NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Drought Recovery Guide, Third Edition October 2005 - Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:

http://www.dpi.nsw.gov.au/agriculture/drought-bushfire-emergencies/drought/recovery/drought-recovery-guide-2005

Updated versions of this document can also be found at the above web address.

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Section 4
Restocking

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- How much can you afford to pay when restocking?
- Buying sheep can be a health hazard
- OJD and sheep movement
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Restocking after a drought

The reduction in stock numbers during drought offers livestock owners the opportunity to restock with animals that are not only suited to their farm, but that are also suited to new market requirements.

You should, therefore, closely assess the suitability of the animals you are considering purchasing. For example, wool from merino sheep has a range of fibre diameters (17–28 microns), but the clothing market's demands are highest for wool that is finer than 20 microns. Consequently, if the farm is capable of producing fine-quality wool, you might consider the purchase of fine wool sheep if the market for fine wool is stronger than for stronger wool.

MAKING DECISIONS

Restructuring enterprises

Low stock numbers at the end of a drought give farmers the chance to review enterprise mixes and breeding directions. Short-term cash flow needs may be better met by increased cropping, livestock trading, or a shift in the balance of livestock enterprises. This review needs to include careful analysis of gross margins, cash flow budgets, return on capital, the capacity of your property, and your own preferences. (See the sections on *Financial management during drought recovery, Grazing management following drought,* and *Managing pastures after drought*.)

Breeding versus buying

Buying stock to restore the numbers that were reduced during the drought requires careful thought and access to finance. This allows a fast return to normal cash flow but, for many people, this will only be possible by increasing their debt levels.

Breeding-up numbers from the retained breeding nucleus is less expensive initially but is slow and reduces future cash flows.

Any breeding-up strategy after drought must also achieve high-levels of fertility. Careful management of the reproductive cycle is required to maximise the number of animals produced.

Purchasing/trading/agistment

Buying some stock for short-term finishing or trading will be a preferred means of generating income for many producers. As prices for stock rise after drought, trading options need to be carefully budgeted for to include all costs. Be aware that store prices can exceed fat market prices. Don't get carried away – make sure that prices offered are realistic.

Also, have a particular end-market in mind when you are buying stock. This may limit your choice but it means that you will be able to sell the stock to advantage when ready. Consider the full range of options; for example, your plan for recovery may mean that purchasing old cows or ewes is a better proposition.

Make sure that you have enough feed available to meet the needs of trading stock as well as those of your existing stock (see *Managing pastures after drought*).

Taking stock on agistment is a cash-raising alternative, particularly if neighbouring areas are coming out of drought more slowly. A written agreement with the other party will ensure that you are both aware of what is expected (see Agfact M1.6 *Agistment guidelines*).

Supply of stock

Suitable stock can be scarce, but don't let the desire to restock force you into paying too much. It may be better to wait until shortages ease and prices and choice improve.

If some of the purchased stock do not perform, cull them early and sell them. Most mobs on the market will contain a few 'poor doers' or less productive animals, and these stock are rarely profitable.

Be aware of health requirements, stock movement requirements, and area of origin of stock, so that inappropriate or disease-carrying stock are not purchased. Be particularly careful about the footrot status of sheep (see 'Animal health following drought').

FURTHER INFORMATION

- Agfact M1.6 *Agistment guidelines*
- *Beef gross margin budgets*
- *Sheep gross margin budgets*

FURTHER ASSISTANCE

For further assistance, contact your local NSW DPI Livestock Officer, Rural Lands Protection Board staff, or an agricultural consultant.

How much can you afford to pay when restocking?

Following periods of rain the supply of sheep and cattle may be reduced. Rainfall also stimulates interest in the purchase of cattle and sheep for restocking and finishing purposes as producers begin to return to normal production.

Should there be further rainfall the resulting improvement in pasture recovery will further stimulate the demand for stock. The crucial question for producers then becomes: 'How much can I afford to pay for breeding stock?'

One decision-support tool available to evaluate such a fitting question is the ImPack model from NSW Department of Primary Industry's StockPlan™. The ImPack model allows the user to input their breeding factors in order to establish their particular herd or flock structure. The model then calculates the numbers of animals for sale based on the producer's breeding factors. Once prices for stock, wool income and variable costs are entered, ImPack calculates the enterprise gross margin. The model allows the producer to evaluate various herd or flock reduction and recovery strategies by comparing the impact of those strategies on returns over a 10-year post-drought timeframe.

The lost income earning potential due to being understocked for any period of time is considerable and means that relatively high prices for breeding stock can be justified if prices paid for progeny remain high and if there are no unexpected feeding costs.

