

Going into goats

**A practical guide to producing goats
in the rangelands**



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Introduction

Welcome to the goat industry's guide to producing goats in the rangelands. This has been developed by producers for producers and draws upon the experience of over 50 goat producers operating in Australia's rangelands.

While the majority of goats produced in the rangelands are rangeland goats; a composite breed of goat incorporating dairy, fibre and meat goat genetics that has evolved in Australia over the past two hundred years, this guide also relates to the production of specific goatmeat breeds such as Boer goats.

Background

The Australian goatmeat industry has experienced strong growth over the past 20 years and this growth has been largely supported by the sale of goats derived from rangeland or extensive production systems.

Of the 1.5 million goats now slaughtered annually, approximately 90 percent are rangeland goats. As such, any improvement in the productivity and profitability of this sector promises to deliver significant benefits to the broader goat industry, including higher rainfall goat producers, through the creation of a more robust and resilient industry.

Meat & Livestock Australia (MLA), as the research and development organisation associated with the goatmeat industry, has supported goat industry development through targeted research, development and extension (RD&E) activities. These activities have focused on improving the capacity of the industry to reliably supply goatmeat of a consistent quality to meet increasing global demand through the Going into goats program.

This guide to producing goats in the rangelands is intended to assist established and potential goat producers make the most out of their operation by drawing on the experiences of some of Australia's best rangeland producers.

The guide highlights the factors that these producers have identified as critical to the successful operation of a goat enterprise in the rangelands and offers practical suggestions and anecdotes based on their experiences.

In developing this guide, one important characteristic of the rangeland goat production industry became apparent; not all states across Australia are equal. The research that supported the development of this guide identified that there is as much as 20 years difference in industry development between those states struggling to realise the full potential of the goat industry and the industry leaders.

This guide aims to circumvent that 20 year knowledge gap through the sharing of ideas from around the country.

This development gap is best illustrated in two areas; the marketing options available to goat producers and the adoption of fencing to assist in grazing and business management.

Marketing options

The goat industry differs from the cattle and sheep industries from a marketing perspective in that there are relatively few buyers and even fewer livestock agents servicing goat producers.

This is the case across the country; however, what does differ from state to state is the way goats are purchased from producers and the level of carcase feedback made available to producers. Most states have now moved to a c/kg grid or value based marketing selling system whereby producers are paid specifically for what they produce, with premiums and discounts applying, thus encouraging industry development.

The alternative - the older business model - is marketing on a dollars per head basis where a price per head is offered across a mob. While this is a simple selling method, dollars per head provides little price guidance or incentive for producers to improve production and generally restricts the return of wealth to the producer, thus discouraging industry development.

The move to c/kg marketing has been one of the greatest driving influences behind industry development and improved productivity and profitability in states that have adopted the system. The higher revenues earned by virtue of this system provide the operator with more opportunity to re-invest in the infrastructure of the enterprise.

Fencing

What was discovered through discussions with producers around the country during the development of this guide, was that as rangeland goat production becomes more specialised, so too does the fencing which producers use in their enterprises.

As systems become more sophisticated, the type of fencing moves from being minimal with a focus on harvesting, to electric fencing retrofitted to old structural fences, to purpose built electric fences and finally on to purpose built structural fences – environment and land type permitting.

This reflects two production factors;

- Producers moving to better control their goats to be able to fully respond to the c/kg signals from the market place and to take advantage of opportunities.
- The increased profitability that comes from being able to respond to c/kg price signals allowing for increased investment in the enterprise which in turn leads to increased profitability.

This guide has been developed to facilitate the sharing of ideas and assist producers in overcoming the barriers that they may face in achieving a sustainable increase in productivity and profitability.

How to use this guide

This guide has been developed to be exactly that; a guide. It is not a manual which tells you how to dismantle and reassemble a profitable goat enterprise; rather it provides guidance relating to the key issues that contribute to the productivity and profitability of successful goat enterprises – as identified by producers.

This guide is intended to be used in conjunction with MLA's *Going into goats: Profitable producers' best practice guide* (GiG Guide) and references that resource throughout. Where other valuable sources of information already exist, these have been summarised and referenced or simply referenced for further information; the task in compiling this guide was not to 'reinvent the wheel'.

Not all of the information will be relevant to all producers and the guide has not been developed to be read from start to finish. Each chapter is accompanied by a toolkit which contains useful resources and sources of further information that relate to that chapter. The toolkits also contain one of the most valuable components of the guide; the producer case studies. These case studies provide practical examples of the principles and procedures discussed in the guide being put into practice on farm.

This guide has been produced only in electronic format to allow additional valuable information to be incorporated in the guide as it becomes available. A notification of updates will be published on the MLA website and emailed to Goats on the Move eNewsletter subscribers when they occur.

Chapter 1:

Business management

Business management is the process of planning, co-ordinating and controlling a business. To survive long-term, a business must be profitable and managed properly.

Regardless of the business you are in, there are fundamental principles that apply including:

- Business and property planning
- Business finance and risk
- Managing people
- Record keeping and obligations

Good business management requires consideration of people, plant and equipment as well as the health, welfare and productivity of livestock in order to ensure the successful financial performance of the business.

1.1 Business and property planning

What to do

There are several environmental and legislative issues that should be considered in beginning the business and property planning process for a rangeland goat enterprise. Addressing these issues will help determine whether or not it is feasible to run a sustainable rangeland goat enterprise in a particular area:

- Is the location and land class, including topography, soil type and vegetation, suitable for rangeland goats?
- Are there any legislative issues that limit how and where goats can be grazed?
- Are there environmental or biodiversity issues that should be considered?

If, in answering these questions, no significant barriers to establishing a rangeland goat enterprise are encountered, more specific business and property planning factors for rangeland goat production should be considered including:

- Setting business goals.
- Selecting the appropriate enterprise or enterprise mix based on land class, region and animal.
- Understanding the market you wish to sell to (it is a good idea to identify a back up market that can be supplied in case your preferred market is not available).

Module 1: Property planning of the GiG Guide provides further general information regarding business and property planning for goat production.

How to do it

Setting business goals

Business goals or objectives define the purpose of your business. These should be identified at the beginning of the planning phase, documented, limited to a couple of primary objectives and revisited on a regular basis to ensure you remain focussed. *Module 1: Property planning* of the GiG Guide provides further information regarding setting objectives.

Objectives should be “SMART”:

- **S**pecific - detail what is to be achieved.
- **M**easurable - so they can be compared with actual results.
- **A**chievable - avoid overly optimistic goals.
- **R**ealistic - make sure objectives are reasonable and reachable.
- **T**ime bound - put a timeframe on achieving the objective.

Objectives for the rangeland goat enterprise should fit with any other enterprise mixes.

Enterprise selection

Having decided to produce goats in a rangeland environment, the next step is to determine which specific enterprise you wish to be involved with. This decision should consider factors such as the region, regulatory restrictions, land class, access to capital and the type of goat as well as personal lifestyle considerations.

A useful exercise in selecting the enterprise is to consider the pros (positive points) and cons (negative points) of each option. Table 1.1 provides an overview of various enterprises and some of the pros and cons identified by established rangeland goat producers. The list is not exhaustive and some enterprises can be combined or run with alternative production operations such as cattle and sheep.

Table 1.1 : Rangeland goat enterprise options

Enterprise	Characteristics	Pros (positives)	Cons (negatives)
Pure wild harvest	<ul style="list-style-type: none"> • Trap or muster goats from an unfenced environment. • Held briefly prior to transport. 	<ul style="list-style-type: none"> • Requires minimal infrastructure investment. • Suited to all areas frequented by rangeland goats. • Opportunity to expand business to provide a service to other landholders. • Low labour and management requirement. 	<ul style="list-style-type: none"> • Limited capacity to add value or market livestock. • Limited access to livestock – seasonally dependent - unable to supply consistently. • Can be periodically labour intensive. • Limited opportunity to respond to market signals. • Immediate need for trucks once goats are yarded.
Harvest and hold – goat paddock/s	<ul style="list-style-type: none"> • Trap or muster goats from an unfenced environment and confine in one or more goat paddocks. • Holding is generally for the accumulation of goats or the growing out of goats to market specifications. 	<ul style="list-style-type: none"> • Ability to control stocking rate within fenced area. • Increased ability to respond to market signals. • Can add value to confined goats. 	<ul style="list-style-type: none"> • Goat paddock fence investment and maintenance requirement. • Confined goats must be actively managed (ie: provided with sufficient feed and water). • Grazing and stocking in the holding areas needs to be well managed to avoid pasture degradation. • Animal health issues. • Additional management costs such as those associated with identification tags.
Low input goat breeding	<ul style="list-style-type: none"> • Multiple paddocks. • Semi controlled breeding usually uses existing rangeland bucks selected for desirable traits. These are joined selected existing rangeland does. 	<ul style="list-style-type: none"> • Ability to control stocking rate within fenced areas. • Ability to target specific markets. Breeders are selected for conformation and to meet market specifications etc. • Greater control of cashflow. 	<ul style="list-style-type: none"> • Increased management requirement and cost. • Limited gene pool as there are no introduced does or bucks.
Depot	<ul style="list-style-type: none"> • Aggregating large numbers of goats in confined areas for on-selling to buyers. • Usually buying from other producers. • Highly intensive, secure holding yards. • Bulk goat handling facilities. • (Refer Module 11: Goat depots from the GiG Guide for further information). 	<ul style="list-style-type: none"> • Reduced exposure to market variation as goats are usually traded on a margin basis. • Ability to value add through drafting, holding to aggregate lines or holding to add weight and grow into saleable goats. 	<ul style="list-style-type: none"> • Need to maintain throughput. • High labour and management requirement. • High reliance on transport.

Know your customer

Once you have settled on a particular enterprise that suits your land class and personal situation, it is important to develop an understanding of who your customers are.

Successful primary production enterprises operate by selling a product for a price that exceeds their cost of production – that is they sell a product, in this case a goat, for more than it costs them to produce the goat. To do this repeatedly, requires a good understanding of what the person buying the product is seeking.

It is important that you look beyond the individual who offers you a price to the actual person who consumes the goatmeat or takes ownership of the livestock. This is your true customer and the individual who drives demand. Don't be afraid to ask your buyer where your product will go, how it will be used and what they want in a goat – that is, the market specifications. This information will assist you in producing a better or more specific product and can help you to make a greater return or identify a different, more lucrative market.

Markets are sometimes determined by enterprise type and Table 1.2 provides a general guide to the typical customer for various rangeland goat enterprises.

Table 1.2: General guide to customer fit for rangeland goat enterprises*

Enterprise	Your buyer	Product destination	Consumer preferences
Pure wild harvest	<ul style="list-style-type: none"> Major export processors. Depot operators. Domestic processors. Live export buyers. 	<ul style="list-style-type: none"> Commodity goatmeat – export. Major markets: US and Taiwan. Slaughter goats exported live. Major market: Malaysia. Commodity goatmeat – domestic. Ethnic butchers and restaurants. 	<ul style="list-style-type: none"> Commodity goatmeat: Lean carcase for use in traditional slow, wet cooking (stewing). Live export: 40kg+ liveweight, young.
Harvest and hold – goat paddock/s	<ul style="list-style-type: none"> Major export processors. Depots operators. Domestic processors. Live export buyers 	<ul style="list-style-type: none"> Commodity goatmeat – export. Major markets: US and Taiwan. Slaughter goats exported live. Major market: Malaysia. Commodity goatmeat – domestic. Ethnic butchers and restaurants. 	<ul style="list-style-type: none"> Commodity goatmeat: Lean carcase for use in traditional slow, wet cooking (stewing). Live export: 40kg+ liveweight, young.
Low input goat breeding	<ul style="list-style-type: none"> Major export processors. Depots aligned with or selling to export processors. Domestic processors. Live export buyers. 	<ul style="list-style-type: none"> Commodity goatmeat – export. Major markets: US and Taiwan. Slaughter goats exported live. Major market: Malaysia. Commodity goatmeat – domestic. Ethnic butchers and restaurants. 	<ul style="list-style-type: none"> Commodity goatmeat: Lean carcase for use in traditional slow, wet cooking (stewing). Live export – slaughter: 40kg+ liveweight.
High input goat breeding	<ul style="list-style-type: none"> Live export buyers. Processors supplying domestic butchers. Restockers. Export processors. Depots aligned with or selling to export processors. Domestic processors. 	<ul style="list-style-type: none"> Goat breeding. Commodity goatmeat – export. Major markets: US and Taiwan. Commodity goatmeat – domestic. Ethnic butchers and restaurants. Breeding goats exported live. Major market: Malaysia. 	<ul style="list-style-type: none"> Export slaughter: Lean carcase for use in traditional slow, wet cooking (stewing). Domestic slaughter: Even fat cover, good muscle colour. Restockers and live exporters: Females with typical Boer colouration.
Depot	<ul style="list-style-type: none"> Processors. Live exporters. 	<ul style="list-style-type: none"> All markets. 	<ul style="list-style-type: none"> All preferences.

*Refer to Chapter 5: Marketing for further details

1.2 Business finance and risk

Successful rural enterprises require managers to have a sound understanding of the enterprise’s financial position as well as an appreciation of the potential financial impact of any enterprise changes (ie: risk).

This helps in the identification of potential efficiency gains, enables the business to be more robust in withstanding market and environmental fluctuations and aids the identification of opportunities to invest both within and outside the business.

Understanding business financial performance indicators can help to:

- Assess the viability of the business.
- Determine the sensitivity of the business to external factors such as interest rates and shifts in markets.
- Monitor costs of production.
- Evaluate investment options.
- Evaluate management changes.
- Investigate scenarios for improving profitability.
- Compare the business performance with forecasted performance from the business plan.
- Compare budget to actual performance.
- Compare with similar businesses.

What to do

When assessing the performance of the business it is important to determine why the analysis is being performed. The financial statements prepared by an accountant are designed to meet the Government’s taxation compliance requirements. They are not designed to assist in measuring business performance.

Business managers are primarily concerned with the cash position of the business - what effect the business operations will have on the bank account at the end of the year and, over the longer term, the effect on net worth.

The cash position of the business can only be established through recording and reporting the income and expenditure of the business throughout the year. Taxation financial statements will not provide the required information. Effective reporting relies on good record keeping including suitable cashbook and budgeting systems.

How to do it

The critical aspects of financial analysis for any enterprise are:

- Enterprise gross margins
- Return on investment
- Cashflow budgeting
- Cost of production

There are a number of goatmeat production enterprise alternatives that require varying degrees of resourcing and it is important to develop a realistic expectation of what the return on investment for each enterprise may be. This may also be in comparison or complement to other production systems such as sheep or cattle.

The potential for a well managed rangeland goat production enterprise to complement a cattle or sheep operation should not be underestimated. This may be realised through increased feed utilisation as well as increased and diversified income.

In comparing a rangeland goat enterprise to other enterprises, it is important to look beyond the price you can expect to receive for a unit of production and fully consider start-up or buy-in costs as well as the ongoing costs required to deliver a unit of production to market. The level of capital required to establish an enterprise is also an important factor with the availability of rangeland goats meaning that they often compare favourably to cattle and sheep which have to be bought in. Even when goats have to be bought in, it is often at a lower unit cost than for cattle and sheep.

Cost of production is an important consideration – there is little point in producing a product at a cost which exceeds the market price. Before investing in an enterprise, you should develop a clear understanding of what the market wants and what it is prepared to pay – there is no point in producing a prime lamb type goat carcase only to find that the market wants a lighter and leaner alternative.

Once you know what the market wants, calculate what it will cost you to produce that product and develop your enterprise to operate within that cost structure.

Further information

Financial analysis is a specialist area. Producers should always seek professional financial advice if they are unsure how to calculate or interpret financial performance indicators or reports.

Module 2: Financial analysis of the GiG Guide provides detailed information regarding financial analysis, information required and the relevant calculations.

1.3 Managing people

What to do

Farm businesses compete with other industries for labour. To be successful in attracting and retaining good staff, farm enterprises must consider:

- Attracting effective and skilled workers by effectively communicating the nature of the position, including the position's responsibilities and the monetary and nonmonetary rewards associated with employment.
- Ongoing management of the employee and working conditions to ensure job satisfaction and therefore retention.
- Meeting legal obligations such as superannuation, wages, taxes and insurances.
- Ensuring the continuation of the business through succession planning.

Attracting, employing, managing and retaining skilled and effective employees is essential for the growth and continued development of a business and the Australian agricultural industry overall.

How to do it

Attracting staff

With labour shortages facing the agricultural industry, producers should consider broadening the pool of potential employees. This may include considering transient workers, migrant workers, the under-employed and even job sharing arrangements or apprenticeships and traineeships.

Considerations for attracting potential employees include:

- Clearly defining the role.
- Effectively communicating what a position entails at the beginning of the recruitment process.
- Ensuring candidates understand the remuneration package (cash and non-cash), the work hours and work-life balance being offered and the work environment.
- Avoiding rushed recruitment, considering the long-term requirements of the position and aligning employee selection with future needs.

There are a number of factors that will influence potential employee interest in applying and accepting the position including:

- Work conditions
- Flexibility for work/life balance
- Career development
- Salary, job security and non-salary rewards
- Projected image of the workforce and the employer
- Alignment between personal values and company values
- Location

It is the role of the employer to determine which factors will be emphasised when advertising a position. This will, in turn, influence the nature of the applicants that are attracted to the position.

Different rangeland goat enterprises and management alternatives carry with them different labour requirements. Consider the availability of labour and the seasonality of the enterprise and labour requirement when deciding which enterprise and what degree of infrastructure improvement suits your circumstances.

Family labour is a valuable resource but one which must be managed carefully and with reasonable expectations. More detail regarding succession planning is provided further in this section.

Ongoing management

Once employed, there are a number of crucial factors that will determine whether employees stay or leave. Every employer's approach to ongoing staff management will vary depending on the business and circumstances; however, factors to consider include:

- **Work place culture**
The culture of the work environment will directly affect an employee's level of satisfaction. Employers should ensure the workplace is as pleasant, fair and enjoyable as possible. This should extend to ensuring fairness and consistency in remuneration.
- **Nature of work**
The work an employee is required to do should match the description that was provided during the employment process.

- **Enterprise objectives**

Employees should be provided with an overview of the objectives of the enterprise so they can appreciate how their role contributes to the business.

- **Feedback**

Fair and effective performance feedback and recognition are important to ensuring job satisfaction. Employees should feel that the employer is approachable and accessible.

- **Two-way communication**

Maintain dialogue with employees to ensure that they are content with their work environment. Consider conducting a regular employee survey to determine satisfaction levels. Conduct skills audits to determine skills employees have and how they can and would like to be up-skilled.

- **Business reputation**

Wherever possible, employers should promote the enterprise's reputation to build pride amongst employees and to attract new staff.

- **Protection**

Employees must be confident that they are protected through an effective occupational health and safety system and appropriate insurances.

Legal obligations

Employers have a number of legal obligations, including:

- Offering equal opportunities to any job applicant and equal and fair treatment on-the-job.
- Determining whether workers are contractors or employees.
- Making accurate superannuation guarantee contributions for eligible employees into an approved superannuation fund at least four times a year.
- Withholding the appropriate level of 'pay as you go' (PAYG) tax from employee earnings and remitting the amounts withheld to the Australian Tax Office.
- Ensuring the appropriate types and levels of insurances are held to protect the safety of the business and the employees
- Providing a safe working environment that complies with occupational health and safety regulations and practices.

While these factors are legal obligations, they can also have an impact on employee satisfaction and tenure. Employers should refer to the relevant state and federal authorities for their specific legal obligations when employing people.

Workplace safety

Rangeland goat production is a very physical occupation and workers can injure themselves in a number of ways. There are also diseases that animal handlers can be exposed to. Employers have a duty of care to provide a safe working environment for their employees, this includes providing:

- Safe systems of work
- Safe plant, equipment and substances
- Adequate training, information and supervision
- Adequate monitoring of work conditions
- Reasonable safety policies and procedures

Not only does this contribute to job satisfaction and employee tenure, it is a legal obligation under individual state or territory legislation.

Occupational Health and Safety Management Systems

The foundation of a safe working environment rests on a well documented, communicated, understood and implemented Occupational Health and Safety (OH&S) Management System (OHSMS). An OHSMS is a set of plans, actions and procedures, actively endorsed by the employer, to systematically manage health and safety in the workplace.

Ultimately, if some mishap occurs due to an OH&S oversight, the property owner can be liable. In order to mitigate the risk of an injury, lawsuit or even a death, it is imperative that the property owner implements a comprehensive and effective OHSMS.

The development, review and maintenance of an OHSMS should be addressed in the property's overall business plan. All people involved, from employee to management, need to understand and fully support the OHSMS.

Employees must be trained and regularly monitored to ensure they have the knowledge and capability to make the system work effectively.

Staff training

Rangeland goat production enterprises are by definition conducted as extensive operations in relatively remote circumstances. Unskilled labour brought into such areas must be trained to fully appreciate the inherent risks and supervised accordingly.

