

Australia is not alone in its move toward whole-of-life individual cattle identification. Our trading partners and competitors are adopting varying degrees of traceability schemes.

Country	Mandatory	Individual animal ID	Whole-of-life transaction recording	Electronic	Date implemented
Japan	✓	✓	✓	✗	February 2003
Canada	✓	✓	✓	✓	January 2001
European Union	✓	✓	✓	✗	1992
New Zealand		✓	✓	✗	2000
Botswana	✓	✓	✓	✓	June 2002
Uruguay	✓	✓	✓	✓	March 2004
Brazil	✓	✓	✓	✗	December 2003

Source: Feedback May 2003

NLIS developments in Queensland

NLIS is coming to Queensland, it is just a matter of how it is introduced and when. No final timelines have been decided.

The Commonwealth and state governments, Meat and Livestock Australia and Agforce are all supportive of its introduction. MLA has been in the forefront in developing a national database and a consistent legislative framework. Victoria introduced the system in January 2003. NSW and South Australia are flagging its introduction for 1 July 2004. Tasmania is well advanced in moving to its introduction and the Dairy industry see it as a useful adjunct to herd recording.

Why NLIS

Australia exports over 60% of our beef production and is the biggest global exporter of beef. Qld exports 80% of its beef, earning $2.6 billion annually, placing it at a high risk should exports be threatened. Recently Canada totally lost its C$3.5 billion annual market access to the US overnight due to a single case of mad cows disease. Naturally there is concern from peak levels to grass roots over the potential loss of our export markets and the devastating economic damage it would cause. Recovery for Canada has been delayed due to difficulties in tracing the disease. To keep our exports Australia needs an efficient, fast and accurate system to both manage and be prepared for residue and disease threats such as foot and mouth. Disease incidents in the UK and Japan, and more recently Canada, have proven how important a robust traceability system is in locating problem animals and assisting with economic recovery.

Major importers are demanding animal trace back capability. A national trace back system is important for consumer confidence in Australia's product and for our global competitive advantage.

Other Countries

The world's largest livestock industries, including the European Union, Japan, Canada and Australia's major competitor and customer, the US, are either in the process of implementing or are seriously considering individual animal traceability systems. For example, the Japanese Government has mandated full traceability to retail level within the Japanese domestic herd by 1st July 2004, and a private member's bill seeking similar traceability in imported beef is being promoted. US are looking to a national system in 2006.

Cost / Benefits

The benefit of NLIS is in keeping our export markets and protecting the incomes of beef industry stakeholders and of course the broader national and state economy. Some 25,000 people are employed in beef production and processing in Queensland and in 2001/2 the gross value of production from cattle and calves was approximately $3.2 billion or 41% of the states total GVP from agriculture. Without seeing the bigger picture, then for some NLIS will represent only a cost. For others managerial benefits with improved records mean improved profits, for instance it is feasible that Queensland store producers can receive carcase feedback on their product, as is the case in Victoria.

Implementation

Implementation of the NLIS in Queensland, as proposed under the risk-based framework, will aim to reduce the demands on producers as much as possible and will not be as onerous as the system required for European Union accreditation. The risk-based approach means that if specific animals represent a low risk they may not need a radio frequency ID. For instance if the target market does not require certification of individual identification, animals will still be able to move from their property of birth direct to slaughter or for live export without radio frequency ID.

The system will have to meet national performance standards for accuracy and timeliness in tracking where animals have been held. These standards would be similar to those recently proposed in the USA, where a time limit of 48 hours has been set for tracing all locations where an animal has been held. This standard would mean electronic identification and interlinked or national databases would be required in the USA also.

Consultation with industry over the implementation of NLIS and the development of the performance standards is ongoing. The current aim is to develop an implementation work plan for consideration by stakeholders during late 2003.

Further information:
John Roberts
Department of Primary Industries
Brisbane
Phone: 07 3239 3590

Vaccinations for beef cattle

Vaccinations are an important part of disease prevention in an animal health program. Vaccinations need to be combined with specific management practices for best control of some diseases. If you are developing the vaccination program for your herd, contact your veterinary practitioner, DPI veterinary officer, stock inspector or beef adviser for up-to-date advice. The following table provides some vaccination recommendations for south east Queensland herds. When administering vaccines, always follow the manufacturers' instructions. All injections should be given in the neck.

'5 in 1' covers a number of clostridial diseases, namely pulpy kidney (enterotoxaemia), black disease, tetanus, blackleg, and malignant oedema.
'7 in 1' covers the same diseases as '5 in 1' plus Leptospira harjo and Leptospira pomona.

Disease	Initial treatment	Annual booster	Animals to treat	When to treat	Approx cost per injection#
Blackleg	2 injections 4 to 6 weeks apart	At your discretion	Calves to 2 years old	Branding and weaning	$0.32 as '5 in 1' $1.61 as '7 in 1'
Many producers give only one injection at branding. This provides limited protection (4 to 6 weeks).					
Tetanus	2 injections 4 to 6 weeks apart	At your discretion	Calves to 2 years old	Branding and weaning	$0.32 as '5 in 1' $1.61 as '7 in 1'
Pulpy Kidney	2 injections 4 to 6 weeks apart	At your discretion	Calves to 2 years old	Branding and weaning	$0.32 as '5 in 1' $1.61 as '7 in 1'
Leptospirosis	2 injections 4 to 6 weeks apart	Yes	Maiden heifers and pregnant cows	See comments	$1.07 lepto only $1.61 as '7 in 1'
Vaccinate maiden heifers (2 injections) before mating. Then all pregnant animals at mid-pregnancy. If heifers have had two '7 in 1' injections, an annual vaccination is all that is required.					
3-day-sickness (Ephemeral Fever)	2 injections 4 to 6 weeks apart	Yes	Current season's sale cattle and bulls	Spring	$2.31
A difficult vaccine to handle. Has to be kept frozen and only 10 doses can be mixed at a time. Too expensive to treat whole herd. Consider treating valuable animals.					
Botulism	1 injection OR 2 injections 4 to 6 weeks apart - depending on the vaccine used	Yes	All susceptible animals	When convenient	$1.38
Vaccines are available that give up to two years' protection with a single vaccination. Deaths from botulism are usually associated with phosphorus deficiency. In recent years botulism has caused deaths in areas previously thought to be free of the disease. Consult your local DPI officer or vet.					
Tick Fever	One injection	No	All animals including home-grown and introduced	Any time but ideally at weaning (3 to 9 months of age)	2 germ $1.95 3 germ $2.58
There is a greater risk of tick fever due to the drought. Contact the Tick Fever Research Centre (07 3898 9655) for information on tick fever vaccination programs including choice of vaccine, vaccinating introduced susceptible adult cattle, and revaccination.					
Vibriosis	2 injections 4 to 6 weeks apart	Yes	All bulls	1 month before mating	$2.86 (25 dose purchase) $1.72 (125 dose purchase)
A very common infertility disease which mainly affects maiden heifers. Vaccinated bulls will not spread the disease.					

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