This is particularly the case where breeding numbers have been reduced significantly, as in the current situation. It may, therefore, take several years to attain full carrying capacity through herd or flock build-up. For example, the loss of income from building-up a cattle herd from 200 breeders to the pre-drought level of 300 breeders by retaining 80 per cent of heifers, is in excess of $100,000 when compared to a herd that is already at 300 breeders (refer to enterprise assumptions in the cattle section below).

ImPack can also be used to compare a range of restocking strategies such as buying-in replacement breeders or breeding-up replacements until numbers reach pre-drought levels. The model allows the user to nominate a discount rate in order to evaluate different options and to work out the absolute maximum price to pay for replacement stock so that pre-drought stocking levels may be reached as quickly as possible.

The figures provided are an absolute maximum because other factors, such as the lack of fodder reserves, add to the risk of being fully-stocked. Alternative enterprises such as cropping or finishing steers can also provide a cash flow and can reduce the amount that can be justified to purchase breeding stock. The following comparisons for cattle and sheep use a 12 per cent discount rate, which covers interest and some risk.

Cattle comparisons

The following example is a guide only based on the herd assumptions listed in Table 10.

Herd rebuilding strategies

Strategy 1: To retain 80 per cent of heifers until breeding cow numbers return to the pre-drought level.

Strategy 2: To retain 80 per cent of heifers in the year after the drought and buy in enough 3–7 year-old joined replacement cows to immediately return to pre-drought herd numbers.

Cattle results

Given the assumptions in Table 10, paying up to $1050 for joined cows can be justified in order to get back to full production immediately. If stocking is only reduced by 10 per cent, the maximum amount that can be paid falls to $939 but if stocking had been reduced by 50 per cent, the amount that could be paid increases to $1294.

Sheep comparisons

The base flock assumptions are shown in Table 11.

Flock rebuilding strategies

Strategy 1: Retain 90 per cent of maiden ewes until breeding ewe numbers return to the pre-drought level of 1000 ewes.

Strategy 2: Purchase enough replacement ewes in the first year following the drought in order to immediately get back to the pre-drought level of 1000 ewes and retain 90 per cent of maiden ewes in years 2 and 3.

Sheep Results

- Strategy 1 takes four years to breed up numbers to 1000 ewes and the income foregone due to drought is $42,833.
- For Strategy 2, Figure 5 below shows that the maximum price to pay for replacement ewes is $93 for 5 year-old ewes, $132 for 4 year-old ewes, and $134 for 1–3 year-old ewes before the discounted cash flow matches Strategy 1.

There is little difference in the maximum price for 1–4 year-old ewes because at least two lambs can be bred from all these age groups, after which the pre-drought level of 1000 breeding ewes is attained. Culling of older breeding ewes is then necessary to prevent the flock expanding beyond the original numbers

The maximum price to pay for five year-old ewes is lower than the other age groups as just one lamb is produced prior to ewes being cast for age and extra purchases of five year-olds are required in Year Two to increase ewe numbers back to 1000.

Similar things would happen in the cattle enterprise if cows nearing the CFA age were purchased compared to buying younger animals.

- Should the net wool return per ewe fall by 20 per cent (from $38.10 to $30.48), the maximum price to pay for replacement 5 year-old ewes falls from $93 per head to $80 per head (a decrease of 14 per cent).
- Purchasing 5 year-old ewes in the year following the drought, as described by Strategy 2, has a significant impact on gross margin in that year where it is shown to decrease by more than one-half (from $48,000 to $22,000) compared with a decrease in gross margin of one-third for Strategy 1 (from $48,000 to $33,000). Such differences in cash flow may be important in the whole farm financial situation.

Conclusions

There are a large number of possible situations that beef and sheep producers could be in. The above results are general ones for some typical scenarios. The analysis shows that being understocked can be a costly option and that land and other resources should be fully-utilised. For those with severely reduced numbers after the drought, and no other enterprise options, a high price may be justified for the purchasing of breeding stock. A premium may be paid for stock that are already joined because they will produce a cash flow to the enterprise much earlier than not being joined.

Producers in a tight financial situation should also complete a cash flow budget to assess appropriate financing strategies and ensure that loans to finance the purchase of replacement breeding stock can be serviced.