Rangeland goats, especially mature bucks can be difficult to handle and pose a significant occupational health and safety risk when confined. Training should be provided to ensure that all staff are aware of these risks and the appropriate actions required when handling rangeland goats.

Handling rangeland goats

Rangeland goats that have not been handled are basically a wild animal and should be treated cautiously. Some animal husbandry practices, such as ear tagging, place the handler at particular risk and should only be attempted by experienced handlers assisted by appropriate handling facilities and equipment.

Q Fever

Q Fever is a disease that can be contracted by humans through contact with infected animals. Cattle, sheep, goats and even kangaroos have all been known to carry the disease. Human infection usually occurs via skin abrasion or the inhalation of the organism when in close quarters with infected animals or when slaughtering or processing infected animals.

The symptoms of Q Fever resemble those of influenza. Acute cases may persist for up to six weeks and on occasion require hospitalisation. Lifelong immunity generally follows infection.

A complication of Q Fever is Q Fever Syndrome which resembles chronic fatigue syndrome and follows infection in about 20 percent of cases. This may persist for five to ten years.

Vaccination to Q Fever is available and it is highly recommended for all those actively involved in handling goats on a regular basis.

Succession planning

Succession planning is an evolving process that ensures the continuation of a business through generations or through layers of management.

Not all businesses require a succession plan as the intention or opportunity to pass a business on may not exist, however, for those that do, succession planning is best addressed in the business planning process.

Developing a succession plan

A succession plan details how the property owner intends to leave or transfer the business ownership and management upon exiting. Factors underpinning the need for a well documented and clearly communicated plan include:

- Tighter margins and higher land values.
- The potential for conflicting expectations among family members.
- The growing complexity of laws that impact on the transfer of assets.

Points to remember

A successful succession plan should consider the business as a whole and involve all stakeholders. This will reduce problems relating to inheritance, management and ownership. The process and acceptance of the final plan can be assisted by:

- Making sure all involved have the opportunity to express their views.
- Developing a collective future vision for the business to ensure all understand what is expected and how it will operate.
- Separating family and business.
- Establishing a process to resolve any family disputes.

The succession planning process

Every succession plan will vary depending on the owner's financial position, type of enterprise, family situation, business objectives, age and health. There are, however, several common steps:

- **Preparation and gathering of background information**
It is useful for everyone involved in the planning process to have a clear understanding of the property's current financial position and enterprise structure.
- **Establishing objectives and priorities**
The current legal land owners must consider personal goals and visions.
- **Consulting interested parties**
Everyone with an interest in the property should, at some point, be involved in the consultation process.
- **Investigating options**
Once the direction of the succession plan is set, investigation into various options should be considered.
- **Decision-making**
Often the way a decision is made is just as important as the decision itself. If everyone with a direct interest in the business is consulted and included in the process, they are more likely to be comfortable with the outcome. Once discussed and agreed, it is useful to list tasks for actioning and follow up to ensure that all have been informed and understand the decision. Clearly communicated and measured time frames can assist in providing structure and clarity for the succession plan.

The final step is ensuring that the plan is put into practice and reviewed every couple of years or when a significant change occurs.

1.4 Record keeping and obligations

What to do

Keeping appropriate records is important in determining the financial health and success of an enterprise as well as meeting industry or legislative obligations.

- **Financial health**
The key to sound decision making is having accurate information. Without good records, current business progress cannot be accurately compared to previous years or industry benchmarks and management can have no way of knowing whether the enterprise is progressing well or losing ground.
- **Industry obligations**
Rangeland goat producers are members of the red meat industry. As such, they are obliged to observe a number of requirements that ensure the food safety, product integrity and the traceability of animals.

How to do it

Financial health

As with any other enterprise or business, a rangeland goat enterprise should be evaluated regularly to allow modifications to be made to the business operations in order to maximise potential. Accurate records are important in providing the basis for this evaluation.

Important records include:

- The accountant's reports;
- Livestock journals kept by the manager;
- Logs of all chemical usage;
- Livestock movement documentation;
- Livestock trading records; and
- Rainfall data.

Producers should implement a well organised record keeping process to ensure that detailed records are routinely kept, easily accessible and provide an accurate impression of business activity.

Industry obligations

Livestock producers are bound by a number of obligations, nearly all of which require management to keep complete and accurate records. Some forms of record keeping are legally enforceable.

Module 3: Industry obligations of the GiG Guide, provides further information regarding industry and legislative obligations. Specific considerations for rangeland goat producers include:

- Livestock Production Assurance
- Livestock identification
- Goat Health Statement
- Feed and fodder declarations
- Transportation legislation

Livestock Production Assurance

Livestock Production Assurance (LPA) is a program that underpins the National Vendor Declaration and Waybill (LPA NVD/Waybill), which upholds Australia's reputation as a world leader in meat and livestock food safety.

LPA is a simple on-farm food safety program, which enables producers to back up claims made on the LPA NVD/Waybills. When producers sign an LPA NVD/Waybill, they are showing their compliance with LPA.

LPA focuses on food safety management, which considers five key elements or areas of compliance, each with a food safety outcome aimed at ensuring that meat from livestock is fit for human consumption. LPA is a vital component for effectively managing on-farm risk.

LPA is compulsory for livestock producers, including rangeland goat producers, who use the LPA National Vendor Declaration and Waybill (LPA NVD/Waybill). LPA NVD/Waybills are now required by most buyers and by not participating in the program it is highly likely that you will be severely limiting competition for your product.

The extent of record keeping and reporting is an individual business choice; however, good record keeping will help ensure that productivity and profitability are being maximised.

Livestock identification

The National Livestock Identification System (NLIS) is Australia's system for identification and traceability of livestock from property of birth to slaughter assisting with biosecurity, meat safety, product integrity and market access.

NLIS is endorsed by major producer, feedlot, agent, saleyard and processor bodies. In addition to this it is underpinned by State and Territory legislation, which forms the regulatory framework for the system.

A subsidiary of MLA, NLIS Ltd, operates the central NLIS Database on which the livestock movements must be recorded. State and Territory authorities provide information on:

- Property Identification Codes (PIC)
- Ordering NLIS devices imprinted with your PIC
- NLIS regulations for cattle, sheep and goats

The requirements relating to identification of rangeland goats vary from state-to-state; however, the same basic principles apply - goat producers should know where the goats under their management have come from and where they are going when they leave their property.

This means:

- Approved NLIS ear tags for all managed goats leaving their property to show where they have come from;
- Accurate transportation documentation for all goats, generally the LPA NVD/Waybill, to show where they are going; and
- Recording a mob-based movement on the NLIS database.

The NLIS is underpinned by state and territory legislation, which forms the regulatory framework for the system. Producers need to comply with relevant legislation in the jurisdiction in which they operate.

As goats are bought, sold and moved along the supply chain, they must be tagged with an NLIS-accredited tag or device, unless they are eligible to be moved tag free in your state or territory.

Goat Health Statement

The national Goat Health Statement allows goat vendors to provide assurance about the health status of the goats they are offering for sale. While these are not compulsory, they may be requested by a buyer especially if the goats are being sold as breeding stock rather than for slaughter.

The national Goat Health Statement is available from Animal Health Australia.

Feed and fodder declarations

Rangeland goats are rarely supplementary fed; however, when this does occur, such as in a depot or in yards when a truck is delayed and the feed is bought in, it is important that you request a fodder or commodity vendor declaration. These declarations are important tools in ensuring feed that is purchased by a livestock producer is free of potentially dangerous chemical residues.

There are five stockfeed and fodder vendor declarations which may be received when stockfeed is bought or sold by a livestock producer which help underpin Australia's enviable food safety record and reputation globally. These are based on:

- Commodity Vendor Declarations
- By-product Vendor Declarations
- Fodder Vendor Declarations

Transportation legislation

When transporting goats, it is essential that they are managed in a way that reduces stress and minimises any risks to animal welfare.

Producers must also understand their roles and responsibilities as well as any standards and guidelines when transporting goats.

The main obligations regarding transportation of rangeland goats are around ensuring:

- Appropriate ear tagging requirements have been met.
- All movement documents and paperwork has been accurately completed.
- Goats are handled and transported in a manner that upholds a high level of animal welfare.

Toolkit 1 - Business management

Toolkit 1.1 Useful contacts

Toolkit 1.2 Further sources of information

Toolkit 1.1 Useful Contacts

- **State departments of primary industries**
 - Australian Capital Territory
Environment, Planning and Sustainable Development Directorate
p: (02) 6205 3737
 - New South Wales
Department of Primary Industries
p: NSW DPI Helpline: 1300 720 405
e: enquiries.nlis@dpi.nsw.gov.au
 - Northern Territory
Department of Primary Industry and Resources
p: (08) 8999 2034 (Darwin)
(08) 8973 9767 (Katherine)
(08) 8962 4458 (Tennant Creek)
(08) 8951 8125 (Alice Springs)
e: ntnlis@nt.gov.au
 - Queensland
Department of Agriculture and Fisheries
p: Biosecurity Queensland — Business Information
Centre: 13 25 23
e: nlis_admin@daf.qld.gov.au
 - South Australia
Primary Industries & Regions of South Australia (PIRSA)
p: Biosecurity SA: 1800 654 688
e: pirsanlisdatabasenotifications@sa.gov.au
 - Tasmania
Department of Primary Industries, Parks, Water and Environment
p: Biosecurity Tasmania: 1300 368 550
 - Victoria
Agriculture Victoria
p: Biosecurity Division: 1800 678 779
e: nlis.victoria@ecodev.vic.gov.au
 - Western Australia
Department of Primary Industries and Regional Development
p: 1300 WA NLIS (1300 926 547)
e: nlis@dpird.wa.gov.au
- **Animal Health Australia**
www.animalhealth.com.au

Toolkit 1.2 Further sources of information

- **Meat & Livestock Australia publications**
 - *Going into goats guide: A profitable producers' best practice guide*. Provides further information related to business management, specifically:
 - Module 1: Property planning
 - Module 2: Financial analysis
 - Module 3: Industry obligations
 - Module 11: Goat depots
 - *Is it fit to load?*
- **Meat & Livestock Australia website**
Provides further information relating to:
 - **Business Management**
Access online: www.mla.com.au/Livestock-production/Businessmanagement
 - **LPA**
Access online: www.mla.com.au/Meat-safety-and-traceability/On-farmassurance/LPA
 - **LPA NVD/Waybills**
www.mla.com.au/Meat-safety-and-traceability/On-farm-assurance/Vendordeclarations/LPA-NVD-Waybills
 - **Feed and Fodder Declarations**
Access online: www.mla.com.au/Meat-safety-and-traceability/On-farmassurance/Vendor-declarations/Feed-and-fodder-declarations
 - **National Livestock Identification System (NLIS)**
Access online: www.mla.com.au/Meat-safety-and-traceability/Livestockidentification
 - **Transportation**
Access online: www.mla.com.au/Livestock-production/Animal-healthwelfare-and-biosecurity/Transportation
- **The Australian Q Fever Register**
 - Provides further information regarding Q Fever and stores information on the Q Fever immune status of individuals. Access online: www.qfever.org/aboutqfever.php
- **Grains Research and Development Corporation (GRDC)**
 - *A Guide to Succession: Sustaining families and farms* (available by phoning 1800 110 044)
- **Animal Health Australia website**
 - Provides the most up-to-date national Goat Health Statement and further information regarding its use. Access online: animalhealth.com.au/programs/jd/goat-health/goat-health-statement.cfm

Case studies

- Topic: Selecting and planning a wild-harvest enterprise
Producer: Dwayne Evans, NSW
- Topic: Harvesting and holding rangeland goats
Producer: Bob Grinham, WA
- Topic: Value-adding through genetics
Producer: Greg Church, NSW
- Topic: Selecting and planning a depot enterprise
Producer: Rick and Jo Gates, NSW

Case study

Selecting and planning a wild harvest enterprise

Name of producer:	Dwayne Evans
Property name:	Manages Weintergia, part leases Winbar East, share in goat paddock at Wave Hill.
Property location:	Between Wilcannia and Menindee, between Tilpa and Louth, south of Wilcannia respectively. New South Wales.
Property size (in ha):	Respectively: 33,500ha, 12,000ha, 10,000ha
Avg. turn off annually:	7,000 harvested goats
Rangeland enterprise type:	Pure wild harvest, low input goat breeding at Wave Hill (introducing Boer genetics)
Target market:	Some to depot, most direct to abattoir (T&R Pastoral)
Other farm enterprises:	3,000 Merinos at Weintergia

Dwayne Evans' main business is harvesting rangeland goats from the three properties he has interests in as well as five neighbouring properties.

Issues to be considered with goat harvesting

Dwayne explains that goat harvesters are in high demand around north-western New South Wales and that there are financial rewards to be realised. "What started as an experiment quickly became my main business enterprise," he says.

Financial

In rangeland country, Dwayne finds his goat harvesting business much easier than running sheep, explaining "we don't need to worry about finding shearers and its less time critical."

He also explains that there is a constant need for goat harvesters in the district and therefore there is significant opportunity to grow the business. While a significant initial investment was required to set the business up, the rewards are now following, "You have to do it properly. If you want to be successful and get a good reputation you can't cut corners or do it on the cheap – you need the right attitude and equipment," he explains.

Physical and human resource issues

Dwayne does not deny that goat harvesting is physically challenging. "Physically, it's hard yakka. It takes a toll on you and you have to always be careful on the equipment, be it bike, ute or gyro-copter, because it's easy to come unstuck. If you're aware of this and know your limits it is rewarding."

Business alternatives on the rangeland country

Dwayne has explored other business enterprises and continues to do so to remain diversified noting that there are advantages in not having "all of your eggs in one basket." This includes managing 3,000 Merinos on 'Weintergia'; however, the ongoing worry about finding shearers is a stressful aspect of the enterprise.

On the country he leases, Dwayne is introducing Boer genetics, explaining "they are easier to grow-out than pure rangeland goats. I can turn them off at eight months instead of 12 months."

Of these options, Dwayne finds goat harvesting the most profitable given the constant need for such services in the rangeland areas.

Infrastructure required for goat harvesting

As Dwayne's goat harvesting has grown, so has his need for resources. The business now operates one gyro-copter, six motorbikes and a small truck. In addition, they use seven well trained dogs and a portable set of yards and drafting race. "To do the job properly, you need decent equipment and good people," he insists.

Words of advice

Dwayne is adamant that you should not take shortcuts in the goat industry, whether running your own goats or running a goat harvesting operation. "If you are running goats in a paddock, make sure it's a decent sized, well fenced paddock stocked at the right rate; if you're harvesting goats, get the right gear for the job. Do it properly the first time, it's much easier than fixing up mistakes," he says.

Key points

- Don't underestimate the difficulty that can be involved in operating in the rangelands as this will lead to problems. Respect the environment and the risks.
- Rangeland goat harvesting can be less labour intensive and time critical than sheep production.
- Good people and reliable equipment are critical in running a successful rangeland goat harvesting operation.

Case study

Harvesting and holding rangeland goats

Name of producer:	Bob Grinham
Property name:	Meka Station
Property location:	100km north of Yalgoo, Western Australia
Property size (in ha):	394,000ha
Avg. turn off annually:	500 goats
Rangeland enterprise type:	Harvest and hold
Target market:	Live exports and abattoir
Other farm enterprises:	Dorper/Damara breeder sheep

Bob Grinham manages 'Meka Station', one of the largest holdings in the lower Murchison region of Western Australia. Meka has a 8,000 Dorper/Damara breeding flock that annually produces 4,000 to 5,000 lambs for live export and harvests about 500 goats for delivery to an export abattoir.

The techniques Bob applies to harvesting and holding goats have been refined through past experiences which included capturing and exporting about 300,000 goats over a 15 year period and designing and operating Australian Quarantine and Inspection Service (AQIS) quarantine and export facilities.

Harvesting rangeland goats

Bob's technique for capturing goats out of coastal parks first involves hiring a plane for an hour or so to fix the location of the main herd. Bob and his crew then select a suitable site near where the goats were sighted and erect temporary yards with lengths of hessian and wire to form wings for guiding the goats into the yards.

At first light the next day, or on a full moon, Bob takes a motorbike and a dog to surprise the goats at their camp and walk them to the yards. Bob's theory is that wild goats come together for security in numbers during the night. At first light the goats break camp; separating into family groups to graze out during daylight hours.

Once yarded, the goats are provided with fresh water to drain salt water out of their system – goats in coastal areas often consume large amounts of saline water and hay for gut fill. Within 24-36 hours after capture, the goats are trucked to station holding paddocks or to an abattoir.

Settling goats into holding paddocks

Bob believes that goats settle into paddocks if they are comfortable with the other goats in the mob. Female goats are drafted into lines based on age and liveweight, with the younger goats separated from four-tooths and older, and each group is moved into a securely fenced training area of about 300m x 300m.

The placement of water troughs at the opposite end to the feeding area ensures that dominant goats cannot control both the water and the feed at the same time. Hay is provided both in feeders and on the ground to provide shy feeders with the opportunity to eat from either location. Shy feeders are also shepherded onto water troughs. Pet 'coach' goats are a useful aid because they provide the new goats with confidence to approach the feed and water troughs.

Feed troughs must be cleaned out daily, to avoid becoming dirty from goat excretions. Any dead goats should be lifted, not dragged out of the yards to avoid dropping contaminated body fluids onto the soil within the intensive yard area. In addition, any sick goats should be quarantined separately and fed in a way that prevents the transmission of feed or soil that may be contaminated to the healthy goats.

Fencing

Within the training area, goats can be trained to respect electric fences. Electric fences are erected about five metres inside the perimeter of the training fence. Goats that escape the electric fence are returned behind the electric fence each day. Repeat offenders are culled, because they encourage other goats to become fence breakers.

Bob believes that a five line electric fence (two electrified wires; three earth wires) with a minimum of 6,000 volts and nine joules current is adequate for most situations.

Bob has found that in his environment and soil type, steel posts at 30m intervals with polythene droppers at 10m spacings provide a good structure for the electric fence. The bottom wire should be no higher than 10cm above ground level. Bob has learnt to remove old fence lines within any new paddocks as goats learn to walk through these old fences and will therefore pressure the electric fences.

After about a week of training, the goats can be released into a larger paddock of up to 25,000ha. Bob has observed that newly arrived goats generally walk around the boundary of their new paddock to seek a escape route. For this reason, he places water troughs at spacings of about 5-6 kilometres around the fence or in the corners of each paddock, rather than in the middle of the paddock.

It takes time, planning and commitment

Newly captured goats take about one year to fully acclimatise to their new environment and settle into their social groups. Reproduction levels may be lower than average in the first year of the enterprise.

Boer bucks need to be delivered onto pastoral stations at an early age (less than one year of age) to be able to perform and compete against bush males. Bob has observed that the range condition can improve if goat numbers are managed correctly. This may be due to the goats' preference to browse the vegetation canopy above, thereby allowing for new seedlings to establish underneath shrubs.

Words of advice

Bob's words of advice for people starting out in a rangeland goat enterprise:

- Identify a market that meets your capacity to supply.
- Spend the time necessary to build a relationship with that market and show loyalty to that market.
- Install infrastructure properly the first time.

Key points

Rangeland goats can be successfully harvested and held.

- Goats settle into paddocks if they are comfortable with the other goats in the mob. It pays to draft goats to minimise dominance behaviour (separate males and females as well as younger bucks and older bucks).
- Feed and water troughs should be placed around the perimeter fence as goats will naturally walk onto these while patrolling the boundary.
- Goats that continually challenge or breach fences should be removed from the mob.

Case study

Value-adding through genetics

Name of producer:	Greg Church
Property name:	Bushley Station
Property location:	90km south of Wilcannia, New South Wales
Property size (in ha):	19,600ha
Avg. turn off annually:	5,000-6,000
Rangeland enterprise type:	High input goat breeding
Target market:	Wethers live export to Malaysia. Smaller does meeting specifications live export to Malaysia for breeding purposes. Crossbred offspring for domestic market.
Other farm enterprises:	Trade cattle opportunistically, 600 Dorper ewes

The difficult times facing the wool industry and the nature of the 'Bushley' country in New South Wales encouraged Greg Church to shift his enterprise focus from Merinos to value-added rangeland goats in the late 1990s.

From an initial pure wild harvest of 1,500 goats annually, Greg now turns off 5,000-6,000 Boer crossed goats. "With the introduction of Boer genetics I decided to make a real effort to meet specifications as I am now getting paid on a live weight basis instead of a dollar per head figure. There's more incentive for me to put the effort in as I see the returns on my bottom line," he says.

The introduction of Boer genetics

Physical and human resource considerations

While Greg still requires labour to muster, draft, process (with ear tags) and truck his value-added goat herd, the timing of the operations are less critical than with his Merino flock. This has significantly reduced the stress and difficulties of running a grazing enterprise in an isolated region.

Financial considerations, risks and potential rewards

Following many 'sleepless nights' Greg decided to introduce Boer genetics, cautiously optimistic that this would reward him financially, and now, as a result, he is able to predict his income 12 months in advance.

"I knew there were a number of markets for value-added goats out there, including the depots, meatworks and one-off opportunities, so I can pick the option that maximises my income with the goats I have on hand," Greg says.

The installation of appropriate infrastructure for goats has also enabled him to introduce Dorsers to his enterprise. "It's a win-win," he says.

Other enterprise options

Greg maintains that his country is best suited to goats.

"Cattle are useful to rotate through the country if feed and markets allow, but the Bushley land is too fragile to be full-time cattle country," he says.

Greg has considered running more Dorsers, which were new to Australia's pastoral system when Greg decided to focus on goats, but the financial rewards of his current enterprise mix are meeting his business objectives for now.

Infrastructure requirements

Greg continues to upgrade infrastructure, as time and budgets allow, with the recent addition of a fourth set of yards and roofs over some yards to minimise animal stress. The purchase of auto-weigh scales has enabled Greg to ensure he is meeting market specifications and hence maximising his returns.

Pros and cons

Greg has found his value-added goat herd to be both financially rewarding and less stressful than his previous operation. He is, however, now faced with the difficulty of finding a supplier of hardy Boer bucks that will survive and thrive in the Bushley country, explaining "many breeders are currently more focussed on the show ring than the commercial job".

Words of advice

- **Infrastructure**
Goats can be hard on the country and on your facilities. If you are value-adding your herd then invest in suitable infrastructure to minimise animal stress and losses. Ensure you have the facilities to meet your market's specifications, such as auto-weigh scales, in order to maximise your returns.
- **Know your markets**
Knowing your marketing alternatives for value-added goats is vital. "Anyone can breed the crossed goats but you need to be able to do something with them and make something from them, if you know your marketing alternatives and their specifications you can maximise your returns."

Key points

- Value-adding opportunities do exist for rangeland goat producers and many of these are accessed via high value breeding operations.
- Before investing, understand the opportunities and potential return on investment.
- Scales are often an important component of a value adding enterprise as they help ensure delivery to market specifications.

Case study

Goat depots - risks and rewards

Name of producer:	Rick and Jo Gates
Property name:	Burndoo
Property location:	70km south east of Wilcannia, New South Wales
Property size (in ha):	25,000ha
Avg. turn off annually:	150,000 goats
Rangeland enterprise type:	Depot
Target market:	50-55% meat export to USA; 20% domestic meat; 20% live export to Malaysia (bucks); 5-10% restockers

Rick and Jo Gates run a successful goat depot on their station 'Burndoo' near Wilcannia, New South Wales. Rick explains that "with only 25,000ha of this country, we were not big enough to run a profitable trading enterprise and the goat depot was our best option."

Issues associated with running a goat depot

While Rick is the first to admit that running a goat depot is not easy, he believes the financial rewards are worth the risks involved.

Key issues Rick has highlighted regarding his depot operation include:

- **Labour**
Physically, the goat depot is very labour intensive. Rick and Jo employ two full-time staff and one casual staff member to assist with the operation of the depot.
- **Financial**
It is costly to establish a successful large-scale depot; however, there are financial rewards.
- **Timing**
Timing is critical in ensuring the success of a depot operation. Rick explains that they sell 2,500-3,500 goats weekly and must therefore have their "finger on the pulse" of pricing and markets at all times. Rick purchases all goats from within a 200km radius and explains that "if I'm not here and ready to buy, my suppliers will sell to someone else. My suppliers are as crucial as my customers."
- **Risks**
The main risk associated with a goat depot is overstocking. Rick mitigates this by pre-emptively marketing his goats which he believes is vital to a successful depot operation. This means that Rick will usually have customers ready to take the goats before they are delivered to the depot for drafting.

Alternative enterprises

Given the nature of the Burndoo country and the potential profitability of Dorper sheep, the Gates did consider breeding Dorsers. They decided, however, that the cost of ewes at \$200-\$250 per head, compared with small goats at \$10 per head, was prohibitive. While the Gates admit their depot operation is labour intensive and time critical, it is profitable and suited to their country.

Infrastructure requirements

The Gates spend considerable time maintaining the 160km of fencing they have on Burndoo. Rick explains "in autumn we'll spend two to three weeks just maintaining fences for height and clearing the grass off them."

Other infrastructure that is critical to the Gates' depot operation includes:

- **Yards**
The Gates have four sets of well constructed and maintained yards.
- **Trucks**
Two on-farm trucks are regularly used for shifting goats.
- **Roads**
Well maintained and upgraded roads are critical to the success of the depot, with an average of three to four B-Doubles loading around 3,000 goats weekly. Following heavy rains in a wet year, it is not uncommon to have to spend in the order of \$20,000 on road maintenance.

Words of advice

- **Intensive**
Running a goat depot is labour intensive and time critical. Rick insists "don't think you can run a goat depot part-time. It's all a matter of timing. If you're not there you won't get the business."
- **Do it properly**
To be successful, a goat depot requires a significant investment in time and money. If you are going to run a profitable depot it is important to establish and operate it without cutting corners.
- **Supplier is king**
The profitability of a goat depot relies to a large extent on the suppliers of the goats. Rick explains that if you are not the easy alternative and front-of-mind for suppliers then they will sell their goats elsewhere and you will miss the opportunity.

Key points

- Running a goat depot requires a significant investment in time and money.
- Location, location, location. Goat throughput is critical to the successful operation of a depot. Goats need to be able to be sourced and then delivered on time and according to specification. The depot should be located to maximise throughput.

Chapter 2: Infrastructure

The infrastructure required for rangeland goat production will vary depending on the enterprise and range from minimal (wild harvest) to substantial (depot). Key infrastructure considerations include:

- Fences, traps and yards
- Water and watering facilities
- Handling equipment
- Shelter

2.1 Fences, traps and yards



Example of a loading ramp and forcing yard incorporated in a trap yard design.

There is significant variation in fencing within and between enterprises. In wild harvest operations, fencing may be limited to several secure traps or yards compared with a rangeland cross breeding enterprise which will rely on secure stock proof fences between individual paddocks.

Part of the reason for the variation in fencing relates to the distances and expense involved and this has led to many ingenious types of fences. No one type of fence, trap or yard suits all situations; however, the ability to effectively control goats is fundamental to running a sustainable rangeland goat enterprise.

What to do

Module 4: Infrastructure of the GiG Guide, provides further general information regarding fencing infrastructure for goat production and is generally applicable to rangeland goat production.

Fencing is now recognised as a critical element of sustainable rangeland production. Good fences allow the producer to more effectively manage total grazing pressure, trap and hold goats for sale, manage lines of goats to meet market specifications and undertake controlled breeding programs.

The behaviour of rangeland goats should be carefully considered when designing fences and yards. Rangeland goats are typically:

- Intelligent
- Inquisitive
- Agile
- Territorial

The first step is to decide what kind of fencing would best suit your operation and budget. While the task can be daunting, developing a long-term fencing plan and then investing a manageable amount in the on-going fencing program each year can deliver a significant return on investment. Such a system creates management and marketing opportunities that soon recover the cost of the fence.

How to do it

Fencing holding compounds or goat paddocks

Holding compounds or goat paddocks are purpose-built high security paddocks that:

- Allow goats to adjust to an enclosed environment.
- Enable short-term holding of rangeland goats while assembling consignments.
- Enable the long-term accumulation of mustered goats.
- Allow goats to be easily and quickly mustered and drafted to take advantage of a marketing operation.
- Allow small goats to be grown out to meet market specifications.
- Allow for selective breeding.

When designing a goat paddock fence it is important to consider not only the goat that you will try to keep in the paddock but also those you are seeking to keep out. In the case of a controlled breeding operation, this may include undesirable rangeland bucks or feral animals such as pigs and wild dogs. This may influence fence design.

Goats can be contained using sound structural or suspension fences and electric fencing. Once confined, goats tend to develop a range within the confines of a fence and will not challenge the fence unless available food becomes scarce. There are many examples of goats trying to get back into a paddock, having escaped, as that has now become their range.

Herd structure plays an important role in determining the range and behaviour of goats and may influence the type of fencing suited to a particular enterprise. The tendency of goats to roam can be significantly reduced by removing the bucks. Mobs of goats with a low percentage of bucks (ie: less than five percent adult bucks) tend to graze within defined home ranges, reducing the requirement for fencing in uniform landscapes.

Regardless of whether a paddock is being fenced with a structural fence or an electric fence, it can be beneficial to eliminate corners by using several lengths of 1.1m sheep yard mesh. This removes a high pressure point and potential weakness in any fence – the corner.

Structural fencing

As a general rule, a structural fence that will contain a cross bred lamb will contain a goat. Be sure to place stays on the outside of the fence or use stays that are difficult to climb or goats will use these to escape the paddock.

• New structural fences

Plain wire fences with the top two wires being barbed wire, such as a ten wire fence, can be effective provided the wires are well tensioned and droppers spaced reasonably close together (<15m). Maintaining high tension on the bottom wire is critical and it may be useful to use a higher gauge wire to allow this.

Hinge joint fences, such as 6/70/30 or 8/90/30, with two barbed wires on the top and two on the bottom are effective. Hinge joint with a picket spacing of 15cm (such as 8/80/15) should be avoided as goats can become stuck by the horns in such fencing.

Line posts (or droppers) should be placed at the bottom of gullies to ensure the bottom of the fence is always within 7.5cm of the ground level. Goats will generally try first to squeeze underneath fences before attempting to climb or jump over the top.

• Renovating structural fences

Sheep fences can be upgraded to be goat proof in many ways. Plain wire fences may benefit from the addition of new wires so as to become a ten wire fence, or through the addition of hinge joint. If the fence is too old or dilapidated, it is, however, generally advisable to consider a new fence as this will deliver a better result and require less maintenance. Regardless of whether the fence is new or old, some degree of maintenance will be required as goats are opportunists and will leave the paddock to explore if a kangaroo hole becomes well defined or a branch falls across the fence.



Stays should be on the outside of high pressure fences or of a construction which is difficult for goats to climb.

Electric fences

Goats respond well to electric fences and this often provides a cheaper fencing alternative to structural fencing. Electric fences may however, require increased maintenance in some environments and consideration should be given to incorporating design features within the fence that will minimise this and the risk of fence failure. This may include running the largest energiser practical to the circumstances to ensure that, even in the event of a minor interference or earthing on the fence, sufficient charge is available to energise the fence, or using insulators that are less likely to release the wire should the structure of the fence be challenged.

• New electric fences

In designing a new electric fence for goats, it is important to consider the environment in which the fence will be operating. Establishing a reliable earth in dry conditions can be difficult and it is important therefore to ensure that the fence design incorporates well positioned earth wires.

Reputable electric fence suppliers offer products and designs suited to Australian rangeland conditions.

• Renovating structural fences using electric fencing

Electric fencing can offer a cheap way to convert an existing sheep fence into a secure goat-proof fence. This can be done by out rigging an electric wire approximately 30cm out from the fence and 30cm off the ground. If done on both sides of the existing sheep fence, this design can also act as a significant deterrent to wild dogs.



An example of an offset electric wire - 30cm out from the fence and 30cm off the ground.

• Training goats on electric fencing

The effectiveness of electric fences can be significantly enhanced by training goats to accept electric fences prior to introducing them to the fenced area. This is best done in a small holding yard, fenced with a well maintained and relatively powerful electric fence. Goats should be held in the yard for a week or so and provided with adequate food, water and shelter. They will soon learn to respect the fence and can then be released into a larger area fenced using electric fencing.

In a breeding operation, older breeding does that have been raised to be accustomed to electric fences will tend to train younger goats and it is not therefore necessary to train goats bred within an environment fenced with electric fences.

• Maintenance of electric fences

Electric fences do require maintenance if they are to remain effective with the main issue being the shorting of energised wires by fallen branches, animal interference, regrowth and debris. The amount of maintenance will depend on the landscape and vegetation.

Maintenance can be reduced by ensuring that you do not overestimate the amount of wire an energiser will energise. Always be conservative and ensure there is ample current to service the fence.

It is often a good idea to run two or more energised wires rather than one so that if one wire is earthed, part of the fence still remains energised.

Paddock size considerations

Holding compounds or goat paddocks can be any size provided some basic principles are met:

- Sufficient feed and water are available for the contained animals. Goat numbers can increase quickly so care must be taken to ensure that a paddock does not become over stocked.
- The vegetation and size allow for relatively quick and easy mustering.

Animal behaviour and welfare considerations

When goats are confined or the mob structure altered, their behaviour can change. Issues to be aware of include:

- Mixing unfamiliar animals may result in dominance behaviour resulting in stress or injury, especially among bucks.
- A mob of goats comprised mostly of does tends to be more stable.
- Where bucks are being kept for a specific market, they should be kept separate from the main herd in appropriate confinement paddocks.
- Goat populations can increase quickly in confinement. If goats are held for an extended period be sure to monitor numbers. Pay particular attention to the number and condition of breeding females and manage these as required i.e. add additional feed or reduce the number of females.
- To minimise dominance behaviour and maximise production, goats should be segregated into the following groups:
 - Does with kids at foot
 - Heavily pregnant does and small or young goats
 - Bucks

Trap yard design

Trapping of rangeland goats is one of the most effective ways to accumulate goats from the wild or from large paddocks. Trapping involves the construction of goat proof fences, typically around water sources with a number of one-way gates or ramps.

There are many trap designs, three of the most commonly used traps are:

- **Jump-down traps or earth traps**

The entrance to the trap consists of an earth ramp sloping up to approximately one metre high approaching a fenced watering point. By walking up the ramp and jumping from the top, the goats are able to access the water. A heavy gauge wire or baulking bar may be placed approximately 30cm above the top of the ramp to prevent the goats from jumping back out of the trap. The width of the ramp depends on the number of goats in the area.

A gate should be positioned in the fence encircling the watering point on the opposite side to the ramp. This means that goats will move around the watering point toward the gate rather than milling around the ramp which can occur if the gate is positioned next to the ramp. The trap is set by closing this gate.

Jump-down traps may be used in conjunction with spear gate traps.

Small or timid goats as well as other livestock may be reluctant to use the ramp and incorporating a spear gate trap in the design allows an option for entering the watering point and results in higher catch rates. The spear gate should be positioned next to the ramp on the opposite side of the watering point to the exit gate.



An example of a jump-down trap from inside the trap.

- Jump-down traps are best suited to areas that are free of other livestock or used in conjunction with alternative access to the watering point, such as via a spear gate. Cattle and sheep that are in poor condition may suffer injuries when jumping from the ramp into the trap.

- **Spear gate traps**

The entrance of a spear gate trap consists of a V-shaped gate with flexible spears. Goats have to squeeze through the spears to enter the yard to drink. Goats should be trained to go through the gates by gradually closing the spears over several days or weeks so that they become used to squeezing through the V. Large bucks may have difficulty squeezing through this type of gate and it is advisable to run a spear trap in conjunction with a jump-down trap to ensure higher trap rates.



Examples of spear gate traps.

- **Swinging one-way gate traps**

One-way gate traps incorporate a one-way gate which allows the goats access to the water but does not allow them to exit.

Important features of an effective trap

- Traps should be established in areas where there is limited availability to water. Alternative watering points should be fenced off.
- Traps should be large enough to avoid overcrowding and regularly checked and destocked as required.
- Traps should be constructed to allow for shade and shelter as goats can suffer when exposed to extremes of heat and cold.
- It can be useful to incorporate loading pens, holding yards and drafting facilities into the trap design, thus enabling on-site animal handling.
- Goats typically exhibit a following and circling behaviour. Round traps can be more effective as they aid the flow of animals and eliminate corners which are high-pressure points where goats may be forced.

Other considerations

- Appropriate feed and water must be made available and goats should be monitored for their unwillingness to drink or eat while in the trap. If goats are not eating or drinking they should be removed from the trap.
- Selection of trap design will be based upon habitat, available materials and accessibility to site.
- Trap design should avoid injury caused by loose or sharp edges or malfunctioning equipment such as gates.
- Consider the implications for other animals of fencing off watering points to force goats to the trap.
- Trees and shrubs should be cleared from the fence line so they won't interfere with the operation of the trap or cause damage.
- Sensitive and fragile natural watering points should not be

incorporated into traps.

- Trap fencing must be well maintained and secure.
- Prior to setting traps a period of adjustment is required - refer to Chapter 3: Animal husbandry and welfare, Section 3.2: Trapping of this guide for further information regarding trap training.

Impact of traps on non-target animals

Traps designed and set up for the capturing of rangeland goats can have a significant negative impact on native non-target species by inadvertently trapping them and also by excluding them from water sources.

A combination of engineering and management solutions should be adopted to minimise the impact of traps on non-target species. The most important of these is to only set traps when goats are ready to be moved and do not leave the trap set for extended periods. Check the trap regularly once set. Other options include:

- Chicken wire, rubber belting or shade cloth placed on the top 20cm of the trap gate mesh acts as both a physical and visual barrier, particularly for kangaroos.
- Fences should be no more than 1.2m high (preferably 90cm).
- Small escape gates can be incorporated at intervals around the fence to allow immature kangaroos and wallabies to escape under the fence while mature kangaroos can jump over the fence.
- A protected water source could be provided nearby that would allow access for wildlife species.

Handling yards

Goat yards may be purpose built or may be adapted from cattle or sheep yards. Well designed handling yards make working rangeland goats easier and safer. When designing and constructing handling yards, producers should consider the following principles:



A set of purpose built goat yards.



These sheep yards have been modified for goat handling through the addition of a top rail.

- Yards that will be used more frequently should be constructed to withstand constant heavy pressure and construction materials should be selected and used accordingly, particularly in high pressure areas such as approaching races.
- Goats exhibit following and circling behaviour; therefore yards should have rounded corners to improve the flow of goats.
- Goats are extremely agile so covering all internal struts and stays will help prevent goats climbing out.
- Goats will crowd and pack together more readily than other livestock. The length of raceways should be reduced to 4m sections to reduce compaction and crowding of goats. V-raceways of widths 50cm at ground level and 65cm-70cm at the top can help accommodate long horned bucks.
- Goats have a nervous disposition and wide angle vision. They tend to be attracted by light and are reluctant to enter wet, muddy areas.
- Modified sheep or cattle yards can make useful goat yards. The height of sheep yards may have to be increased through the addition of another rail, increasing the height to about 1.1m-1.2m. Hinge joint, mesh, rails or belting may be added to the lower 1.1m of cattle yards to make them goat proof. Attention should also be paid to the loading ramp to ensure that trucks can be loaded and unloaded with minimal risk of escape.

Portable yards are a useful addition to some goat enterprises and can save time and effort when goats need to be handled. Portable sheep yards can be easily modified to handle goats by adding an additional rail to increase the height of the panels.

Useful features for yards

- It is suggested that the minimum height of perimeter fencing be 1.5m while the minimum height of handling yards be no less than 1.2m.
- Goats and workers work better in shade. Provide shade to as much of the yards as possible.
- Holding yards should be equipped to provide feed and water.
- It is useful to be able to water the yards to suppress dust.
- Yards should be located so they can be easily accessed from the main road but far enough away so as not to be easily observed. This allows goats to be trucked out readily as required while reducing the risk of stock theft and a possible negative public reaction to seeing confined livestock.
- Goats are less inclined to attempt to jump yards if they are able to see through them.
- Yards should be accompanied by a sturdy loading ramp.

Module 4: Infrastructure of the GiG Guide, has further information regarding design considerations for goat production that should be considered in a rangeland goat production context.

Mustering goats

When mustering goats, it is often useful to move them along a fence line. This increases your control over the mob and often reduces the need for labour.

Wings can be constructed away from permanent yards to channel goats toward the yard.

When using portable yards, these can be set-up on fence lines for a similar effect.

2.2 Water and watering facilities

What to do

Access to sufficient quantities of high quality water in a goat production environment is critical to goat health, managing grazing pressure and controlling livestock movement. The management of watering points in a trapping enterprise is particularly important.

Goats will tend to centre their range around reliable water, particularly where water is scarce and bucks have been removed from the herd. Such watering points become an important consideration in monitoring grazing pressure and managing livestock numbers.

Once goats are confined it is important to provide them with easily accessible, good quality water at all times.

How to do it

In a trapping enterprise, non-critical watering points should be fenced-off to force goats to enter traps. This must be done in consideration of other animals that may be relying on the water.

Grazing pressure should be monitored around the fenced watering points. This is best done by identifying key plant species which are grazed at different times depending on the amount of feed available. The more palatable species are the first to be grazed with less palatable species only grazed when other plants are in scarce supply. By monitoring the less palatable plants as you move away from the watering point, you will develop a feel for how much feed is available and when it is time to reduce or increase stocking rates.

In providing water to goats in confinement it is important to position the watering point where goats will locate it easily. Troughs are best positioned near the fence in a goat paddock so that when goats are moving around the fence, as they tend to do in seeking exits and establishing their range, they will naturally come across the trough.

Water should be provided to goats when they are yarded although it is advisable to limit access to water immediately prior to trucking as goats that have drunk their fill do not tend to travel well.