There are a range of changes in management that could contribute towards recovering full stocking capacity. Only two have been

Table 10. Yearling enterprise with steers and surplus heifers sold at 15–18 months and 10 year post-drought assumptions

Key Variable	Enterprise breeding factors and assumptions for 10 years following the drought
Usual herd size	300 breeders
Drought sale price for cows sold to reduce herd	$400
Steer sale price @18 months (for next 10 years)	$650
Surplus heifer price (for 10 years)	$480
Cull cow prices (for 10 years)	$500
Variable cost per cow	$45
Heifers first calve at…	two years
Weaning per cent	88 per cent
Weaning per cent in Year One following drought	70 per cent
Destocking strategy	All 8–10 year-old breeders sold @ $400. No replacement heifers retained in drought year. 200 cows joined in first year after drought in strategy 1 (see below).
Discount rate	12 per cent

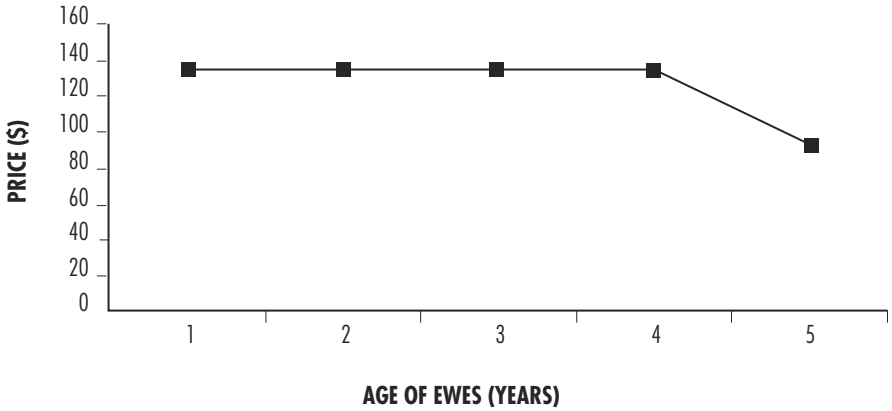
tested here with either sheep or cattle. Things like retaining breeders to an older CFA age, reducing culling levels and increasing inputs to maximise weaning rate can be used in various combinations with the methods tested.

To help determine your maximum amount to pay for replacement breeding stock using the combination of management changes most appropriate to your situation, it is recommended that you attend a StockPlan™ workshop. The StockPlan software, including ImPack, is available for producers after attending a training workshop. Producers should contact their local livestock officers in order to attend a workshop in their area.

Table 11. Central West self-replacing medium wool merino ewe enterprise (spring lambing) and 10 year post-drought assumptions

Key Variables	Enterprise breeding factors and assumptions for 10 years following the drought
Base flock size	1000 ewes
Weaning per cent	85 per cent
Weaning per cent in the first year after drought	70 per cent
Maiden ewes lamb at…	2 years old
Ewes are cast for age (CFA) at…	5 years old
Net wool return per ewe	$ 38.10
Variable costs per ewe	$ 18.00
Wether price	$ 40.00
Surplus maidens price	$ 40.00
Cull and CFA ewe price	$ 20.00
Dry ewe price	$ 30.00
Drought sale price for ewes sold to reduce mob	$ 20.00
Destocking strategy	Reduce usual mob size by 30 per cent (to 700 ewes) through the sale of 100 per cent of all 4 and 5-year-old ewes and 9 per cent of 3-year-olds.
Discount rate	12 per cent

Figure 5. Maximum Price for Replacement Ewes (12% discount rate)



Buying sheep can be a health hazard

Every year, graziers will normally introduce sheep onto their properties for restocking. These are as either ram replacements, as short-term woolcutters, or as sheep for fattening. These sheep are usually bought direct from properties, from store sales, from circuit sales and, in some cases, from fat sales. Remember that rams from studs are introduced sheep the same as any others.

Where disease is concerned, the rule for buyers is caveat emptor ('let the buyer beware'). The main concern in this is usually to prevent the introduction of sheep lice, footrot and ovine Johne's disease (OJD). There are, however, many other diseases which should be considered to ensure that a sheep enterprise remains profitable. Steps must therefore be taken not only to prevent the introduction of disease but also to avoid exposing introduced sheep to diseases that are already present on a property.

When buying sheep from saleyards, it must be remembered that inspectors in saleyards cannot guarantee freedom from disease. This is because of the small numbers of animals that are examined and the difficulty of examining animals in pens.

The ideal situation is, therefore, to buy sheep directly from a property where you know the disease status, treatment and vaccination history of the sheep being sold. Sheep bought from saleyards usually have no guarantees or flock history.

Vendors offering sheep for sale must use the Animal Health Statement. There are vendor declaration forms for footrot and OJD, and an accredited disease-free scheme for ovine brucellosis..

The Animal Health Statement and vendor declarations for footrot and OJD allow the purchaser to identify the vendor and obtain further information on the health of the purchased sheep.

Here is an outline of diseases you should consider when introducing sheep on to a property and the steps that you can take to reduce the risks associated with particular diseases.