Module 4: Infrastructure of the GiG Guide provides further information about water supply for goats.

2.3 Handling equipment

What to do

The handling equipment outlined in *Module 4: Infrastructure* of the GiG Guide may be applicable to rangeland goat production depending on the nature of the enterprise. More sophisticated handling and management tools, such as goat handlers and scales, are becoming more common place in the rangelands as producers seek to maximise the value of their goats.

How to do it

There are a number of commercially available goat handlers which make handling large numbers of rangeland goats a realistic proposition. Typical features of a good goat handler are that they:

- Are well constructed and able to stand up to rough work
- Can operate in harsh, dusty environments
- Are designed to immobilise goats through the removal of a false floor, a controlled squeeze mechanism or some other feature

- Can be operated quickly and easily
- Allow goats to be ear tagged and marked
- Are designed to accommodate wide horns on mature bucks
- Are affordable

Contact your local steel or yard supplier to see what is available.

A goat handler should be installed in well designed yards and complemented by a three-way draft and a set of scales to allow goats to be sorted and weighed.



Goat handlers can either be simple, improvised devices or purpose built such as this example.



Scales such as these can be used to weigh pens of goats with the weight then averaged across the mob. This speeds up handling and improves efficiency.

Scales are an important management tool which can help determine the value of your goats and implement management strategies to maximise returns. It is advisable to weigh goats prior to sale so that you have a good idea of what a consignment is worth. Light animals that you will not be paid for (usually less than 23kg live weight and referred to as “no commercial value” or NCVs) can be identified and removed from the consignment.

Scales also allow mobs to be drafted into consistent lines and sold into the most profitable market.

Toolkit 2 - Infrastructure

Toolkit 2.1 Further sources of information

Toolkit 2.1 Further sources of information

- **Meat & Livestock Australia publications**
 - *Going into goats guide: A profitable producers' best practice guide.* Provides further information related to infrastructure, specifically Module 4: Infrastructure
- **Department of Agriculture and Food, Western Australia publications**
 - The Grazing of Goats in the Pastoral Areas of Western Australia (Best Management Practice Guidelines), www.agric.wa.gov.au/objtwr/imported_assets/content/lwe/regions/nrr/warangelandsbmpwelfaregoats.pdf
- **Queensland Government publications**
 - Feral Goat (*Capra hircus*) in Queensland, Pest Status Review Series - Land Protection, (1999) www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPAFeralGoat-PSA.pdf
- **NSW Department of Primary Industries publications**
 - Humane pest animal control - Trapping of feral goats, www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/57262/goa-004.pdf

Case studies

- Topic: Electric fencing for goat production in the rangelands
Producer: Joe and Fiona Owens, QLD
- Topic: Structural fencing for rangeland goat production
Producer: Andy and Fiona McLeod, NSW
- Topic: Designing goat yards
Producer: Keros Keynes, Formerly of Curbur Station, WA
- Topic: Effective trap yards
Producer: Stephen Obst, SA
- Topic: Modifying existing infrastructure for rangeland goat production
Producer: Ken Turner, NSW

Case study

Electric fencing for goat production in the rangelands

Name of producer:	Joe and Fiona Owens
Property name:	Gydia Park
Property location:	25km west of Isisford, Queensland
Property size (in ha):	10,000ha
Avg. turn off annually:	400 goats
Rangeland enterprise type:	High input goat breeding system
Target market:	Live export and export meat market
Other farm enterprises:	Cattle and sheep

Joe and Fiona Owens have spent the last ten years working out what is the best electric fence system for goats on their property, 'Gydia Park', west of Isisford, Queensland. Joe believes six plain wires with one top barb with the second bottom and fourth wires electrified works best. He reiterates that it is important to run all this through steel posts on insulators and use galvanised steel pegs attached to the earth wires and driven into the ground in low spots along the fence to take advantage of any available moisture every few kilometres.

The Owens have found that this fence requires the least maintenance and presents fewer faults than other designs and is made even more resilient through the use of porcelain insulators which tend to stand up to more abuse, last longer and therefore require less maintenance than plastic insulators.

Other options, such as an offset or stand-off hot wire, can be effective in keeping goats in, but kangaroos can cause problems through constantly tangling the wire and causing it to short or breaking insulators by hitting the fence forcefully.

Important elements of an electric fence

Joe identified the following elements as being important in operating an effective electric fence in his environment:

- Energiser size - "If you want to power 20km use an energiser that will do at least double that. This means that minor shortages and disruptions along your fence can be experienced without the fence becoming ineffective."
- Earthing - "In the dry areas, a good earth is essential." Good earths, incorporating stainless steel rods with salt and dolomite, should be used at the energiser and complemented by earth wires in the fence and earthing rods or posts every couple of kilometres along the fence.
- Stand-off wires - "If using an offset or stand-off wire over a long distance, run double wire for some distance from the energiser to maximise power at the end of the line. Think of your wire as a pipeline - a 2cm pipe run 2km will deliver no pressure at the end, whereas a 4cm pipe run 2km will deliver plenty of water and pressure."
- Joiners - "Pay attention to correct joins with clamps to prevent power loss along the line."

Fence training

Joe believes training the goats to respect fences is a critical part of any goat production system. "If you have unhandled rangeland goats, it's best to contain and feed them in a small goat paddock for at least three days. The fence is the important

part; this should be made up of ringlock or hinge joint (8/90/30) with an electric offset. The ringlock or hinge joint will prevent them from escaping if they rush the fence and even if they try, they should hit the hot wire first and will soon learning to stay well away from fences."

Before confining goats in an electrified training paddock, Joe insists that you must check that your energiser is working at maximum output so that the goat's first encounter with the fence is the one the animal remembers. Also pay attention to any gaps in gates or hollows under the fence. "Be one step ahead of them, so they learn straight away they can't get through the fence and out of the paddock". Joe found they quickly accept this and do not bother to challenge the fences in future.

Fence maintenance

Joe spends a couple of hours most weeks checking his 45km of electric fencing. He also checks the energiser on most water runs. "It's often convenient to build the fence checking task in with other jobs you'd be doing anyway, such as checking water. This way it does not take much time and does not become an onerous task."

To be effective, electric fences must be checked regularly and well maintained; however, training goats to respect fences from the outset minimises the reliance on maintenance.

Word of advice

- Seek advice from electric fence field representatives and producers with experience in your area.
- A good electric fence fault finder, showing both volts and amps, is essential for maintaining fences.
- Construct the fence properly the first time and train the animals well. This will minimise future issues and reduce the need for maintenance.

Key points

- Goat proof fences are essential for high-value breeding enterprises. Electric fencing can be used to effectively control goats.
- Regular maintenance is required to ensure that electric fences are operating effectively; however, the amount of maintenance required is influenced by the fence design.
- Training goats to respect electric fences can improve the fence's effectiveness.

Case study

Structural fencing for rangeland goat production

Name of producer:	Fiona and Andy McLeod
Property name:	Coombah Station
Property location:	125km south of Broken Hill, New South Wales
Property size (in ha):	80,000ha
Avg. turn off annually:	6,000-7,000 goats
Rangeland enterprise type:	Harvest and hold
Target market:	Boxed meat exported to USA
Other farm enterprises:	Trade cattle opportunistically, 3,000 Merinos, 500 Dorpers. After flood, opportunistic cropping in lake bed.

'Coombah Station', New South Wales, was originally fenced for sheep but the McLeods have gradually changed some of the fencing to allow for the effective management of rangeland goats.

Effective fencing for goats

There are many theories surrounding effective fencing for rangeland goats, but the McLeods have found a type of fence that works for them.

The colloquially known 'ten wire fence' provides the answer to their needs. The basis of the ten wire fence is a regular sheep fence with four plain high tensile wires and two high tensile barbed wires running along the top of the fence. Four additional high tensile plain wires are added to this fence along with droppers spaced as closely as the budget will allow. On Coombah Station, the McLeods have found a star post every 12m with two droppers in between is effective.

Andy does not deny that there is a significant amount of work involved in constructing a ten wire fence for goats but maintains that it is worth the effort. "It is very time consuming and a major effort," he admits, "but once it is in, it's in for good and it lasts. It's worth the time and money."

Critical elements of an effective fence

Maintenance

Maintenance of fences is critical to ensuring their effectiveness. "Obviously if you have holes in your fences you'll lose goats, so it's worth spending the time checking them." The McLeods check the fences around their goat paddock regularly if goats are in. The rest of the property, over 80,000ha, is checked less regularly and paddock corners are the focus as they are subjected to the most pressure.

Age of fence

The McLeods explain that the newer the fence the better, but if an older fence is in good condition then modifying it shouldn't be a problem. If modifying an existing sheep fence to a ten wire fence, the sheep fence should be no older than five to ten years, depending on its condition. Andy's son Alex explains "you are better off ripping it out and starting again if it's not in good nick."

Dropper and post spacing

Another rule of thumb - the closer the droppers and posts, the more effective the fence.

The McLeods recommend that the droppers be spaced as closely as is practical and affordable to ensure the fence is as effective as possible. A 12m post spacing with two droppers in between works well on Coombah and also seems to increase the life span of the fence by reducing the amount that the wire stretches.

Training goats with fences

Andy believes that if the fences are in good enough shape then there is little advantage in training goats. "We may lose the odd goat through a fence but certainly not big numbers," he says.

The McLeods have strategically constructed permanent reinforced wings in a V shape running away from their yards. Each wing can be up to 400m long, the longer the better according to Andy, and is designed to assist in directing the goats in the right direction. These wings help minimise pressure on standard fences and reduce stress by making the goats easier to work.

Words of advice

- **Maintenance**
Keep fences well maintained to minimise any goat losses.
- **Keep chipping away**
Andy believes that the best way to go is to start small and work out from there - you don't need to fence the whole property at the one time. He maintains that you should properly fence a paddock every few years, as time and budgets permit.

Key points

- Goats can be harvested and held in goat paddocks for marketing when prices improve during the cooler months.
- Pre-existing sheep fences can often be modified to make good goat fences.
- In general, structural fences still require maintenance although not as regularly as electric fences.
- Training goats to structural fences is not as important as it is when using electric fences.

Case study

Designing goat yards

Name of producer:	Keros Keynes
Property name:	Formerly of Curbur Station
Property location:	340 km north east of the port of Geraldton, Western Australia
Property size (in ha):	178,000 Hectares
Rangeland enterprise type:	Wild harvest and domesticated goats
Target market:	Live exports and abattoir

Keros Keynes has spent over 40 years with livestock and goats. While operating Curbur station, he designed and built a 15,000ha domestication paddock with training compound and yards as well as trapyards (from arc mesh and ringlock netting) around 48 dams and wells.

Since July 2009, Keros has established a goat breeding farm incorporating a depot and feedlot. On this farm, he has built containment and handling yards for rangeland goats which allow for drafting on arrival into sex and weight and applying health protocols such as drenching, vaccinating, weighing, feeding and holding.

Keros' observations on the following aspects of goat behaviour led him to consider these as key factors in the design of goat yards:

1. Goats tend to prefer to move uphill
2. Goats tend to move more easily through curved yards as they tend to smother in corners
3. Goats prefer to remain in social groups, with the older goats leading the younger ones.
4. Rangeland goats tend to rush and pack into each other, causing a risk of trampling. To minimise this risk, the size of the forcing yard should be limited to a capacity of about 40 goats and processing raceways should be limited to about 6 metres in length.

General planning principles



- Holding paddocks should be of a scale to contain the largest mob on the property and should be located with easy access to the main yards. These should contain adequate shade and water, with some rocks or logs to provide some entertainment for the goats.
- The construction material used in the complex, including fences, gates and raceways, should be of sufficient strength to withstand rangeland bucks running at full speed.

- Gateways need to be wide enough to enable a smooth flow of goats.
- Provide a single pathway to all handling facilities so that all goats have to follow the same direction every time they use the yard system. Goats are intelligent and will remember their way.
- Avoid steep downhill slopes within the main yard complex; however, a slight gradient may be useful to provide drainage during wet conditions and avoid water collecting in undesirable places such as near drafts and gateways.
- Orientate the facilities to avoid shadows falling across pathways and raceways.

Handling facilities

Provide suitable drafting facilities and handling pens or raceways.

Drafting race – Allow a minimum of 2.5 metres between the race entrance and the drafting gate. The race should ideally be V-shaped, 900 mm high, 600 mm wide at the top, tapering to 300 mm at bottom with a solid floor. Added strength and improved flow can be achieved by staggering the upright posts, especially at the entrance to the race. The sides of the race should be solid and smooth, without holes or rails, to allow ease of passage for larger horned animals.

Allow for a minimum three-way draft to reduce the need to repeatedly move the same groups of goats through the system. Consider labour saving devices such as remote controlled gates where applicable. Drafting gates are best manufactured from solid material so as to prevent goat horns from being caught.

Handling race – Can be up to 6 metres but divided into three 2 metre sections. If handling large numbers of bucks, the height may need to be increased to 1.2 metres. Consideration should also be given to raising the race or making the race height adjustable as it is easier for an operator to work on animals at waist height rather than leaning forward over a race all day. Allow space for a set of scales to be dropped into the race or set up a separate weigh station to allow two procedures to occur simultaneously.

Handling devices – There are several goat handlers on the market which take the hard work out of regular husbandry activities such as drenching and hoof trimming. Of particular note are those units with a built in squeeze, providing safety for the animal and operator.

Shelter, shade and dust – Shade should be provided, particularly over the working race. Dust suppression in working yards is important for both the operator and the animals. Well positioned sprinklers can reduce dust while dust and mud can be minimised through the use of paving and good drainage.

Recommended dimensions

Height of fences and yards

- Most manufactured farm gates are 1.2 metres high and this is a good height for most goats.

Gate widths

- Receiving yards – 4.0m
- Internal gates 1.2m or wider
- Consider vehicle access as part of the planning process

Suggested area per goat

- Holding yards one goat per square metre
- Forcing yards three goats per square metre

Words of advice

- If the people handling the goats are comfortable in the yards, then nine times out of 10 the goats will be as well.
- If you have troublesome individual animals such as habitual fence jumpers, sell them as soon as possible.
- Run new animals through your handling facilities, including the yards, race and crush, several times without handling them to get them used to your facilities.
- Consider building your yards with temporary or portable yards first so you can change them to suits your situation. Once you settle on a design that works, then build the permanent structure.
- Use small mesh size to reduce the incidence of smaller goats getting their head caught in the yard panels.

Case study

Effective trap yards

Name of producer:	Stephen Obst
Property name:	Pualco Station
Property location:	65km south of Yunta, Burra and Truro, South Australia
Property size (in ha):	8,100ha, 2,500ha at Burra, 400ha depot at Truro
Avg. turn off annually:	4,000 goats (from station and surrounding national park)
Rangeland enterprise type:	Pure wild harvest at Yunta, depot at Truro
Target market:	T&R Pastoral; wholesale carcasses directly to butchers (primarily Muslim market)
Other farm enterprises:	700 Merino ewes, prime lambs, goat depot

Stephen Obst traps rangeland goats on his station 'Pualco' near Yunta, South Australia, and from the surrounding national park. He drafts these and trucks goats that are too small for market to his fenced property at Burra, South Australia, which holds up to 2,000 goats. These are added to with small goats purchased from other producers. Stephen's depot at Truro gives him another option for growing out smaller goats with the convenience of being located very close to T&R's Lobethal abattoir.

Effective trap yard designs for goats

Stephen has developed a fail-safe system for trapping rangeland goats on Pualco and the surrounding national park which could be applied to most station country. The following are what Stephen considers to be key elements of effective trap yards for goats:

- Fence all watering points so goats become trained in using traps and are not stressed when they are set.
- Construct one or two spears in the fence on one side of the watering point. Spears are a funnel opening in the fence pointing toward the water point. Goats need to push through the funnel to access the water.
- Next to the spears, build an earth jump or ramp to offer goats, particularly bucks and shy goats, an alternative means of accessing water rather than walking through the spear.
- On the opposite side to the water access point, build spear or trap gate exits. This helps further train the goats to walk through spears. When you need to trap goats, these exit spears or trap gates are closed and the trap is set. Once goats have drunk at the watering point at a set trap, they will tend to congregate around the closed exit, leaving the watering point clear for more goats to enter the trap via the entry spears or earth jump or ramp.
- Round any corners using sheep yard mesh and steel posts so goats cannot run into these and pile up. This will minimise stress on the goats and pressure on the fence.

This system of trapping goats tends to result in a clean "muster" as all goats are well trained and used to accessing the traps for water.

Alternative yard design

Flap gates, as opposed to spears, can work just as well if goats are trained to use them, though Stephen believes it is important to always offer goats the option of an earth jump into the water point. "If you give them the option, you'll get all of them. This also eliminates animal welfare concerns of keeping stock off water," he says.

Animal welfare issues and trap yards

Training the goats to access the traps for water and offering them the option of the earth jump eliminates potential animal welfare issues associated with keeping stock off water as all goats will enter via one method or the other.

Permanent or portable loading ramps servicing all trap yards enable Stephen to quickly and easily truck out the goats when traps are set. Trucking occurs on a daily basis, ensuring goats are not denied access to feed for long periods.

Permanent or portable drafting facilities at each trap enable Stephen to draft and truck goats according to size, further minimising stress on the animals.

Words of advice

- Fence all watering points so goats are trained to access water and mustering becomes simply a matter of closing a gate.
- Provide goats with the option of a spear or flap in AND an earth jump. This will ensure a clean muster.
- Build exit points on the opposite side to the access points to eliminate blocking of access.
- Eliminate corners where possible from trap yards to minimise stress on animals and fences when trucking out.

Key points

- Trapping goats needs to be strategic and consider both terrain and alternative watering points to be most effective.
- The welfare of both the goats to be trapped and other animals needs to be considered in a goat trapping enterprise.

Case study

Modifying existing infrastructure for rangeland goat production

Name of producer:	Ken Turner
Property name:	Boorungie
Property location:	130km north east of Broken Hill, New South Wales
Property size (in ha):	69,000ha
Avg. turn off annually:	4,000 goats
Rangeland enterprise type:	Pure wild harvest with a small harvest and hold operation
Target market:	Meat export, primarily to USA
Other farm enterprises:	10,000 sheep: 50% Merinos, 50% first cross SAM, 200 beef breeders

Ken Turner became interested in the potential returns from goats during the 1990s and decided to modify the infrastructure in one paddock as an experiment to see how the resident goat population could be managed to derive a return. The experiment worked and since then Ken has successfully modified much of the existing sheep and cattle infrastructure on 'Boorungie', New South Wales, to manage rangeland goats.

Ken's now traps and sometimes musters rangeland goats from the wild. He delivers these to his handling facilities where they are drafted for sex and size. If necessary, they are then released into different holding paddocks until sufficient numbers are accumulated to truck to the processor, T&R Pastoral.

Fencing

Ken has modified over 100km of the existing sheep and cattle type fencing on Boorungie with 7/90/30 hinge joint fencing to contain his rangeland goats. Initially 6/70/30 and 8/90/30 standard hinge joint was trialled, some with barb on the bottom, but the 7/90/30 with barb on the top has proven to be the most effective.

Some of this was tied to existing fences and, where new fences were erected, star posts were hammered in at 7-12m intervals, depending on the terrain (closer together in more undulating areas). All fences have a barbed wire on top to contain cattle.

Good end assemblies are critical and the type varies with soil type, always remembering the more wires in a fence, the more pressure on the end assembly.

Ken explains that this method of re-fencing has "been an effective and practical way for me to goat-proof many of my fences."

Yards and scales

Ken has modified existing cattle yards for goats by welding weldmesh to the bottom half of the yards to a height of 1.1m.

A three-way goat draft which was purchased off-the-shelf from a commercial yard supplier has been installed within the modified yards along with scales. Around 15,000 goats are handled through these yards each year.

Loading ramp

As with the yards, Ken has modified the cattle loading ramp by welding extra rails along the bottom to a height of 1.1m. This allows a four deck truck to be loaded in 40 minutes without the risk of escape.

Watering facilities

Ken has installed goat trap yards made from 1.1m weldmesh with a further 70cm strip of hinge joint along the top around many of his watering facilities. The yards are constructed to be round; eliminating the need for heavy end assemblies and meaning goats cannot pile up in the corners. The use of weld mesh provides a solid barrier and succeeds in limiting damage by kangaroos and emus.

At each trapped watering facility, Ken has installed a holding yard and uses a portable loading ramp to move goats back to the main yards where they are drafted.

Words of advice

Ken insists that, when installing or upgrading infrastructure, it is best to do it right the first time and not cut corners when it comes to effort or expense. Goats can exert a considerable amount of pressure on infrastructure and Ken's advice is to "go heavier rather than lighter, it's easier to do it right the first time than trying to fix it later."

Ken advises using heavy weldmesh (with 20cm x 10cm holes) or sheep yard mesh in goat paddocks and trap yards and when reinforcing existing infrastructure. In high pressure areas, such as the draft, Ken recommends using highly durable materials such as K-rail or heavy weldmesh (7-9mm steel, not the standard 5mm weldmesh).

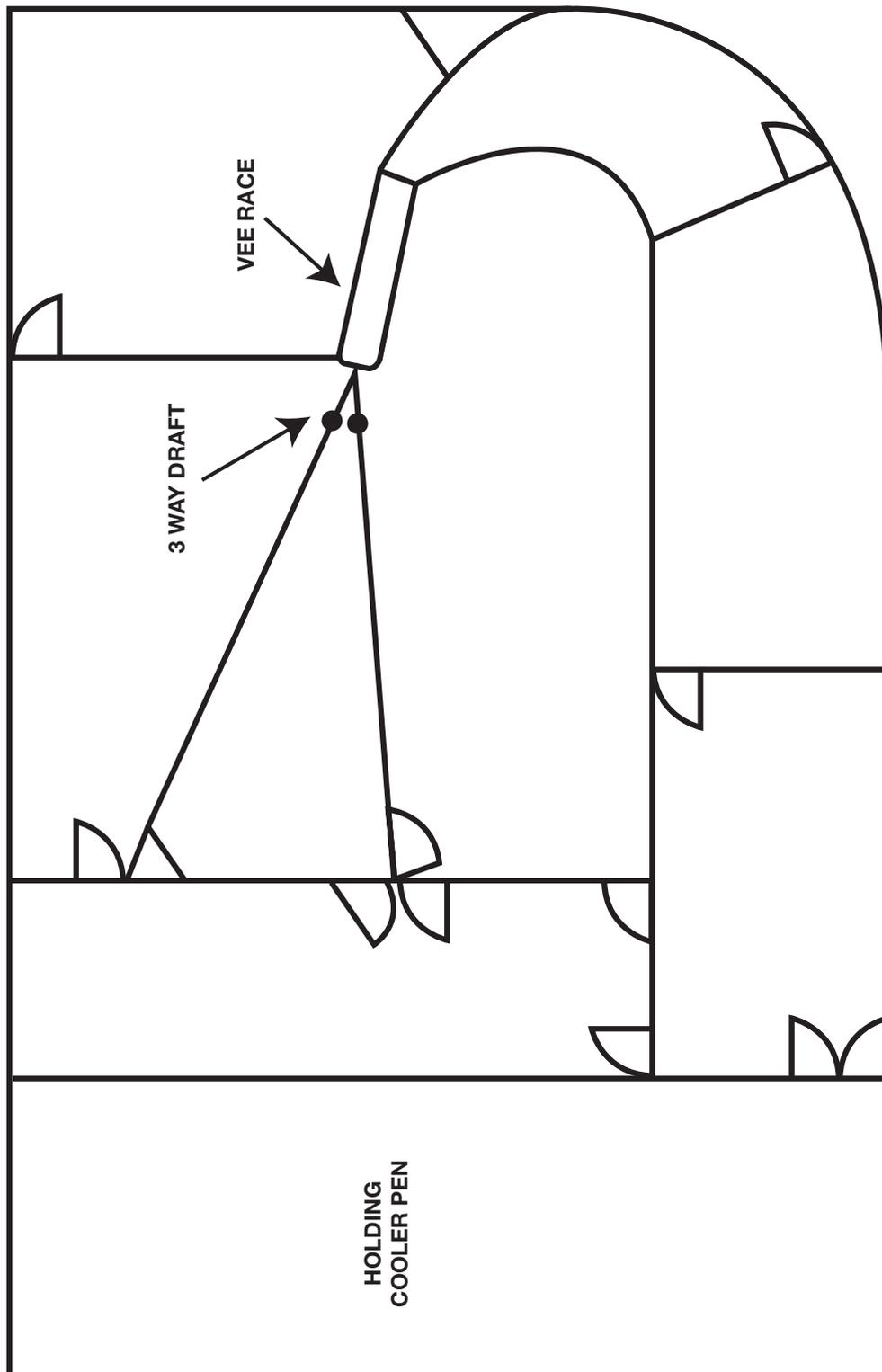
Any corners at watering trap yards should be reinforced with weldmesh although Ken believes it is best to make these trap yards circular if possible. Corners can be cut out using sheep yard mesh and posts in a semi circular fashion.

Key points

- Existing infrastructure can be modified to suit low input harvest and hold goat operations.
- Reinforcing existing infrastructure to work goats is best done using heavy duty material. This maximises effectiveness and minimises the need for maintenance.
- Cattle yards can be converted to useful goat yards.

Yard designs

Force yard



Chapter 3:

Animal husbandry and welfare

When undertaking husbandry procedures or practices on rangeland goats it is important to:

- Handle the goats in a way that minimises stress
- Maximise animal welfare
- Pay attention to occupational health and safety

What to do

The types of husbandry activities that will occur in goat production are enterprise-specific. You need to decide which activities are required for your operation.

- Husbandry activities:
 - Mustering
 - Trapping
 - Holding in paddocks or yards
 - Drafting and culling
 - Breeding and selection processes
 - Managing predation
 - Tagging
 - Transportation
- Welfare considerations:
 - Water
 - Nutrition and feed
 - Shelter and shade
 - Disease

A note on stress and handling

The factors outlined above can all contribute towards stress in a rangeland goat. Stressors should be minimised or eliminated wherever possible. Reducing factors that cause stress will deliver benefits in terms of goat health, improved production and better meat quality.

Rangeland goats have a greater flight zone than other livestock as they are rarely handled. The flight zone is an animal's personal space. Once a person enters the flight zone, the animal will move away. Low stress stock handling techniques respect the animal's flight zone and use pressure and release techniques to move animals. Such techniques should be used when handling rangeland goats.

How to do it

3.1 Mustering

Four key factors influence the effectiveness and efficiency of mustering rangeland goats in an unfenced environment:

- Ruggedness of the terrain and density of vegetation
- Operator experience
- Vehicles
- Mob size

Each of these should, as much as is possible, be managed to the enterprise's advantage to ensure an efficient and effective

muster. Furthermore, mustering during the heat of the day should be avoided as this will stress the animals and cause more vulnerable goats, such as pregnant does, will not keep up with the mob.

Depending on the terrain, goats can be mustered in the rangelands using motorbikes, well trained dogs and light aircraft. Motorbikes communicating with a light aircraft by radio can be a particularly effective combination.

It is important to work goats wider than you would sheep and cattle. This is particularly the case when using aircraft. Goats will move far more effectively if they feel that they are getting away, rather than being pressured.

Working goats along fence lines is an effective way to direct the mob and can reduce the labour requirement.

Goats should be handled during cool or mild conditions to avoid heat stress and should be moved steadily as a mob at the rate of the slowest animal.

Goats that fail to keep up with the mob should be allowed to drop back. Does that continually break may have left a kid behind and should be allowed to leave the mob. The technique for aerial mustering is different for goats compared to sheep. Factors such as the engine noise of the plane and the height of the aircraft above the goats require careful consideration to avoid causing agitation in the mob. Some pastoralists restrict the distance they plan to move their goats each day eg: less than 3km-5km per day.

3.2 Trapping

The trapping of rangeland goats is one of the most effective ways to accumulate goats from large paddocks or the wild. Trapping involves the construction of goat proof fences, typically around water sources, with a number of one-way gates or ramps. A key to the successful trapping of rangeland goats is 'trap training'.

Trap training involves allowing goats to enter the trap via the trap mechanism (the spear, one-way gate or ramp) and leave via another gate for a period of time. When the exit gates are then closed the trap is set.

Chapter 2: Infrastructure of this guide provides further information relating to the design and construction of traps.

3.3 Holding goats in paddocks or yards

With increased intensification comes not only the potential for increased revenue but also increased risk and an increased management requirement. Goats in a confined space require increased husbandry to ensure that they have adequate food and water and are not exposed to disease. Under some circumstances, vaccination to clostridial diseases and worm testing preceded by drenching may be required.

Goats captured by mustering and confined to yards or a goat paddock should be allowed a minimum of 48 hours rest with adequate shelter, food and water before they are transported long distances. It is important to ensure that all goats have the opportunity to fill their stomachs through the provision of feed, such as hay, and are fit to load prior to transportation.

Goats should be drafted to minimise dominance behaviour when confined to holding yards or goat paddocks. Where possible goats should be drafted and separated according to gender, age and weight.

When relocating goats, unload them at or push them to the watering point; do not assume they will find the water.



An example of shelter for goats in yards.



Goats should have access to fresh water at all times when in holding paddocks or yards.

3.4 Drafting and culling



An example of a drafting race.

During drafting, rangeland goats should be handled in a manner that minimises stress and injury. Do not rush the goats; give them time to assess the situation.

When goats are yarded and forced toward a drafting race they tend to crowd and pack together which can lead to smothering, or they can attempt to jump out of the yards which can lead to injury. Take care to avoid overcrowding or undue pressure when working goats in the yards. Dogs can be useful for mustering goats but should generally not be used when working goats in yards.

When confining goats for any length of time they should be drafted based on gender, size and behaviour (the removal of dominant bucks) to ensure the group's welfare.

Older males and goats with significant horns should be separated to avoid dominance behaviour and injury. Does and unweaned kids should be kept together.

When goats are yarded it is advisable to draft off any goats that appear weak or infirm, or of a type that does not suit your breeding objective or market specification. These should be identified as culls and sold at the next available opportunity. Culling goats on an ongoing basis saves double handling and helps improve the productivity of the enterprise.

3.5 Breeding and selection

An increasing number of rangeland goat operations are seeking to improve the quality of the goats they are producing by retaining female breeding stock and joining these to either selected rangeland bucks or an introduced meat breed such as a Boer goat, Kalahari Red or Savannah goat. This can be done in several ways including:

- Turning desirable bucks (rangeland or introduced breed) out with rangeland does in a relatively uncontrolled free range environment.
- Confining rangeland does to a goat paddock and introducing desirable rangeland bucks into that paddock.
- Confining rangeland does to a goat paddock and introducing meat breed bucks (eg: Boer) into that paddock
- Confining meat breed does (eg: Boer) to a goat paddock and introducing meat breed bucks.

Regardless of the breed or whether the breeding operation is intensive or extensive, bucks should be selected to comply with the enterprise breeding objective and be of sound conformation. Rangeland environments can be challenging and it is important that the bucks be able to persist and perform.



A cross breeding operation

When bucks are introduced into the enterprise, it is critical that they be acclimatised to the conditions. The safest way to do this is to source bucks from a similar environment. Alternatively, bucks should be brought in as young animals, the sooner post weaning the better and allowed to mature in the environment.

Rangeland does make good breeding stock and persist well in rangeland conditions. Does should be classed based on conformation and type. Some producers prefer does that demonstrate dairy goat characteristics as these are considered to be superior milkers. There is generally a uniform dislike of hairy goats as they tend to be light framed types that devote more energy to growing hair than producing meat and kids. Refer to *Module 5: Goat selection* of the GiG Guide for further information on goat selection.

3.6 Managing predation

Predation can impact a goat enterprise at any stage in the production cycle, especially when wild dogs are the main predator; however it is kids that are most vulnerable.

After birthing does tend to plant their kids and graze off, only returning periodically to feed and nurture the kids. This behaviour persists for several weeks before the kid begins grazing with the doe and it is during these early stages that the kids are most vulnerable.

The success of the breeding cycle and kid survival is highly dependent on seasonal conditions and predation.

Where possible, kidding should occur in paddocks that offer cover to escape predators and shelter from inclement weather.

Common predators of kids are wild dogs, foxes, pigs and eagles.

Controlling predators can be a costly and time consuming activity but in many areas forms a critical part of running a viable rangeland goat enterprise.

Efforts to control wild dogs, foxes and pigs involve baiting, trapping and shooting, with a combination of some or all of these activities often being the most successful approach.

Predator control is far more effective when undertaken on a regional basis with all neighbours participating in the program. Formalised producer-run dog control groups have been established in some areas. These groups coordinate dog baiting and trapping efforts and seek funding from external sources including government and meat processors, to assist in undertaking control activities.



Kids are most vulnerable to predation.

Fencing is another option available to producers and, while costly, can provide long term gains through increased production and reduced stock attacks. When used in conjunction with baiting on the outside of the fence to prevent incursions, or with guardian animals, fencing becomes even more effective and the cost benefit increases. Fences must however be well maintained to be effective and unless time is invested in their upkeep, money is better spent on other control methods.

Wild dogs

Wild dogs have had a profound effect on livestock enterprises in many rangeland production areas, particularly in Queensland and Western Australia. There are three critical elements to successful wild dog control:

- A strategic approach is required.
- The strategic approach must be coordinated to include all properties and the broader community in an affected area.
- The program must be delivered on a landscape scale rather than localised efforts.

For a wild dog control program to be effective it must be integrated and utilise as many forms of control as possible. This may include large scale aerial baiting in March-April (targeting the breeding period,) and again in late spring early summer (targeting young dogs bred that year) in addition to trapping, shooting and ground baiting. Control needs to be proactive and in place ideally before attacks occur.

Where foxes and wild dogs coexist, it is important to consider the behavioural habits of both species in planning a control program. Foxes take baits more readily than wild dogs and need to be controlled prior to coordinated wild dog baiting programs. By controlling foxes first, producers ensure baits are available to the target species, in this case wild dogs. Baiting prior to kidding is one way to manage losses and remove foxes from the landscape.

Producers can also strategically bait or trap on a regular basis in areas where wild dogs are known to travel or water.

Wild dogs are creatures of habit and will utilise the same geographic features and aspects of the landscape year in year out even when they come in from another area. Areas such as drainage lines, firebreaks, watercourse and ridgelines leading off hills are a great place to start your wild dog control program.

Wild dogs often move along the soft sandy edges adjoining Spinifex country in rangeland country. Producers can capitalise on this behaviour by placing baits or traps in these areas so any dogs entering the property will encounter some form of control.

Foxes

Foxes tend to be less of a problem for goat producers in rangeland country than they are in agricultural or high rainfall areas. A coordinated control response by neighbours is the most effective approach where foxes are a problem.

Unlike wild dogs, foxes rarely challenge mature goats meaning that baiting should be timed to occur in the weeks prior to kidding. This will reduce the number of foxes in the area at kidding when the goats are most vulnerable.

Foxes are territorial and once a dominant fox is removed from an area, there will be a brief period of decreased fox pressure before another fox moves into that area. The challenge is to have as many kids as possible on the ground and mobile before the fox population reestablishes.

Strategic baiting when vixens are whelping and young foxes are dependent upon their mother in late winter can also be effective.

Wild pigs

Pigs can be a problem in some areas and at some times. Reports by producers indicate that when pigs are a problem, they can have a devastating effect on kid populations, reducing reproduction rates from about 150 percent at kidding to 30 percent at weaning.

Pigs can be effectively trapped and baited. As with all predator control, this is best done through a coordinated, strategic approach.

Guard animals

Guard animals are being used successfully in higher rainfall areas where paddocks are smaller; however producer trials suggest that they may also be effective in rangeland systems.

Best practice guidelines on the use of guardian dogs have been published by the Invasive Animals CRC and provide comprehensive instruction on bonding and implementation of these dogs on farm.

3.7 Eartagging

Rangeland goats are sometimes ear tagged with a management tag to allow for the easy identification and drafting of animals.

In addition, in some instances rangeland goats require tagging under the National Livestock Identification System (NLIS), Australia's system for identification and traceability of livestock for biosecurity, meat safety, product integrity and market access purposes.

Each state treats the tagging of goats under NLIS differently. In most states, rangeland goats must be tagged if they are subjected to any form of management or animal husbandry.

Contact your state primary industry department for specific requirements.

3.8 Transportation of goats



A truckload of goats ready for transport.

Transportation is a critical stage in the goat production process and one which must be carefully planned and managed. Transportation usually has a good outcome if animals are in the best possible condition prior to transport and best practice is adopted en route. Important considerations include:

- Handling
- Transport vehicles
- Distance and travel duration
- Legislative requirements and obligations

For a more comprehensive overview of this important subject, readers are referred to the *Australian Animal Welfare Standards and Guidelines Land Transport of Livestock*, Edition 1, December 2008.

Animal handling

Goat handling in the lead up to transportation is critical to ensuring that goats arrive at their destination in the best possible condition. Goats should not be held in yards for extended periods prior to transport and should be provided with good quality feed and water up to the point of transportation. Other considerations include:

- Always handle the goats to be transported in a calm and quiet manner.
- Allow strange animals to mix with and become accustomed to each other well before being loaded.
- Do not load sick, tired or weak animals with strong, healthy goats and make sure all goats are fit to load.
- Female animals that are obviously pregnant should not be transported as they may abort their kids or give birth prematurely because of the stress of transport.
- Bucks and does should be separated for trucking.
- Be sure to abide by any curfews that may be in place.



Handlers loading goats onto a truck calmly and efficiently in well designed yards.

Transport vehicles

When transporting goats, ensure that the vehicle is appropriate for the task. Important considerations include:

- The floor of the transport vehicle must be solid and easy to clean.
- The floor of the transport vehicle must be fitted with raised ridges to stop the goats from slipping and injuring themselves.
- The sides of the vehicle should be high enough to prevent the goats from jumping out.
- There must be no spaces between the floor and the side panels and any partitions. A goat might get its leg caught in this space and break its leg.
- Goats on the vehicle should not be loaded either too loosely or too tightly because this may increase the risk of injury. In general, over-loading is the greater risk to livestock welfare. The numbers per pen should be sufficient to provide stability for the class of goat and the intended journey.
- There should be partitions in the crate of the vehicle to limit the movement of the animals during transportation. This will minimise the risk of goats losing their footing if the truck is forced to stop suddenly.
- Partitions should also be used to separate goats differing greatly in size, horned animals from those without horns and bucks from other bucks.
- There must be no sharp points or corners in the area of the vehicle where the goats will travel.
- There should be no loose articles, for example shovels, carried with the animals.
- The vehicle must have proper ventilation so that the goats receive fresh air.
- The vehicle should provide protection against bad weather (for example, rain or strong winds) and should provide shade against the sun.
- Do not overload the vehicle. A goat of liveweight 40kg requires 0.22m² space which equates to 136 goats on a deck of 12.5m length by 2.4m width.



A truck suitable for transporting goats being loaded.

Distance and travel length

- Goats should not be transported by road for more than 36 hours from the time of loading. If goats are to be transported for more than 36 hours, they need to be offloaded at intervals of not more than 24 hours and be allowed to rest and recover for 12 hours before being transported further. The goats must be provided with feed and clean water during the rest period.
- The route should be carefully planned for extended trips where watering and feeding may be required.

The goats being transported should be inspected not later than 30 minutes after the start of the journey and then at least every two hours to check that none of the goats has fallen or has its head or foot stuck.

Legislative requirements and obligations

There are a number of legislative and industry obligations for the movement of livestock within Australia that apply to the movement of rangeland goats:

- All managed goats must be tagged with an approved NLIS (Sheep) ear tag (including rangeland goats that have been subjected to some form of husbandry procedure).
- Each consignment must be accompanied by a fully completed LPA NVD/Waybill (Goats) or a transported stock statement and goat health statement.
- All mob-based movements must be recorded on the NLIS database.

Chapter 1: Business management of this guide provides further information regarding legislative and industry obligations, as well as local state departments of primary industries contacts.

3.9 Water

It is important to ensure that all holding facilities have access to a sufficient supply of clean, good quality water. The amount of water consumed by goats varies depending on the physiological state of the goat, the type of feed and the weather conditions. The free supply of water is important in reducing stress and maintaining the goats in the best possible condition in confinement.

3.10 Nutrition and feed

Despite rumours to the contrary, goats do not eat everything nor thrive on low value feed. As generalist herbivores, they do however, have a broad diet with a high browse component and will therefore maintain their condition when more palatable species are depleted by adjusting their diet. This is largely why goats remain fat when sheep start slipping under the same circumstances when the season goes off.

Supplementation

It is generally not required nor economically viable to supplement goats in their natural environment. The diverse nature of a goat's diet generally means that they source what they need from the available feed.

As with all ruminants, goats require roughage in their diet. When confined and fed therefore, it is important that dietary changes be introduced gradually and that this includes a fibre or roughage component. Further information is available in *Module 7: Nutrition* of the GiG Guide.



Improvised feed trough fashioned from a hollow log.



Supplementing roughage in a holding yard environment.

3.11 Shelter and shade

Left to their own devices, goats will seek out shade and shelter as required. Due to their low body fat, goats do suffer in inclement weather unless they are able to gain some protection from the elements, such as in amongst shrubs or around rocky outcrops. When confining or yarding goats, it is important that shade and shelter be provided. Shade in yards benefits both the goats and the handlers and shelter in a goat paddock allows goats to seek refuge as required.

3.12 Disease

A number of potentially debilitating parasites and diseases occur among rangeland goats in Australia. These rarely pose a significant threat to the goat's well being or production while rangeland goats are free roaming; however, they can become an issue when they are handled inappropriately or confined at high densities.