SHEEP LICE

In NSW, approximately 20 per cent of flocks are infested with sheep lice. However, very few infested pens are actually detected in saleyards. This is because, generally, inspectors in saleyards can only detect medium to heavy lice infestations and these only in sheep with more than three months' wool. It is, conversely, very difficult to detect light lice infestations in sheep with less than three months' wool and it may take several months for a light infestation to become obvious.

Lice are small, wingless insects which feed either by biting or sucking. They hatch from eggs in a form resembling the adult lice and go through a series of moults as they grow to adulthood. The sheep body louse requires near-ideal conditions to survive and breed. These conditions are found on the skin near the base of the fleece. The number of lice present on an infested sheep fluctuates with the season and with the amount of wool present. The lowest number of lice are usually present in summer with hot weather reducing the ability of the lice to survive and breed. For further information, see Agfact A3.9.31 *Sheep lice*

Recommendations:

- Obtain as much history as possible from the vendor, including the origin of the stock, any lice treatment after the last shearing and, if possible, whether the sheep were lousy before the last treatment.
- Examine the stock when they arrive at the property, looking carefully at any animal showing signs of rubbing or biting. If the sheep are lousy, it is important to obtain details of previous treatments to ensure that there is no problem with chemical resistance and that the appropriate treatment can be given. If there is no evidence of lice, keep the introduced sheep quarantined from other stock on the property for three months. This will allow a light lice infestation to become obvious.
- If lice are detected in introduced sheep, seek help from your local veterinarian to determine the susceptibility of the lice to various insecticides, and then treat the sheep accordingly. Use chemicals according to label instructions to avoid residue problems.

FOOTROT

It is very difficult to detect footrot in saleyard pens when the sheep are crowded together. It is even harder when footrot is not particularly active (for example, in the dry, summer months).

When inspecting sheep in a paddock, remember that chronically-infected sheep may not show signs of lameness or loss of condition and that the infection can persist in an infected foot for many years.

Footrot in sheep appears in a number of forms, ranging from a relatively-mild (benign) condition through to a chronic infection with under-running of the sole, overgrown feet and rotting tissue. Other animals may have a chronic infection with under-running, but have no obvious lameness. Unfavourable environmental conditions and recent treatments will also mask the disease. For further information, refer to Agfact AO.9.56 on *Footrot: sheep and goats*.

Recommendations:

- Whenever possible, buy sheep from owners who are prepared to complete a vendor declaration detailing the origin of the sheep and the footrot status of both the mob and the property of origin.
- If footrot is considered a potential problem, inspect sheep before you buy and view with extreme caution any mob that shows evidence of having been pared or vaccinated against footrot.
- Be especially careful if buying lines of sheep with mixed earmarks which may indicate a dealer's mob or a mob from several sources. This increases the risk of buying sheep from an infected property.
- Try and buy sheep in non-spread periods to avoid the risk of introducing sheep that are in the early stages of the disease and which may not become obvious for another 2–3 weeks.
- Ensure that the truck used to move the sheep has been hosed-out thoroughly with high-pressure water before the sheep are loaded for their journey.
- If possible, keep introduced sheep isolated from other sheep on the property until they have been through conditions suitable for the development and spread of footrot and the disease has had the opportunity to manifest itself.
- Carefully examine any lame sheep in an introduced mob.

Footrot Vendor Declaration Form

The vendor declaration form has been developed by NSW Department of Primary Industries, in consultation with the sheep industry, to give assurance that the sheep offered for sale are free of footrot. There is no obligation for the vendor to use this form but, if a vendor can comply with the conditions of the declaration, the purchaser can be more confident that the sheep are free of footrot.

This form can be completed by a vendor who is confident of the disease status of the sheep being offered for sale. The vendor declares that:

- The stock have/have not been bred on the property. If the stock have not been bred on the property, the owner should state when the stock were introduced.
- The sheep have been inspected within the previous seven days and there is no evidence of footrot in the flock.
- There has been no evidence of footrot on the property within the previous 12 months.
- The sheep have/have not had treatments for foot conditions.
- The sheep have/have not been subject to a laboratory test for footrot. The vendor then gives details of the earmarks/eartags on the sheep and signs the form. Any disputes over the details on the form are a matter between the vendor and the purchaser. The forms can be obtained from stock and station agents and Rural Lands Protection Boards. Vendor Declarations must be used when introducing sheep from a Residual Footrot Area (for instance, Victoria) into a Control or Protected Area.

OVINE JOHNE'S DISEASE

Ovine Johne's disease (OJD) is a wasting disease of sheep caused by the bacterium *Mycobacterium paratuberculosis*. The disease has been diagnosed in certain geographical areas of NSW, these are known as the Management Areas. A vaccine is also now available to assist with control of the disease. The disease has a long incubation period and may not be obvious until some years after infected sheep are introduced onto a property. Tests to detect the disease are based on a flock diagnosis. Some areas of the state are known as exclusion areas – these are very low OJD prevalence areas. These Rural Land Protection Boards have requirements to be informed of sheep movements into these areas by providing a copy of the Animal health Statement from the consignment sheep.