Relocating goats into close confinement situations can disrupt their social structure and dominance behaviour. In addition, poor nutrition, lack of shelter, overcrowding and excessive handling can lead to further stress, which aids the development of disease. Young goats generally adapt better to the intensive system than older goats. The major issues affecting rangeland goats in a managed environment are Salmonellosis and internal parasites including Coccidiosis.

Salmonellosis can occur in rangeland goats when they are subjected to sustained periods of stress. Salmonella occur naturally in the gut but when the animal is stressed the level of Salmonella can increase rapidly resulting in sickness and death. Rangeland goats should be kept as calm as possible during handling and in the lead up to and during trucking.

Coccidiosis is generally caused by ingesting mature oocysts that are shed by carrier goats in moist overcrowded conditions. Infected goats may die very quickly (within 24 hours) without developing diarrhoea or may exhibit blood in faeces before a slower death. The best form of control is to prevent goats accessing the oocysts in the first instance, reduce stress and, if considered necessary, use preventive drugs in high risk situations.

Internal parasites rarely pose a problem in rangeland production systems except during unusually wet years or when goats are confined to small spaces.

Scouring goats should be culled and if an outbreak of internal parasites or a disease such as Salmonellosis is suspected, seek veterinary advice. For further information see *Module 9: Parasite control* of the GiG Guide.

In a managed enterprise where goats are held in confinement, it is advisable to vaccinate goats against clostridial diseases. A quarantine drench and vaccination may also be administered when goats, such as breeding bucks, are introduced into an enterprise. Goats are susceptible to a number of notifiable diseases that also affect sheep and cattle. Unusual symptoms should be treated with caution and a vet contacted immediately.

Toolkit 3 - Animal husbandry and welfare

Toolkit 3.1 Useful contacts

Toolkit 3.2 Further sources of information

Toolkit 3.3 Wild dog control

Toolkit 3.1 Useful contacts

State contacts for animal husbandry and welfare

State	Contact
ACT	Environment, Planning and Sustainable Development Directorate 132 281
NSW	Local Land Services 1300 795 299
NT	Emergency Animal Disease Watch Hotline 1800 675 888
QLD	Biosecurity Queensland 132 523
SA	PIRSA Biosecurity Animal Health (08) 8207 7900
TAS	Biosecurity Tasmania 1300 368 550
VIC	Agriculture Victoria – Animal Health 136 186
WA	Agriculture and Food (08) 9368 3333

- **NLIS database helpdesk**
Phone: 1800 654 743
Email: nlis.support@mha.com.au
Visit: www.nlis.mha.com.au
- **LPA/NVD Waybills and LPA Hotline**
Phone: 1800 683 111
Fax: 02 9463 9182
Email: lpa@mha.com.au
www.mha.com.au/nvd
- **Queensland Government - Wild Dog Advice**
Greg Mifsud
National Wild Dog Facilitator
Department of Employment, Economic Development and Innovation
Longreach
Phone: (07) 4688 1083
Email: greg.mifsud@deedi.qld.gov.au

Toolkit 3.2 Further sources of information

- **Meat & Livestock Australia publications**
 - *Going into goats guide: A profitable producers' best practice guide*
Provides further information related to animal husbandry, specifically: Module 5: Goat selection, Module 7: Nutrition, Module 9: Parasite control
- **Queensland Government publications:**
 - *Dog aware fact: What is a wild dog?* (PDF, 94kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-What-Is-A-Wild-Dog.pdf
 - *Dog aware fact: Confirming the presence of wild dogs* (PDF, 64kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-Confirming-Presence.pdf
 - *Dog aware fact: Individual property plans* (PDF, 77kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-Individual-Property-Plan.pdf
 - *Dog aware fact: Coordinated wild dog control* (PDF, 72kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-Coordinated-Control.pdf
 - *Dog aware fact: 1080 - Sodium fluoroacetate* (PDF, 115kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-1080.pdf
 - *Dog aware fact: Exclusion fencing - netting* (PDF, 108kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-Exclusion-Fencing-Netting.pdf
 - *Dog aware fact: Exclusion fencing - electric* (PDF, 267kb)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-Wild-Dog-Fact-Sheet-Exclusion-Fencing-Electric.pdf
 - *Toxin 1080: A guide to safe and responsible use of sodium fluoroacetate in Queensland* (PDF)
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPA-1080-Guidelines-Fluoroacetate.pdf
- **Invasive Animals Cooperative Research Centre publications**
 - *Best practice guidelines on the use of guardian dogs*
www.invasiveanimals.com/wp-content/uploads/2010/09/Guardian-Dogsweb.pdf
- **Invasive Animals Cooperative Research Centre websites**
 - www.invasiveanimals.com
 - www.feral.org.au
- **Australian Government**
 - *Australian Animal Welfare Standards and Guidelines Land Transport of Livestock*, Edition 1, December 2008
www.animalwelfarestandards.net.au/land-transport/

Toolkit 3.3 Wild dog control

1. Wild dog management needs to be coordinated and applied at a landscape scale

- Community wild dog management programs have proven to be effective in Queensland and other states.
- Development of wild dog management committees which are comprised of affected stakeholders, have delivered improved wild dog management outcomes for producers.
- Effective wild dog management programs are those that involve all stakeholders, including private and public land managers.
- Programs need to be integrated, using as many forms of control as possible, in order to eliminate a greater proportion of the wild dog population.
- Large scale coordinated baiting programs are an effective means of reducing populations, but long term targeted on farm programs may be required to reduce annual impacts.
- Developing community based wild dog management plans will assist in providing information on wild dog movements and allow for better targeting and communication within the control program.

2. Control needs to be targeted

- Less is better when targeted.
- Be proactive instead of re-active.
- Become familiar with the signs of dog activity, such as agitated stock, movement of kangaroos and wallabies from paddocks where they are usually found as well as dog tracks and scats.
- Actively look for the presence of wild dogs and implement control before they have an impact rather than implementing control in response to attacks.
- Wild dogs are creatures of habit and will use the same travel routes and corridors within the landscape regardless of where they have come from.

3. 1080 baiting programs can be conducted while minimising risk to working dogs

- Following best practice guidelines for 1080 baiting will limit the risk to working dogs.
- The retrieval and destruction of baits is critical in reducing risk to working dogs.
- Tying baits with wire to known locations and/or burying them will allow effective retrieval of baits, giving the producer confidence that the bait has either been eaten or collected prior to mustering.
- Tying and burying baits prevents them from being removed by non-target animals, improving effectiveness.
- More is not necessarily better. A few strategically placed baits in areas of known wild dog activity often delivers far more effective control than broad scale distribution of baits in areas the dogs don't use.
- Avoid risks to working dogs by leaving them at home when checking baits or travelling to areas of the property where control has been undertaken.

4. Integrate as many control techniques as possible on farm

- Where possible, utilise trapping and shooting in conjunction with baiting, to achieve better control. No one technique on its own will deliver effective control.

- Manage other farm activities prior to wild dog control programs so wild dogs are not disturbed and forced out of the area.

5. Wild dog management should be about reducing impacts rather than eradication

- Manage dogs to reduce impacts as eradication is unlikely.

Best practice indicators

- Calm and less agitated stock resulting in ease of handling and weight gain
- Reduction in bites and dog related injuries
- More confidence in the use of 1080
- Delivery of effective community based wild dog management programme

Case studies

- Topic: Animal husbandry in a rangeland goat breeding enterprise
Producer: Tara and Sam Homfray, NSW
- Topic: Using guard dogs in a managed rangeland goat enterprise
Producer: Simon Kopcke, WA
- Topic: Running a goat breeding operation in the rangelands
Producer: Bruce Foott, Qld
- Topic: Goat selection, drafting and market specifications
Producer: Rick Howard, NSW
- Topic: Handling rangeland goats
Producer: Tim and Mary Perrottet, Qld
-

Case study

Animal husbandry in a rangeland goat breeding enterprise

Name of producer:	Tara and Sam Homfray
Property name:	Fairmount Station
Property location:	40km south east of Wilcannia, New South Wales
Property size (in ha):	75,000ha
Avg. turn off annually:	12,000 goats
Rangeland enterprise type:	Primarily pure wild harvest, small high input goat breeding
Target market:	Skin-on does to the USA, bucks live export to Malaysia
Other farm enterprises:	Opportunistic cattle trading

The size and location of the Homfrays' 'Fairmount Station', 75,000ha near Wilcannia, New South Wales, means there are plenty of rangeland goats to be wild harvested and selected for sale or breeding on an annual basis. By selecting the best of the rangeland goats and introducing Boer genetics, the Homfrays have been able to realise significant gains in productivity and therefore profitability.

Selecting the right animal

Buck selection

The Australian rangeland goat is a unique animal which has adapted to Australian conditions through over 200 years of natural selection. The principle behind the Homfray's breeding program is to take advantage of the best that the local rangeland goats have to offer by selecting and retaining the better does and bucks for breeding and making their own adjustment to the local population through the limited introduction of Boer goat genetics.

In 2007, the Homfrays decided to experiment with the introduction of 140 Boer bucks to their rangeland goat operation. Tara explains that; "We are now seeing clear evidence of the influence of the Boer goats coming through the herd including higher weaning weights. We've retained the vigour and adaptability of the rangeland goat but are now producing a faster growing animal which means we can hit our target market specifications earlier."

Doe selection

All does are selected from the local rangeland goat population through visual drafting-totype in the race. Those with sound conformation and udders are retained along with does exhibiting Boer influence; the others are sold into the goatmeat trade. This helps sustain ongoing genetic improvement in their herd.

Managing predators and kid survival

While breeding the right kind of goat is important, maximising weaning rates is also critical. Central to this is in much of the rangelands is predator control.

Baits are laid strategically for foxes and when pigs present a problem, which is usually only in dry years, they are trapped and culled.

Joining times

The scale of Fairmount Station makes it difficult to manage joining times, so Tara explains "we let mother nature do what she does best."

The Homfrays have found that, in their area, goats will naturally join twice a year, in spring and Autumn, if there is sufficient feed. If not, they can still be relied on to join for a spring kidding. "It works well," she says. "They know what they are doing so we leave it up to them."

Special considerations for breeding goats in the rangelands

Manage the country, then the goats

Tara insists that with a rangeland goat operation you must "manage the country, then the goats. The goats will respond to well managed country."

Through running the goats in bigger mobs and rotating paddocks, the vegetation is more responsive, the animals tend to stay healthier and any worm burden is minimised.

Draft off the bucks

Drafting off the young bucks to grow out in a separate paddock helps minimise stress on does and kids while maximising the young buck growth rate.

Genetic potential

Tara sees Boer goat influence as being the next stage in the ongoing development of the rangeland goat. "We have a terrific goat in the rangeland goat and we shouldn't ignore the animal's potential. What we are doing by introducing Boer goat genetics is just steering the next stage of the rangeland goat's evolution to produce more meat more quickly."

Boer genetics offer rangeland producers two significant advantages; hybrid vigour and marketing opportunities.

Hybrid vigour is the term used to describe the increased growth rates that typically result from joining a rangeland goat to a Boer goat. This allows the Homfrays to meet their turn-off weights faster; therefore increasing productivity and profitability.

Some markets will pay a premium for consistent lines of Boer and Boer cross animals. By first identifying these markets, such as the live export market to Malaysia, and then refining the production system to deliver goats that meet the market's specifications, significant value can be added to a production system through the introduction of Boer goat genetics.

Words of advice

- Don't ignore the potential of the Australian rangeland goat. With some selection, very resilient and productive lines of goats can be identified.
- Look after the environment and the goats will look after themselves.
- Prepare a budget before focussing on goat production; you may be pleasantly surprised.
- The incorporation of Boer goat genetics is a good way to add value to a goat breeding operation in the rangelands.

Key points

- An open mind, planning and operational flexibility are important to developing a successful rangeland goat operation.
- Value adding opportunities exist; however, the cost benefit of pursuing these opportunities as opposed to capitalising on the existing resource need to be assessed.

Case study

Using guard dogs in a managed rangeland goat enterprise

Name of producer:	Simon Kopke
Property name:	Weebo Station
Property location:	150kms north of Leonora, Western Australia
Property size (in ha):	323,750ha
Avg. turn off annually:	Goal is to turn-off up to 1,000 goats annually
Rangeland enterprise type:	High input breeding system (with Kalahari Red genetics)
Target market:	Perth domestic meat market and live export to Malaysia
Other farm enterprises:	Cattle and pistachios

Increasing numbers of wild dogs in the Northern Goldfields region of Western Australia have caused most pastoral stations to cease production of small stock. 'Weebo Station', owned by Nickel West (a subsidiary of BHP), used to run about 8,000 Merino sheep prior to being destocked in 2008.

In 2009, Simon Kopke, the manager of Weebo Station, resolved to improve the commercial viability of the station. He investigated the opportunity of starting a rangeland goat enterprise comprising of a high input goat breeding system that, in the future, would be capable of supplying higher quality goats to the Perth domestic meat market and to live export.

Simon's planning for the enterprise included introducing new goat genetics (Kalahari Red), modern electric fencing technology and the use of Maremma guard dogs within the initial grazing area of about 8,000ha.

Making a start with guard dogs

These plans materialised into the Weebo goat enterprise. The initial herd is made up of about 200 rangeland does and four Kalahari bucks. Simon is looking to build up numbers to 4,000 goats with a goal to turn-off up to 1,000 annually.

The herd is contained within a large 10km x 8km paddock (about 8,000ha) that is fenced with a five line electric fence. This fence is powered by the largest available energiser and has been designed to both contain the breeding herd and act as a deterrent to wild dogs.

Four Maremma dogs have been introduced to the breeding herd to also protect the breeders from predators and their movement is being monitored via GPS tracking collars.

Through the application of Kalahari goats, electric fences and Maremma guard dogs, Weebo Station is hoping to become a learning site for neighbouring pastoralists to observe the project as it unfolds.

Learning from others

Simon suggests that producers do their homework before investing in a new type of fencing or the use of guard dogs. "I visited Ninian Stewart-Moore's property 'Dunluce Station', near Hughenden in Queensland, to see how the Maremma's were being managed to reduce the impact of wild dogs on their sheep flock. It was after witnessing firsthand the success that Ninian was having on his property that I decided to trial Maremma's on Weebo Station"

Training of the Maremma dog requires patience and perseverance. Weebo Station had experienced about 30

percent goat losses to wild dogs before the guard dogs settled into their role within the large paddock. Simon reports that no further losses have occurred, despite one dingo living within the large paddock for over six months.

One of the greatest challenges Simon encountered was encouraging the Maremma pups, introduced at eight weeks of age, to bond with the goat herd. Through trial and error and by applying advice from Maremma breeders from Australia and the United States, three of the four dogs have now bonded to the herd.

Word of advice

- The solution to the wild dog threat to goats may be unconventional.
- Fencing allows for targeted management and investment.

Key points

- High input breeding operations require the identification of high value markets to remain viable.
- Don't be afraid to ask questions of other producers when beginning a goat enterprise.
- There are ways to combat the affect of wild dogs. The challenge is finding the right solution for your situation (this may influence enterprise choice).



'Favorito' with young goats in the paddock

Case study

Running a goat breeding operation in the rangelands

Name of producer:	Bruce Foott
Property name:	Barta Park
Property location:	65km south of Mitchell, Queensland
Property size (in ha):	10,000ha
Avg. turn off annually:	1,500-2,000 goats
Rangeland enterprise type:	High input breeding system
Target market:	Males to the abattoir, does live export market into Malaysia

After becoming involved with goat production in 2000, Bruce's property 'Barta Park', south of Mitchell, Queensland, is now fully fenced and is a 100 percent goat-focused operation. Owner, Bruce Foott, initially went into goats as part of his mulga control program; however, they soon become a profitable enterprise in their own right. Bruce has in this time learnt a few lessons along the way regarding running a Boer goat operation in the rangelands.

Selecting and introducing new bucks

From Bruce's experience, the best bucks are those that are bred on similar country. According to Bruce; "When we buy-in Boer bucks we always look for animals that have been bred in similar country to ours. They are accustomed to the conditions and tend to be tougher than those that come from a stud on the coast or from colder country."

That said, Bruce has found that it is getting harder to find Boer bucks bred in the rangelands so he has begun his own breeding program. This has attracted interest from other producers and Bruce is now operating in-part as an unregistered stud.

Selecting does

When running a self-replacing breeding operation targeting the live export doe market to Malaysia, it is critical that the right balance be achieved between the number of does which are retained and the number of does sold. Sell too many and not enough replacement does will be kept in the herd to maintain numbers in the next breeding cycle.

Does to be retained in the herd are selected for characteristics that the market requires; that is typically red heads, white bodies and strong Boer characteristics. Bruce is a little sceptical about this as there are very good goats that may fall down in colouration and are therefore culled; however, there is no point in breeding a goat that the market does not want.

Kid survival

Bruce has observed rangeland goats to be a lot tougher in his environment and he is finding that Boer does on average produce less kids. His experience is that the higher the Boer genetic content, the lower the weaning percentage.

This is a problem for his operation and he is considering adding another breed like Kalahari Red into his breeding program in an attempt to increase his kidding percentages.

Managing predators

Predators are a major problem for Bruce who undertakes strategic baiting programs for wild dogs, foxes and pigs. Bruce runs baits for most of the year to keep predator numbers down as they can decimate goat numbers if left unchecked.

Bruce acknowledges that baiting can be a problem for his own working dogs; however, his strategic approach and attention to best practice guidelines ensures that the risk to nontarget species is minimised.

Bruce does not have a set joining time but rather runs the bucks with the does for 12 months of the year. Bruce does so to minimise the impact of uninvited rangeland bucks as the Boer bucks are more likely to be on hand when the does come into season.

Special considerations for breeding in the rangelands

Bruce believes that the rangelands are the best place to breed goats as there is plenty of space and browse. Grazing management is, however, important to protect the environment and the feedbase. The main form of browse on Barta Park is mulga and it is important for this to be spelled periodically to allow it to recover.

Breeding objective

Bruce is the first to admit that running a Boer breeding operation in the rangelands is challenging. "Defining a breeding objective in the rangelands is about tossing up between the adaptability that the rangeland goat brings and the value-adding opportunities that the Boer goat brings through increased meat production potential and the live export market. I'm looking for that balance; an animal that will survive, be a good mother and meet market specifications."

Drenching hasn't been a problem at Barta Park for the last 10 years due to the dry conditions. Bruce has observed that in their area they only tend to get worms if the browse decreases and the goats are forced onto the ground in search of grass. Consequently, it is important to maintain a good level of browse. Bruce also maintains relatively low stock densities to reduce the likelihood of worm infestation.

Words of advice

- If buying-in, buy stock that have been bred on similar country.
- Ensure the balance between the number of does retained and the number of does sold.
- Don't breed a goat that the market doesn't want.
- Protect the goats environment and feedbase to ensure good ongoing feed and to avoid worm problems.

Key points

- Be ready to change your enterprise if that which you are pursuing becomes unsustainable (profitable).
- For goats to thrive in an area, they must be fully acclimatised to that area. The best way to achieve this is by:
 - Breeding them where they will be run;
 - sourcing them from a similar environment; or
 - introducing them at as young an age as possible.

Case study

Goat selection, drafting and market specifications

Name of producer:	Rick Howard
Property name:	Moonavale
Property location:	200km north east of Broken Hill, New South Wales
Property size (in ha):	42,500ha
Avg. turn off annually:	3,500 goats
Rangeland enterprise type:	Harvest and hold
Target market:	Abattoir for meat export to the USA and local depots
Other farm enterprises:	4,000 Merinos, 250 cattle

Rick Howard is intent on decreasing the grazing pressure applied by transient rangeland goats on his country at 'Moonavale', north east of Broken Hill in New South Wales. He does this by drafting goats heavier than 25kg (dressed) and selling them directly to the abattoirs.

"This has greatly decreased the grazing pressure and left us with a much younger goat population," he says. The young goats are then drafted into his goat paddock (3,200ha) until there are enough to make a full load of a consistent line that meets market specifications.

"Drafting and growing out this way means we can minimise stress on the animals, minimise the need for large musters and maximise transport efficiencies by ensuring we make up a full truck load when the goats go. It's better for the animals and better for us economically," Rick explains.

Through understanding his market specifications and having a few lines of goats in the goat paddock, Rick is able to sell goats to take advantage of market peaks. "I know that in the cooler months the price I can get for my goats will rise so, through having the goats handy, I can take advantage of this and even out my income across the year," he says.

Managing different lines of goats

Rick maintains a goat paddock that is large enough to house several lines of goats. Holding mixed lines together offers several advantages including encouraging older goats to lead younger goats to water and larger animals knocking more established scrub down for the smaller goats to clean up.

Bucks will pressure does and this can be exacerbated if they are combined in a confined space. If bucks and does are combined in a goat paddock, the paddock should be large enough and contain enough scrub to allow the does to avoid the bucks but also small enough to allow for easy mustering so marketable lines can be drafted off as the opportunity presents.