Recommendations:

- Purchasers of sheep should be aware of the risks of OJD – particularly if buying sheep from a high prevalence areas or with a known disease history.
- Purchasers should only buy low-risk sheep – this could include sheep which have come from flocks which have undergone testing to Market Assurance Program (MAP) standards or which have been vaccinated according to industry protocols.

- Purchasers should also request a copy of the Animal Health Statement declaring the origin of the stock and disease risk associated with the flock.

For further information on OJD, see the NSW DPI website: *ojdinfo.dpi.nsw.gov.au*

ANTHELMINTIC RESISTANCE

Anthelmintic resistance is widespread in sheep flocks in NSW with a risk of introducing resistant strains of a range of parasites on to a property when sheep are brought in.

This resistance cannot be detected by inspecting sheep. There is also no simple test to detect this problem in sale sheep. When introducing sheep, it is advisable to assume the worst and treat them as though they are carrying resistant parasites. A quarantine drench is therefore recommended for introduced sheep. See Agnote DAI-257 *Sheep worms: don't import resistance* for further details. An anthelmintic resistance test (NSW 'DrenchTest') is also available from Regional Veterinary Laboratories to determine the drench resistance status of a flock. For further information, contact your local veterinarian.

Recommendations:

- Before buying sheep, find out if they have been on a worm control program such as WormKiller DrenchPlan. Sometimes it also may be possible to find out if there is a problem with a specific family of anthelmintics.
- Drench the sheep with a highly-effective combination of drenches (ML + Lev + BZ) on arrival and according to body weight. Then hold them in yards for at least 24 hours with access to water and hay. The practice of drenching sheep and then letting them out into the holding paddocks around the shed and yards is not recommended.
  This is because, if resistant parasites are present, worm eggs that are not killed immediately by the drench will survive on these areas and the larvae can then hatch and infect sheep that are later brought into the yards.
- Place sheep on a worm control program appropriate for your property, either WormKill, DrenchPlan or (Far)WestWorm. Suitably fine-tune these for your property.

CLOSTRIDIAL DISEASES

Sheep which have not been vaccinated against clostridial disease may be susceptible to infection, particularly if they are brought from the more-arid parts of the State where the risk of infection is lower.

Recommendations:

- Check whether new sheep have been vaccinated against the clostridial diseases (and cheesy gland).
- If the vaccination history is not available or incomplete, assume that the sheep are not vaccinated.
- Adopt the appropriate vaccination program for your district.

For further information see Agnote DAI/190 *How vaccination works* and Agnote DAI/191 *Vaccination Programs for Sheep*.

OVINE BRUCELLOSIS

Rams at fat or store sales are usually cull rams and are likely to be carrying ovine brucellosis. Therefore, do not buy rams at store sales, in saleyards, or from non-accredited flocks. If you do, you risk introducing ovine brucellosis on to your property.

Another risk is of introducing brucellosis on to your property through pregnant ewes that have come from an infected property. Your rams can then pick up brucellosis from an infected ewe at lambing time when the ewe may excrete the organism in the birth fluids. However, there is no evidence of risk to rams that are mated with these ewes after weaning.

Ovine brucellosis causes infertility and sterility in rams and can also cause abortion in ewes. In rams, lesions (abnormalities) occur in the testis, epididymides and in accessory sex glands.

The infection first affects the epididymides, causing inflammation, and swelling of the surrounding tissues. In chronic infections, lesions can result in complete blockage of the epididymides resulting in the ram being sterile.

Recommendations:

- Buy rams only from flocks that are accredited free of ovine brucellosis. Lists are available from NSW Department of Primary Industries, Rural Lands Protection Board offices, or from breed societies. There is no need to blood-test rams from accredited flocks.
- Do not buy rams that have had only one negative blood test. Brucellosis has a long incubation period and two negative blood tests, at least 60 days apart on all rams in the group, is required before a veterinarian can issue a certificate of freedom from the disease in non-accredited sheep.
- Do not run introduced lambing ewes with

rams, unless you know that the ewes have been joined to rams free of ovine brucellosis.

BLOWFLY STRIKE

Un-mulesed sheep are more prone to breech strike than are mulesed animals. It is recommended that, whenever possible, replacement breeding stock and wethers be purchased as mulesed sheep. This rule also applies to first-cross ewe replacements. This is because the additional cost of buying mulesed sheep will be recouped several times over in the savings on fly control over the life of the sheep. In addition, fleecerot can also predispose sheep to flystrike and, particularly, bodystrike. Selection against fleecerot has been shown to reduce the incidence of flystrike by over 30 per cent. Producers should, therefore, avoid buying sheep with obvious signs of fleecerot.

Major fly activity usually occurs in autumn and spring and coincides with moist, warm conditions. Conversely, hot, dry weather and cold conditions limit the development of sheep blowfly populations. Green blowfly initiates more than 80 per cent of strikes in sheep. This fly is particularly attracted to areas of the sheep's fleece which are moist and affected with fleece rot or mycotic dermatitis (in the case of body strike) and areas scalded or stained by urine or dung (in the case of breech strike). The fly lays its eggs in the wool with the maggots hatching in 12–24 hours. They feed on the skin surface for a further 12–24 hours until their mouthparts harden sufficiently to tear the skin. The strike usually becomes obvious 3–4 days later and produces discolouration of wool and irritation.

Struck sheep develop fever and loss of appetite. They often leave the mob seeking shelter under trees and bushes or amongst fallen timber.

For further information on sheep blowflies, refer to Agnote DAI-70 *Sheep blowflies.*

Recommendations:

- Buy mulesed sheep.
- Ensure that these sheep have been correctly mulesed with the appropriate tail length.
- Avoid buying sheep with signs of fleecerot.

CHEESY GLAND

Cheesy gland not only causes losses in slaughter stock but is believed to be a significant cause of production loss and mortality in adult stock from both pneumonia and chronic infections. With the increasing importance of the disease in the export meat market, graziers should consider cheesy gland when introducing sheep on to their properties.

Cheesy gland is a chronic bacterial disease of sheep causing abscesses in lymph nodes of the body and internal organs. Infection can occur in sheep with less than 3–4 weeks' wool. Shearing and dipping are regarded as important times when cheesy gland infection is spread.

The organism can also infect unbroken skin. Infection can also occur by the rubbing of pus or contaminated dip on the unbroken skin of recently-shorn sheep. Dipping 'off shears' in dip contaminated with the organism can also cause rapid spread of infection. After passing through the skin, the organisms travel to the lymph nodes and release a toxin which destroys the lymph node tissue. The result is an abscess that often contains large amounts of greenish pus. After a few weeks, the pus becomes dry and 'cheesy' in appearance. Abscesses then commonly occur in the point of the shoulder and the flank. For further information, see Agfact A3.9.21 *Cheesy gland caseous lymphadenitis in sheep.*

Recommendations:

- Buy breeding sheep and replacement wethers from properties that have a regular cheesy gland vaccination program.
- When new sheep arrive on your property, ensure that vaccination for cheesy gland is included in the routine treatment program for the sheep.

SCABBY MOUTH

Introducing susceptible sheep on to a property already infected with scabby mouth can cause problems. Susceptible sheep should, therefore, be vaccinated. Alternatively, the flock should be closely observed when they are most vulnerable to infection (for example, when they are grazing in paddocks with a lot of thistle). If an outbreak does occur, vaccination can then help to reduce production losses.

Scabby mouth is a highly-contagious viral disease of the skin of sheep and goats which usually affects lambs and kids in their first year of life.

It can also infect humans. Infection usually causes scabs and pustules around the lips but it can also affect the udder and the skin around the coronet and pasterns.

POISONOUS PLANTS AND WEEDS

Seeds of weeds and poisonous plants embedded in the wool of introduced sheep can cause problems in the future. Some examples of these problem plants are Paterson's curse, St John's wort, khaki weed, thistles and Bathurst burr. Therefore, if there are high levels of contaminating seed in the wool of new sheep, restrict them to certain areas and consider specific weed control in the future. Early shearing might also be considered if an infestation is severe.

HYDATIDS

Even a property with a careful hydatid control program runs the risk of introducing hydatids through infected sheep.

Recommendations:

- Do not feed offal to dogs.
- Ensure that farm dogs have no access to dead sheep in the paddock.
- If there is a risk of hydatids occurring, consider a treatment control program for all your dogs. Consult your veterinarian for advice.

LIVER FLUKE

Sheep from flukey properties can easily introduce this infection onto clean properties. Graziers with a routine fluke control program should therefore be aware of the risk of introducing fluke-infested sheep. A WormTest might also be considered to monitor for fluke. For further information on liver fluke, refer to Agfact A0.9.57 *Liver fluke disease in sheep and cattle.*

Recommendations:

- Obtain information about the origin of stock and any previous treatments for liver fluke.
- If new stock have come from flukey areas and have not been treated recently, they should be treated with an efficient flukicide (preferably triclabendazole) to kill immature fluke as part of the quarantine drench.
- Place the sheep on an appropriate fluke control program if this parasite is known to occur on your property.