Rick points out that when mixed mobs are yarded and held in the yards, they should be drafted into bucks and does to minimise dominance behaviour and thereby minimise stress. "I want the goats as stress-free as possible to maximise my bottom line," Rick says.

Words of advice

Rick explains that while everyone's circumstances are different, goats have proven themselves financially and that you should not be afraid of dedicating a decent amount of land to your goat enterprise.

As a guide, if you are looking at an annual turnoff of 1,000-1,500 goats set aside 2,000ha for a goat paddock. This will give you the option of growing and holding goats in good condition until you can draft off a consistent line that meets target market specifications.

Key points

- Different classes of goats have different grazing habits and the affect of these habits become more obvious when goats are confined.
- Observing and understanding grazing habits allows management decisions to be made that benefit both the goats and the environment.
- Goats do display dominance behaviour, bucks over does, larger goats over smaller goats and horned goats over younger or polled goats, and this can be exacerbated in confinement.

Case study

Handling rangeland goats

Name of producer:	Tim and Mary Perrottet
Property name:	Dongan Plains
Property location:	100km south west of Dirranbandi, Queensland
Property size (in ha):	28,000ha
Avg. turn off annually:	7,000-20,000 goats
Rangeland enterprise type:	Low input goat breeding system
Target market:	Meat market
Other farm enterprises:	Dorpers and Angus cattle

Tim and Mary Perrottet went into goats to try and clean up the regrowth on 'Dongan Plains', south west of Dirranbandi, Queensland, around 15 years ago. In that time Tim has learned a thing or two about handling Boer and rangeland goats.

As far as husbandry procedures with rangeland goats goes, Tim suggests doing only the bare minimum and restricting this to essential activities. This means keeping handling and disturbance to a minimum.

Tagging and marking

Marking on Donga Plains now involves only ear marking and tagging. Tim ear tags and marks everything that is yarded and will be released. Tim no longer castrates as he feels that when he did the animals didn't grow out as quickly, so he stopped the practice.

Tim's preferred method of restraint for goats for ear marking and tagging involves holding them between your legs. While this is harder work than using a VE machine it is much quicker with four to five staff being able to process 500-1,000 goats per hour once the system is up and running.

Tim equips each worker with a nail bag to hold the tags and a set of marking pliers. He also recommends wearing horse shoeing chaps whilst marking to minimise the affect of horns on the handler.



Goat yards on Dongan Plains

Mustering

Mustering on Dongan involves having one person in a light plane in the air and between one and three people on motorbikes below. The average paddock size on Dongan is about 4,000ha and while the mustering is fairly easy, the goats do become cunning and hide from the person in the air under trees.

The role of those on the ground is to flush out the goats hiding under trees and keep the tail moving while the main mob is brought together and moved along by the person in the air.

Fences



Examples of fencing on Dongan Plains

Most of Tim's goats are born in a fenced environment and respect fences. Six wire electric fencing is used and, according to Tim, these work well provided the installation is done well. Keeping power up to the fences in wet years can be challenging and fence lines are sometimes sprayed with herbicide to keep the grass down and minimise shortages.

Tim stresses that this fence works for him because his goats are used to electric fences. In high pressure areas such as holding paddocks, Tim opts for a hinge joint fence with an electric outrigger on both sides of the fence.

Weed control

Tim has found goats to be very useful in cleaning up regrowth country and this is what initially led him to actively manage goats on Dongan. Tim does, however, highlight the need to carefully monitor goat condition when they are being stocked at high densities to manage regrowth and weeds.

Word of advice

When handling goats in the yards, especially rangeland goats, Tim suggests that the yards be only half filled as the goats will pack-up and potentially smother. "I don't use dogs in the yard as the goats run better without them. My goats generally don't need dogs in the paddock either as most were bred there and are relatively used to being handled but I always have them with me in case they are needed. Paddock dogs can cause a lot of problems if they get too close to the goats."

The regrowth on Dongan Plains has been reduced to the extent that much of the country has been restored to very productive and more valuable grassland country, more suited to sheep and cattle. Tim notes that with the lack of browse; "If I wish to keep running goats it will have to be at a lower stocking rate than I am used to."

Key points

- Identifying and adapting efficient and cost effective handling and husbandry techniques is important to running a profitable low input breeding operation.
- Tagging and marking goats identifies the producer as the rightful owner of the goats and facilitates management and marketing opportunities.
- Goats are better worked wider than sheep when mustering by air and on the ground.
- When well managed, goats can reduce the impact of woody weeds on the grazing environment and, in some cases, restore grasslands invaded by woody weeds back to their original condition.

Chapter 4: Grazing management of rangeland goats

What to do

Grazing management of rangeland goats relates to the monitoring of the rangeland in order to:

- Optimise the use of feed on offer
- Determine the appropriate time to increase or decrease stocking rates
- Avoid negative impacts on the environment or biodiversity

Factors to be considered in the grazing management of rangeland goats include:

- Stocking rate
- Water management, position
- Complementary grazing
- Managing goat paddocks
- Grazing systems
- Grazing trigger points - monitoring grazing effects
- Weed control

How to do it

4.1 Stocking rate

Managed goats should be introduced to a paddock or property at a rate equivalent to that which the property is rated for sheep. The stocked goats should then be carefully observed and the number adjusted according to the condition of the rangeland.

In winter rainfall areas, stocking rate decisions should primarily be made in spring in an attempt to gauge the total goat population that may be accommodated during the driest period (summer) and adjusted according to the season. Conversely, in summer rainfall areas, stocking rate decisions should primarily be made in autumn when the degree of carryover feed can be assessed.

In poor seasons, where palatable species are in short supply, a stocking rate below that considered to be appropriate for the area should be applied and plant species monitored for evidence of an improvement in the deterioration of the rangeland condition.

The different feed requirements of different classes of goats should be considered when calculating stocking rate. Tables 4.1 provides information into the DSE rating of various classes of goats.

Table 4.1: Dry sheep equivalent (DSE) for classes of goats

Class	DSE* based on limited information	Weight range
1 dry doe	0.75 DSE	30-40kg
1 breeding doe	1.2 DSE during pregnancy. During lactation, 1.5 DSE for single kids, 1.9 DSE for twins.	40-60kg
1 weaner	0.7 DSE from weaning to one year old	20-40kg
1 buck	1.5 DSE to 2 DSE	60-80kg

Goat numbers can increase rapidly in favourable conditions and ongoing monitoring is required to ensure that animal and rangeland condition are maintained. In controlled breeding enterprises, kidding should be timed to allow sale goats to be sold prior to the height of summer when animals congregate on waterholes, increasing grazing pressure in those areas.

Trapping is best conducted during the summer months when alternative watering points become scarce. This provides the opportunity to control goat populations and manage grazing pressure.

4.2 Water management, position

In extensive grazing operations, distance to water can have a major affect and result in what is known as a grazing gradient. This term describes the situation where overgrazing occurs near the watering point while pasture remains underutilised further away from the watering point.

Distance to water must therefore be considered when calculating the carrying capacity of a paddock. If paddocks are stocked simply according to paddock size (rather than to the area within an appropriate distance from water), areas close to water will be over-grazed while remaining parts of the paddock will be underutilised.

It is important to consider the grazing gradient when planning a property and the installation of watering points.

4.3 Complementary grazing

Goats possess a unique characteristic which separates them from almost all other types of livestock. Goats are browsers with browse contributing about 60 percent of their diet, whereas cattle and sheep are grazers with only 10-15 percent of their diets comprised from browse.

While there is significant overlap in the diets of sheep and goats, during periods of abundance of feed, goats tend to favour browse if grasses or more palatable herb species are depleted. This allows goats to remain in good condition for a sustained period after the onset of dry times.



Goats can be successfully grazed with cattle and sheep.

4.4 Managing goat paddocks

Goat paddocks should be fenced to include similar land systems and vegetation types. This encourages even grazing of the paddock and discourages the preferential grazing of preferred areas which may occur where different systems are fenced together. Abiding by this principle may mean that smaller goat paddocks are adopted than may otherwise be the case.

4.5 Grazing systems

The term “grazing system” is used to describe different grazing management strategies.

Regardless of the grazing strategy which is adopted, a successful system will:

- Optimise usage of feed on offer by manipulating the stocking rate
- Minimise uneven grazing which is either wasteful or harmful
- Match stocking rate to the diet quality required by the animal production targets

Strategic grazing can also play an important role in hazard reduction, weed management and maintaining a favourable tree-grass balance.

4.6 Grazing strategies

Rangeland pastures can be managed through a number of grazing strategies including:

- Continuous grazing and set stocking
- Rotational grazing
- Cell grazing
- Time control grazing
- Spell grazing
- Tactical grazing

Continuous grazing

Continuous grazing is a management system where livestock run in a paddock continuously over time with no, or only infrequent, spells from grazing. Continuous set stocking refers to the situation where livestock numbers in a paddock vary little from month to month, or from year to year.

The main benefits of continuous grazing are that it is simple to apply, requires minimal labour and can deliver good production and land condition outcomes if managed well. Disadvantages of set stocked continuous grazing are that pasture utilisation may be above or below the optimal level at any one time. There is also the potential for overgrazing with livestock habitually revisiting preferred areas.

For good production and land class outcomes, set stocked continuous grazing systems should be conservatively stocked to minimise the decline of preferred native pasture species and land types. Risks to land condition and production can be minimised in a continuous grazing system by:

- Preparing a forage budget and adjusting stocking rate accordingly.
- Spelling the paddock during the growing season once every 3-4 years to allow pasture recovery.

Rotational grazing, cell grazing and time control grazing

Rotational grazing involves moving livestock through a series of paddocks so when they have finished grazing the last paddock in the series, the first paddock has recovered to allow the rotation to recommence. Rotations are often organised around the plant growth cycles and aim to optimise pasture utilisation.

Cell grazing and time control grazing are similar to rotational grazing, but are more intensive and involve more paddocks or ‘cells’. In time control grazing, paddock moves are determined by plant growth - the faster the growth, the more moves and vice versa.

The main benefits of rotational grazing stem from a focus on plant growth phase. Plants are grazed in their vegetative state for relatively short periods, compared with continuous grazing. This reduces the tendency for preferred species to be grazed out. Grazing is then followed by a rest period, which allows perennials to replenish their root reserves and better withstand dry periods, benefiting both soil structure and land condition.

A well designed rotational grazing system can also prevent uneven grazing across the paddock.

Rotational grazing does, however, require increased infrastructure and labour and may not be practical when plants are not growing. The reduced opportunity to selectively graze in a rotational grazing program can also lead to a decline in per head animal production due to livestock being forced to graze less nutritious plant species.

Spell grazing

Spell grazing involves locking up areas at critical times in their growth cycle to allow plants to replenish root reserves and set seed. This reduces the risk of over grazing and encourages plant recruitment through seed set.

An example of spell grazing is wet season spell grazing in the northern rangelands. This involves destocking paddocks during the wet season to allow plant recovery and new native pasture plant recruitment through seed set.

The disadvantages of spell grazing are associated with the disruption to livestock caused by the paddock move. Spell grazing can also lead to overgrazing if livestock need to be brought together at high stocking rates while other paddocks are spelled.

Tactical grazing

Tactical or strategic grazing is now recognised as the most productive and sustainable grazing practice and involves a combination of the above, tailored to meet the needs of a particular enterprise within a particular environment.

4.7 Grazing trigger points - monitoring grazing effects

It is important to assess the general condition of your paddocks on a regular basis. This should include off-track or across paddock traverses to assess the degree of utilisation of preferred species, particularly near favoured campsites and watering points.

Goats introduced to new country may take some time before developing patterns of vegetation use and their preferential grazing plants. Once plant preferences have been established and identified, these should be monitored to see which preferential species have become depleted. It will be obvious as the goats will have moved on to less desirable plant species.

When this occurs, stocking rates should be adjusted to relieve grazing pressure. Monitoring efforts should pay particular attention to the health of the canopy structure, in particular noting browse lines and regeneration of browsed tips of large shrubs and trees. Damage or lack of regrowth of new shoots of the canopy and under canopy shrubs is a critical sign that grazing pressure is resulting in long-term degradation to the plant community.

Goats grazing annual ground feed of declining quality will quickly become reliant on perennials and adjustments to stocking rates and distributions will need to be made rapidly. Be aware of the effect of “outside” goats or unmanaged

grazers such as kangaroos coming on to your property and implement measures to control stocking rate.

4.8 Weed control

Goats can be used to control weeds, such as prickly acacia; however, as high stocking rates are required to achieve control, careful management is required to ensure that other adverse effects do not follow. Weed control plans are best developed in consultation with your local government, natural resource management or catchment adviser and implemented on a trial basis covering a small area. If positive effects are observed, a wider weed control initiative may be implemented.



The left hand side of this image shows regrowth control through the use of goats.

Toolkit 4 - Grazing management of rangeland goats

Toolkit 4.1 Further sources of information

Toolkit 4.1 Further sources of information

• Meat and Livestock Australia publications - goat specific

- *Weed control using goats*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=3970

• Meat and Livestock Australia publications and resources - other livestock

The following publications and resources are cattle and sheep based however key concepts can be applied to managed and rangeland goat production.

- *Towards sustainable grazing - the professional producer's guide*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=1449
- *Tips & Tools: Grazing management for productive native pastures*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=3970
- *Grazing land management: Sustainable and productive natural resource management*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=2914
- *Pasture health kit*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=3998
- *Tips & Tools: Getting started with simple time-based rotational grazing*

www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=3753

- *Tips & Tools: Tactical grazing to maximise pasture and animal productivity*
www.mla.com.au/Publications-tools-and-events/Publicationdetails?pubid=3762

• Meat and Livestock Australia website

- *Grazing distribution*
www.mla.com.au/Livestock-production/Grazing-and-pasture-management/Native-pasture/Grazing-management/Grazing-distribution

• Department of Agriculture and Food, Western Australia publications

- *The Grazing of Goats in the Pastoral Areas of Western Australia (Best Management Practice Guidelines)*
www.agric.wa.gov.au/objtwr/imported_assets/content/lwe/regions/nrr/warangelandsbmpwelfaregoats.pdf

• Queensland government publications

- *Feral Goat (Capra hircus) in Queensland, Pest Status Review Series - Land Protection (1999)*
www.dpi.qld.gov.au/documents/Biosecurity_EnvironmentalPests/IPAFeralGoat-PSA.pdf

• CSIRO publications

- *Managing feral goat impacts by manipulating their access to water in the rangelands*
www.publish.csiro.au/paper/RJ10070

• NSW Department of Primary Industries

- *Glove box guide to tactical grazing management for the semi arid woodlands*
www.dpi.nsw.gov.au/aboutus/resources/bookshop/glovebox-tacticalgrazing-mgt
- *Best management practices for extensive grazing enterprises*
www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/175570/best-mgt-ext-graz.pdf
- *Tactical grazing management for semi-arid rangelands*
A two-day, NSW DPI PROfarm workshop to help NSW Western Division graziers develop an understanding of tactical grazing management techniques and principles. For further information visit: www.profarm.com.au or phone: 1800 025 520

Case studies

- Topic: Matching feed demand to feed supply
Producer: Garry Hannigan, NSW
- Topic: Controlling prickly acacia in the rangeland using goats
Producer: John and Donna Paynter, QLD
- Topic: Controlling weeds in the rangelands using goats
Producer: Jim and Trish McKenzie, QLD

Case study

Matching feed demand to feed supply

Name of producer:	Garry Hannigan
Property name:	Churinga
Property location:	130km east of Broken Hill, New South Wales
Property size (in ha):	50,000ha
Avg. turn off annually:	2,000-3,000 goats
Rangeland enterprise type:	Harvest and hold
Target market:	Local depot
Other farm enterprises:	4,000–5,000 Dorper/Damara crossed meat sheep

Garry Hannigan runs a complementary grazing enterprise on 6,000ha of his property 'Churinga', 130km east of Broken Hill in New South Wales. He uses the condition of the available vegetation as a means of determining his stocking rate, thereby maintaining the balance between production and environmental sustainability.

Key indicators guiding stocking rate

Garry grazes sheep and goats together on the fenced country at Churinga. While there is some degree of dietary overlap, sheep and goats do tend to favour different vegetation at different times making them ideal complementary grazing companions.

One of the great advantages of complementary grazing is that it facilitates increased pasture utilisation and therefore allows for a higher stocking rate. With this increased stocking rate comes a particular need to monitor vegetation as this is the best way to ensure that the fragile environment is not coming under excessive grazing pressure.

Plant types as grazing triggers

Garry keeps a close eye on various plant species for indications of whether the country is stocked too heavily or whether it could hold more stock. Different indicator plants tell different stories; some plants are the first to be grazed while others are not grazed until others are depleted.

Keeping an eye on which plants are grazed in a particular area at which times can be a valuable means of understanding how the country is responding to the stocking rate.

"I'll watch the bushes and shrubs for the goats and the grasses and bushes for the sheep to make sure I get the balance right," Garry says. "If there is too much pressure, I can quickly destock the goats to the local depot or decrease my sheep numbers." Trigger plants vary in different regions at Churinga and include harlequin fuchsia, bladder saltbush and narrow leaf hop bush.

Use of supplements

Garry does not use nutritional supplements on his property. He finds that the diversity of vegetation and careful management of his stocking rates provide the livestock access to all the nutrients they need. He finds supplementary feeding has the potential to allow for artificially high stocking rates which can place excessive pressure on the environment.

Leveraging the grazing habits of rangeland goats

Garry is in tune with his environment, always taking careful note of the vegetation before deciding how to stock country. He insists "some country will only take sheep; the goats would put too much pressure on it. In the fenced country you have to be guided by the available vegetation and land type - study the vegetation first, not the condition of your animals," he says. "In fact I have fenced some of my country to exclude goats because the vegetation couldn't handle them."

When the vegetation allows, Garry will use rangeland goats to maximise its utilisation through complementary grazing with his sheep.

Words of advice

- **Study the vegetation, not the condition of your animals**
Garry insists that graziers should "study the vegetation, not the condition of your animals and stock accordingly. Through doing this your stock will always be in reasonable condition. It's a win-win."
- **Err on the side of conservative stocking**
If in doubt, err on the side of conservative stocking, particularly in fragile rangeland country. This is especially the case if you are just getting to know a new property or area.
- **Understand your areas trigger plants**
Understand what the best trigger plants are in your area. These can tell you when you should adjust your stocking rate and often vary from land class to land class and area to area; get to know what works on your country.
- **Remember, meat sheep and goats 'breed like rabbits'**
Both goats and meat sheep are prolific breeders. Your stocking rate may triple once offspring start to graze.

Key points

- Goats grazed with sheep can increase pasture utilisation.
- Best practice in running goats varies from property to property and even within properties according to land class; it is not a case of one size fits all.

Case study

Controlling prickly acacia in the rangelands using goats

Name of producer:	John and Donna Paynter
Property name:	Wando
Property location:	50km east of Winton, Queensland
Property size (in ha):	12,140ha
Avg. turn off annually:	900 goats
Rangeland enterprise type:	Low input breeding system
Target market:	Live export (wethers and young does) and supplies Western Meat Exporters (goatmeat for export)
Other farm enterprises:	Beef and sheep

John and Donna Paynter's ongoing battle against prickly acacia began with the purchase of 'Wando', east of Winton in Queensland in 1979. In December 2000, John recalls the prickly acacia being so thick "You couldn't get the sheep out of the paddock and you were unable to ride a motorbike through it. A friend suggested instead of thinking of prickly acacia as a pest, think of it as a resource and try using it as forage for goats."

John's first step was to build a goat paddock by installing a goat-proof fence and watering points in the country affected by prickly acacia. After introducing the goats, it didn't take long for their positive influence to become apparent and, since then, goat paddocks have become a feature on Wando.

What goats will eat and when

John has found that while goats eat prickly acacia all year round, they really attack the plant in early summer when the does are typically lactating. Mature trees will often be ring barked by the goats and regrowth kept at bay.

John's first goat paddock is over 1,000ha and holds 900 does joined to 15 Boer bucks along with their followers. At this stocking density, it has taken 10 years for the goats to bring the prickly acacia under control to the extent that grasses are starting to proliferate and visibility through the prickly acacia has increased from practically zero to a couple of hundred metres.

Provision of supplements

John's goat paddocks are designed to contain goats and allow goats to be run at higher densities than they otherwise would. This is to encourage the intensive grazing of the target species required to achieve control.

In such circumstances it is, however, important that the condition of the animals be monitored and supplements provided when required. John begins providing supplements to his goats six months after the last beneficial rain.

He starts his goats on a dry mix containing 10 percent urea, increasing this gradually to 15 percent and finally 20 percent once their rumens have had a chance to adapt to the dietary change.

The gradual introduction of urea is critical; a sudden introduction can be fatal. John uses the same dry mix for goats as he does for his sheep flock.

Producers are reminded that under some circumstances urea can be toxic to goats. It is recommended that producers consult their local veterinarian or feed supplier before feeding any urea as part of a feed mix to goats.

Fencing requirements

Wando's goat fences have a barb on top and a single wire stand-off with electricity.