CHEMICAL RESIDUES

There are no tests that can be carried out in saleyards to detect chemical residues in either meat or wool. However, graziers should keep accurate records of where sheep were purchased and, if possible, records of earmarks or ear tags. Residues of particular concern include those for chemicals which are no longer registered for sheep treatments such as arsenic; organochlorines like dieldrin; or existing chemicals such as organophosphates which have been used inappropriately. Wool contaminated with these residues present an occupational and environmental hazard which means it is severely discounted in the marketplace.

SHEEP IDENTIFICATION

The National Flock Identification Scheme (NFIS) was introduced in July 2002 as a voluntary scheme developed by industry for the permanent identification of sheep and lambs. The scheme uses colour-coded, visually-readable ear tags printed with a Property Identification Code (PIC) and the NFIS logo. Trace-back is achieved by documenting PICs on a current National Vendor Declaration (NVD) when sheep are sold. Sheep producers are encouraged to adopt the NFIS as an effective system for identifying and tracing sheep.

This is to help determine the origin of any chemical residues or disease if contaminated or infected sheep are traced back to the property of origin.

SUMMARY

- Graziers should be aware of the disease risks of introduced sheep and should take appropriate preventive measures. Graziers must realise that saleyard inspections give no guarantee of freedom from disease. There is a need for graziers offering healthy sheep for sale to emphasise this point.
- Request a copy of the Animal Health Statement with as much information as possible from the vendor about previous treatments in the flock.
- If possible, quarantine new sheep from other sheep on your property until they have been through a period where the major diseases could be expected to show up. With lice, this means keeping introduced sheep separate from the main flock for up to three months or until they have been treated. With footrot,

the introduced sheep should be kept separate from other sheep on the property until they have been through a period when conditions are conducive to the spread of footrot.

- Don't import resistant sheep worms. Seek advice on treatment of sheep when they arrive on your property. In general, introduced sheep should be drenched with a highly-effective combination of drenches and then started on a worm control program suitable for your area.
- Put new sheep on an appropriate vaccination program when they arrive on the property.
- Graziers offering sheep for sale should promote the disease-free status of their flock – for example, by using the Animal Health Statement and National Vendor Declarations (NVD).

OJD and sheep movement

A new national approach to the management of OJD (NAOJD) is in place following the end of the six year National Ovine Johne's Disease Control and Evaluation Program (NOJDP). The new approach, which commenced on 1st July 2004, has three main objectives:

- areas currently free of disease remain free,
- area prevalence will be maintained or reduced for the Very Low Prevalence, Low Prevalence and Medium Prevalence Areas, and
- area prevalence will be reduced in High Prevalence Areas such that prevalence area status may be reviewed in the longer term,

and is underpinned by four key elements:

- Removal of zones and zone-based trading restrictions,
- Establishment of prevalence areas,
- Establishment of a nationally agreed trading system using Animal Health Statements and assurance-based credit (ABC) points,
- Unrestricted access to Gudair Vaccine.

NSW has phased in a new approach to OJD management that is consistent with the NAOJD, and is underpinned by mandatory use of Animal Health Statements. While NSW includes four different prevalence areas, reflecting a gradient of estimated infection levels, the state is essentially managed in two parts.

The Management Areas, mainly comprising the higher prevalence areas, encourage producers to manage their own risk by using strategies such as vaccination, on-farm management and informed purchase of sheep.

The Exclusion Areas, comprising most of the very low prevalence regions, have demonstrated local producer support for self-funded and self-managed district programs designed to slow the potential spread of OJD into and within the area.

An owner is required to notify an Inspector if they know a flock is infected. A vet is required to notify an Inspector if they suspect or know a flock is infected. Any breach may result in regulatory action.

The onus is on the landholder moving the sheep into the EA to obtain the Animal Health Statement and provide a copy of it, as well as the landholder's name and details of the destination of the sheep, to the RLPB within seven days before or after the movement.

Individual landholders, including the owner of a saleyard or showground, or a RLPB in control of a TSR, may require a minimum OJD standard for entry of sheep onto that land. However, an EA can only recommend a minimum OJD standard for entry of sheep into the EA.