Following his experience John now recommends producers go with a double stand-off and electrifying them both. Another suggestion is to replace the wooden angled post supports with pipe as goats will climb the wooden supports.

The role watering points play

John has found that in his country, goats water far more effectively from troughs rather than dams. Dams have a tendency to become boggy, especially if they are being used by cattle, and this can cause issues with goats. John recommends fencing dams off and installing tanks and troughs for the goats.

Use of herbicide in conjunction with grazing

John has also used herbicides to control prickly acacia and while this has been effective, it is very labour intensive and expensive. When John first started on Wando he was quoted around \$50,000 to spray the prickly acacia in his goat paddock. Goats have controlled and reduced the trees for nothing and this calendar year alone he has made around \$50,000 of revenue from goats.

Words of advice

John advises not to be frightened about "having a go with goats". The only experience he had with goats, prior to using them for weed control on Wando, was through the sights of a rifle. Now they're making him money and increasing the productive potential and value of his property.

For those considering moving into the controlled grazing of goats, John recommends being prepared for them before they arrive. "Make sure the fences and watering points are up to the task before the goats arrive. This will mean that they stay where you want them and will save time and money in the long run."

In John's area, goats were considered pests when he first looked into managing them so the decision to actually buy goats in may not have been popular with neighbours.



Every now and then, John's goats do stray onto his neighbours properties.

When this happens, John suggests that you "drop everything" and get the goats back as quickly as possible to minimise the inconvenience to your neighbours. This will not only assist neighbour relations but will also assist with the acceptance of goats in the district.

The positive effect John's goats have had in helping to reduce the impact of prickly acacia has not gone unnoticed and discussions with neighbours now increasingly turn to management options involving goats.

Key points

- Goats can be used to crash graze woody weeds such as prickly acacia.
- While intensive grazing can be a very effective and even profitable weed control measure, as with any intensive farming enterprise, the goats and the environment need to be monitored closely to ensure that negative side effects of the enterprise are kept in check.
- Urea can be a useful supplement for ruminants grazing high roughage diets; however, urea can be poisonous and should be administered on the advice of a nutritionist.

Case study

Controlling weeds in the rangelands using goats

Name of producer:	Jim and Trish McKenzie
Property name:	Gamarren
Property location:	98km south east of Cunnamulla, Queensland
Property size (in ha):	26,630ha
Avg. turn off annually:	3,000 goats
Rangeland enterprise type:	Pure wild harvest and low input breeding system
Target market:	Slaughter - meat for export - supplying T&R Pastoral
Other farm enterprises:	Sheep and cattle

Goat production began for the McKenzies when they purchased 'Gamarren', a property around 100km south west of Cunnamulla in Queensland. Gamarren had sandy areas of woody weed encroachment and goats.

Following discussions with neighbours and friends, the McKenzies decided to use the goats to help control the woody weeds, predominantly hopbush and false sandalwood, and the results have been better than they expected. Paddocks that were impassable and unproductive because of the weeds and regrowth are now manageable and useable.

Trish states that "The goats were so effective in the first paddock that we used them in that we invested in more fencing to contain goats in other problem paddocks and had similar success."

What goats will eat and when

Trish has observed goats eating all the major shrub and tree species in their area with the proportion of their diet made up from browse estimated to be around 70 percent. Only about 30 percent of their diet has been observed to be derived from grasses in the McKenzies area. Grasses are now starting to re-emerge where the goats have thinned or eradicated the hopbush and false sandalwood, increasing the amount of valuable pasture available to the sheep and cattle and generally improving the condition of the land.

This grass biomass is also used as a tool against the woody weeds to both compete with regrowth and, more importantly, to provide fuel for fire. The combination of strategic grazing with goats to allow grass biomass to accumulate and then strategic burning of that biomass has proved very successful on Gamarren.

Controlling stocking density and the difference this makes

To achieve the desired woody weed control, the fences around the affected paddocks were made goat proof and goats were introduced at a high stocking rate to encourage crash grazing of the target weeds. Some paddocks were subdivided to allow for heavy grazing. Once the density of the weeds was reduced, so too was the stocking rate reduced although a residual population of goats was kept in the paddock to control regrowth.

Provision of supplements

Lick blocks and loose licks have been provided to the goats in the weed-affected paddocks and while this has not been supplied to correct any one particular dietary imbalance, the licks have been popular with the goats. The decision of which lick to use has generally been determined by price and availability.



Grazing pressure demonstrated on woody weeds

Fencing requirements

In Trish's experience, training the goats is as important as the fence itself when it comes to electric fencing. At the start of the weed control program, Trish initially utilised whatever fence was there with the addition of a poly outrigger and electrified wire. Old telephone lines were used and worked well when it was dry; however, these did lose their effectiveness in the rain.

All goats on Gamarren initially go into a training yard which is electrified. Trish considers this to be an important step and thinks as a result you may only need to turn the electricity on once a month as they have learnt to be wary of fences.

The value of using goats to control weeds

In short Trish knows goats have added value to their operation. "Originally we couldn't use some of the paddocks on Gamarren as they were thick with woody weeds; now these paddocks are useful, all thanks to the goats.

"We have found goats much more effective than other conventional woody weed control methods such as spraying, which is expensive, and clearing using a bulldozer which is again expensive and disturbs the earth encouraging woody weed regrowth. "There is minimal cost associated with goats, the regrowth is controlled and, at the end of the day, you have a product you can sell."

Words of advice

- **Careful management**

If you plan to use goats in high densities to control weeds, careful management is required to make sure that the welfare of the goats is maintained and the environment is not negatively impacted by the high stocking rates.

- **Maintain body condition**

Some weeds may not provide all of the nutrients required by the goats. Ensure that the goats have access to additional feed or supplements to maintain body condition.

Key points

- Goats can play an important role in the strategic control of woody weeds by reducing the canopy density and allowing more light through to ground level. This promotes the growth of grass which then provides fuel for fire; another important tool in controlling woody weeds in some areas.
- Once woody weeds have been removed from a paddock, it is advisable to retain a small mob of goats to graze regrowth.
- Careful monitoring of land and goat condition is required when goats are grazed at high densities to control woody weeds.

Chapter 5: Marketing

The process of marketing rangeland goats is similar to that of any other livestock enterprise - the key is to understand the target market's specifications and to breed or select goats based on those specifications.

Module 8: Marketing of the GiG Guide provides further details about marketing goats. Of particular importance to rangeland goat producers are:

- Market specifications
- Selling options
- Drafting
- Market information
- Value adding opportunities

5.1 Market specifications

What to do

Producing rangeland goats that meet market specifications is one of the most obvious methods of improving profitability. The first step in marketing your product to maximise returns is to understand the market specifications and more importantly, to draft and deliver to those specifications.

To meet market specifications, particular management knowledge and skills are required including:

- Understanding the specifications and requirements of the target market.
- Assessing and monitoring the progress of animals towards target market specifications and/or drafting goats to meet market specifications prior to trucking.
- Managing the grazing system to achieve growth targets and successful market outcomes.
- Seeking feedback from the market and implementing practices to improve the management of the production system.
- Evaluating marketing options regularly.



Inconsistent goat carcasses such as these can be difficult to market.

How to do it

Module 8: Marketing of the GiG Guide provides details regarding the markets for goats and goatmeat. Of particular relevance to rangeland goats is the information regarding:

- Commodity export goatmeat
- Live goat export

Live goat export

The main live export market for goats is Malaysia.

Customer	Malaysia slaughter	Malaysia breeding
Size	30-40kg+ liveweight	30kg + liveweight
Age	Generally young goats	Young females
Breed	Boer, Boer cross and suitable rangeland for slaughter (red headed)	Red headed Boers for breeding.
Sex	Male	Female
Other requirements	Prefer heavier goats	

Commodity export goatmeat

The main export markets for Australian goatmeat are USA, Taiwan, Canada and the Caribbean. Other markets include Malaysia, Singapore and the Middle East. Table 5.1 provides an overview of export markets and their requirements.

Table 5.2: Export market requirements

Customer	Size	Other requirements
USA	8-16kg carcass weight	Skin-on, lean
	18-23kg carcass weight	Skin-off, lean
Taiwan	14-16kg carcass weight	Skin-on, lean
Malaysia	<10kg carcass weight	Skin-off, lean
	20kg carcass weight	Skin-off, lean
	Boneless very lean meat in cartons	
Singapore	>22kg carcass weight	Skin-off
Middle East	8-14kg carcass weight	Skin-off

5.2 Selling options

What to do

The selling options available to rangeland goat producers are less sophisticated than those available to cattle and sheep producers; however, it is still important to know what your options are so you can maximise your return.

Unlike the cattle and sheep industries where agents are available to assist in identifying selling options and preparing livestock accordingly, very few agents operate in the goat industry. This does, however, allow for a more integrated supply chain.

How to do it

As there are relatively few agents operating in the goat industry, it is important that the goat producer establishes a network of buyers and stays up to date with selling options. Producers located near depots may choose to let the depot operator take care of the marketing side of the equation. In such a situation, it is important that the producer foster a good relationship with the depot operator to ensure that they are at the top of their list of people to call when an opportunity presents. The best way to do this is to deliver goats to the depot on time and to specification.

To a certain extent, the markets available to goat producers in the rangelands will depend on the type of goat being produced and the number of goats you are producing or have to market at a particular time.

Table 5.2 provides a summary of the likely markets for each type of rangeland goat enterprise. These are not exhaustive but provide an indication only.

Table 5.2: Markets for rangeland goat enterprise options

Enterprise	Selling options
Pure wild harvest	<ul style="list-style-type: none"> • Direct to depots or processors • Live export buyer <ul style="list-style-type: none"> • Usually slaughter stock
Harvest and hold - goat paddock/s	<ul style="list-style-type: none"> • Carcase trade buyer, processor or depot operator <ul style="list-style-type: none"> • Usually slaughter stock • Usually sold into the commodity goatmeat export market • Some into the commodity goatmeat domestic market • Some into farmers or produce markets, local or specialist butchers
Low input goat breeding	<ul style="list-style-type: none"> • Carcase trade buyer, processor or depot operator <ul style="list-style-type: none"> • Usually slaughter stock • Usually sold into the commodity goatmeat export market • Some into the commodity goatmeat domestic market • Some into farmers or produce markets, local or specialist butchers
High input goat breeding	<ul style="list-style-type: none"> • Live export buyer <ul style="list-style-type: none"> • Usually breeding stock • Usually shipped by air
Depot	<ul style="list-style-type: none"> • Live export buyer <ul style="list-style-type: none"> • Usually slaughter stock • Usually shipped by air • Carcase trade buyer, processor or depot operator <ul style="list-style-type: none"> • Usually slaughter stock • Usually sold into the commodity goatmeat export market

5.3 Drafting

What to do

Buyers are looking for a specific product to meet a particular customer's requirements. To maximise returns, it is important that rangeland goat producers seek to meet those needs. Drafting is the easiest way goat producers can put together consistent lines of goats in order to meet market specifications. It is one of the only forms of value adding available to rangeland goat producers.

How to do it

Goats may be drafted according to weight, gender and composition.

• Weight

Scales are an essential part of a goat enterprise seeking to take advantage of marketing opportunities. Goats are weighed and drafted into lines based on weight requirements of each market.

Goats weighing under 10kg carcase weight and sent for slaughter are known as "no commercial value" (NCV) goats as they generally cost more to process than the goats are worth. The producer rarely gets paid for these goats unless supplying a special order.

Producers can avoid sending NCV goats by drafting off all goats weighing less than about 23kg live weight. These goats can then either be retained and grown out or sold to other producers who will grow them out to market weight.

• Gender

Goats should be drafted into groups based on gender and behaviour to ensure the group's welfare. Older males should be separated from the group to avoid persecuting younger males and horned goats should be separated to avoid injury. Ideally, goats should be segregated into the following groups:

- Does with kids at foot
- Heavily pregnant does and small or young goats
- Bucks

• Composition

Drafting a line of goats that are consistent in size and composition ensures the product presents well to the buyer, contributes to the product meeting market specifications and can appeal to some buyers due to efficiencies in processing consistent animals.

Composition refers to a number of factors; goats can be drafted based on:

- Size - draft groups based on a similar size to ensure uniformity in carcase.
- Body condition score - based on market requirements.
- Hair - experienced rangeland goat producers have indicated that short haired goats can handle stress better. In addition, some markets prefer short haired goats while quarantine issues are also a factor in long haired goats.

5.4 Market information

What to do

Market information is an important part of any livestock enterprise. Understanding markets allows the producer to maximise the sale value of their livestock, anticipate market movements and structure their operation to adapt to changing markets.

How to do it

A range of market intelligence sources exist for goat producers. These sources can be formal, such as published information or information such as feedback from buyers.

Formal market information sources

- **National Livestock Reporting Service (NLRS)**
Through its network of livestock market officers across Australia, the NLRS independently collects market data from the key auction and direct markets, in addition to slaughter statistics, wholesale, skin and hide prices.
- **MLA Goats on the Move Market Report**
Provided fortnightly, this email report provides average prices for over-the-hooks carcase sales and slaughter volumes in the eastern states. Information in this report is provided by the NLRS. An industry overview is also provided on a quarterly basis in the Goats on the Move eNewsletter.
- **Friday Feedback e-newsletter**
News, views and advice delivered straight to your inbox every Friday. It covers industry news, market information, weather, producer case studies and on-farm tools.
- **Newspaper and radio market reports**
Rural and regional papers and radios often provide market reports, while these predominately cover sheep and cattle, increasingly they are covering goats.

Informal market information sources

One of the most useful sources of market information is feedback from the buyers. Stock agents, traders, processors and depot operators are in tune with the physical markets and a valuable source of information.

Other rangeland goat producers are also a valuable source of information. Taking opportunities to engage with other producers - whether it be face to face, over the phone or via email - can help circulate important and relevant industry information and strengthen producers' understanding of the market.

The point of gathering market information is not to try to top the market. Rather, the information should be used more strategically to help you decide what a fair average price is for the product you produce year in year out. This can help you implement management strategies and deliver a profitable product to market.

Market information may also help you time your turnoff to coincide with annual market spikes and avoid selling when prices are down.

5.5 Value-adding opportunities

Module 8: Marketing of the GiG Guide provides details regarding value-adding opportunities in goat production available to rangeland goat producers. Drafting is the most effective way to add value to your product as this reduces the investment in time and effort required by the buyer and transfers this back to you as the property owner.

Weighing goats prior to transport to ensure that they meet market specifications and that no NCV goats are in the consignment is another good way to maximise returns.

Toolkit 5 - Marketing

Toolkit 5.1 Further sources of information

Toolkit 5.1 Further sources of information

- **Meat & Livestock Australia**
 - *Going into goats guide: A profitable producers' best practice guide*
Provides further information related to marketing, specifically: Module 8: Marketing
 - *Goats on the Move eNewsletter and Market Report:*
www.mla.com.au/Publications-tools-and-events/eNewsletters
 - *Market reports, analysis and data including access to the National Livestock Reporting Service:*
www.mla.com.au/Prices-and-markets

Further information on preparing livestock, including goats, for market can be found on the livestock production section of MLA's website: www.mla.com.au/Livestock-production/Preparing-for-market

Case studies

- Topic: Supplying goats to the live export market
Producer: Colin and Kirsten Forrest, Qld
- Topic: Selling goats for the commodity market
Producer: Ian and Sharon Elliott, Qld

Case study

Supplying goats to the live export market

Name of producer:	Colin and Kirsten Forrest
Property name:	Oakley
Property location:	20km east of Longreach, Queensland
Property size (in ha):	6,500ha with 3,700ha fenced
Avg. turn off annually:	1,500 goats
Rangeland enterprise type:	High input breeding system
Target market:	Live export to Malaysia
Other farm enterprises:	Beef and sheep

Colin (Col) and Kirsten Forrest initially brought goats to 'Oakley', 20km east of Longreach in Queensland, for the control of prickly acacia regrowth. They soon proved their worth and are now a major part of the Forrest's enterprise.

The Forrests run about 2,500 goats, turning of 1,500 per year, across 3,200ha of fenced country with their major target market being the Malaysian live export trade via a depot. This market requires young Boer or Boer cross does and anything that does not make the grade goes into the export goatmeat trade via an abattoir.

Not only are the economics of running goats proving worthwhile, but the Forrests are also seeing a positive influence on the environment with dense regrowth being replaced by native grasses.

Marketing goats

The Forrests market their live export goats through a depot who pays a price per head on-farm and looks after the quarantine and export requirements. While the exact specifications vary from order to order, the market is usually seeking young Boer and Boer cross does, generally 30kg live and up, with a white body, red head, good Boer characteristics and floppy ears.

Preparing goats for market

Col drafts his goats based on the specifications provided by the depot. All suitable goats are weighed to ensure they meet the required liveweight specification. The goats are then inspected by the depot operator and transported to the depot facility where the goats are then processed according to a protocol requested by the importing country and supervised by the Australian Quarantine and Inspection Service (AQIS).

Goat proof fences are an important part of the Forrest's operation as these allow for controlled breeding and the exclusion of rangeland goats, as well as the segregation and management of lines of goats suitable for live export.

This is particularly important as there does not tend to be a specific time to sell goats into or target the live export market. Rather, this tends to be an opportunistic market where a producer needs to have goats on hand to take advantage of an order when the order comes through.

Col comments that "It is best to stay close to your depot and work with them as best you can. That way you'll be at the top of their list of people to call when an order comes through."

Words of advice

The importance of diversification

While the live export market has been profitable over recent years, the Forrests are only too aware of the risks of having 'all of your eggs in one basket'. Their secondary, but very important, target market is the local abattoir to which most wethers and out-of-specification females as well as all cast-for-age livestock are consigned.

Col is also experimenting with a semi finished, higher value article for the local domestic market. "Its early days and numbers are low but it's going ok," according to Col.

Col sums things up by saying "It's important to diversify and communicate with those in your supply chain. The more feedback and communication that can occur the better the supply chain works and the greater the benefit to all members."

Col also maintains that goats are better for the country from an environmental perspective. "I'm seeing more grass and fewer rubbish species thanks to the goats."

Key points

- High input breeding enterprises can be successful in the rangelands provided a target market is identified that justifies the additional expense.
- Diversification is important in running a high input breeding enterprise as this allows a fallback position in case there is a problem with the primary market.

Case study

Selling goats for the commodity market

Name of producer:	Ian and Sharon Elliott
Property name:	Eskdale
Property location:	120km north east of Winton, Queensland
Property size (in ha):	13,000ha
Avg. turn off annually:	8,000 goats
Rangeland enterprise type:	Low input breeding system
Target market:	Slaughter for meat export and domestic markets, some live export
Other farm enterprises:	Beef and sheep

Ian and Sharon Elliott from 'Eskdale' north east of Winton, Queensland, first tried their hand at goat production around 2003 and goats now play a large part in their business. The Elliotts not only breed goats, but also consolidate and transport them for the commodity export and domestic abattoir markets. Last year they sold around 8,000 goats with approximately 800 heading overseas as part of export shipments.

Consigning goats to market specifications

Ian receives a market specification from the abattoir and consigns goats according to that specification. "The orders are rarely very complicated," according to Ian. "The most definite guideline that generally applies is a minimum dressed weight of 10kg. Anything under that is considered to have no commercial value (NCV) and is condemned as an NCV. Producers don't get paid for NCVs."

Ian suggests that selling goats to a depot is a good option for producers who are just starting out in the goat industry, have irregular volumes of goats or are not interested in the marketing side of things. By selling to a depot, they get paid for what they produce on a \$/kg liveweight basis. Throughout 2011, this has averaged around \$0.90 - \$1 per kg liveweight - about \$35 per head.

Assessing goats prior to consignment

Ian is paid a liveweight rate upon arrival for the goats that he sends to the abattoir. The most important issue here is avoiding consigning goats that are likely to be NCVs as there are significant costs in transport that must be paid regardless of whether the abattoir pays or not.

To avoid rejection, Ian weighs all goats and does not send anything weighing less than 24kg liveweight.

Ian recommends that even though you get paid on what they weigh at the abattoir, producers should use their own scales on their property before they are loaded so that they know what to expect and don't send any goats that will go as NCVs. A kill sheet is supplied by the abattoir which summarises the weights of each consignment.

Along with the abattoir, Ian also supplies goats to ethnic butchers but suggests that this requires a significant commitment in time and effort. "My preference is the abattoir market as this is reliable, can handle volume and is less hassle."



Scales at Eskdale



Handling facilities at Eskdale allow Ian and Sharon to draft goats to specification.

Words of advice

If it won't 'make the grade', don't send it

When selling goats, Ian feels that the most important consideration, along with weighing goats and only sending those that meet the buyer's specifications, is animal welfare. All goats should be assessed prior to transport and as Ian says; "If you don't think it's going to make it; don't send it."

Key points

- Central to running a low input breeding enterprise is breeding and delivering the kind of goat the identified market wants.
- Scales are important in ensuring that goats of the correct weight are consigned to market.



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