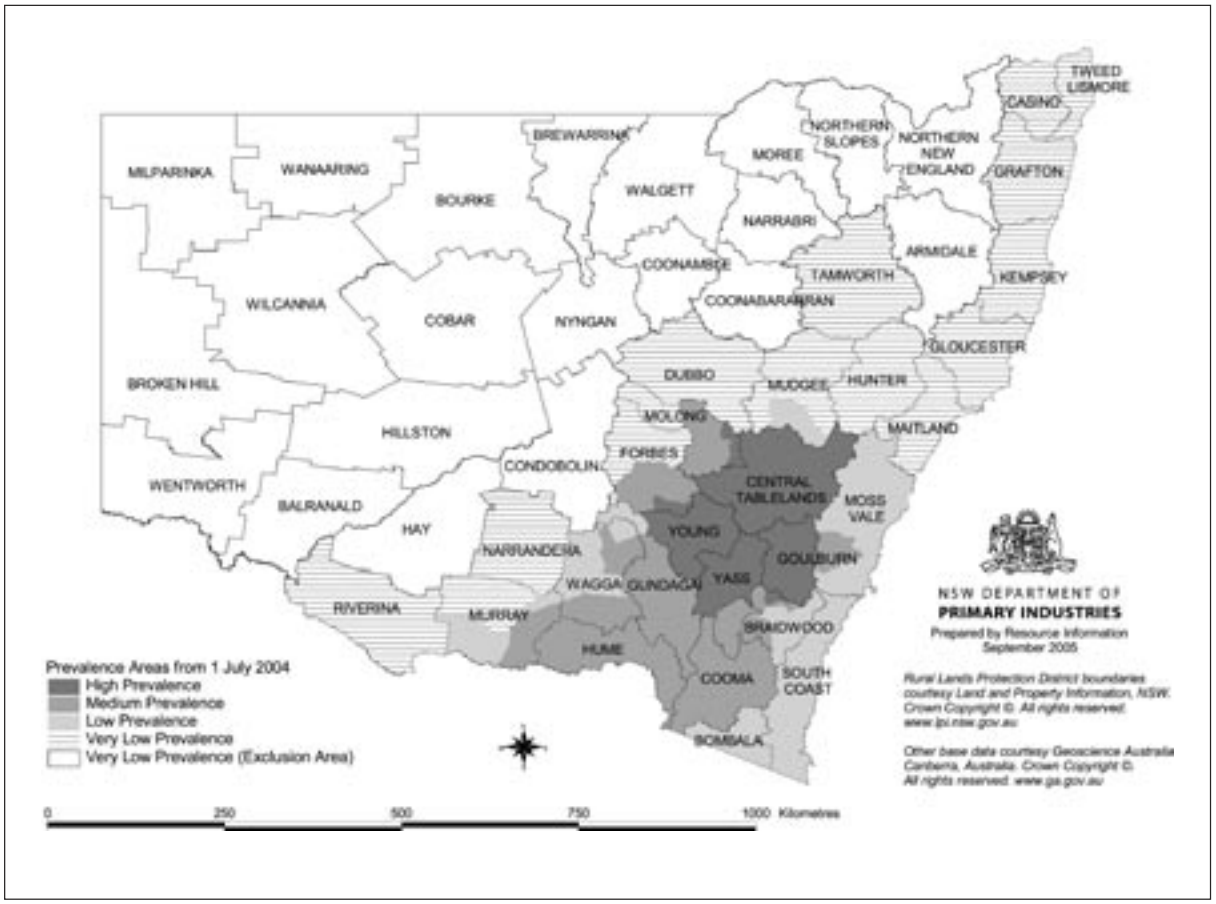
Key Principles:

- OJD is a notifiable disease. An owner is required to notify an Inspector if he/she knows a flock is infected. A vet is required to notify an Inspector if he/she suspects or knows a flock is infected. No regulatory action or investigation is required following notification.
- The Animal Health Statement is mandatory for all sheep sold as re-stocker or moved for agistment; it is signed by the seller, and accompanies the sheep and provides a prospective buyer with an indication of OJD assurance or risk, using assurance based credit (ABC) points. ABC points provide assurance for trade but are not required for movements within NSW, however, may be required for interstate movements.The statement provides other information as well, and may be used as a Travelling Stock Statement.
- SheepMAP approved vets are responsible for certifying approved vaccinates. NSW guidelines for approved vaccinates are:
  - lambs vaccinated by 16 weeks of age,

- sheep vaccinated over 16 weeks of age in flocks participating in the SheepMAP,
- sheep vaccinated over 16 weeks of age in flocks in very low and low prevalence areas, where there is no known risk of exposure prior to vaccination.

- Owners of flocks that are known or suspected to be infected are required to indicate this under category A of the Animal Health Statement. Resolution of suspicion is normally the responsibility of the owner and an approved vet, with advice available from DVs and DPI vets, or from the OJD vet panel. Infection is normally confirmed by laboratory testing, i.e. positive histopathology or positive culture. However an owner filling out an Animal Health Statement may conclude, on other evidence, that his/her flock is infected.
- PDMPs may be developed for flocks suspected of being infected, but approved vets are generally advised against certifying low-risk sheep from such flocks until suspicion has been resolved by veterinary investigation, normally including testing. Note: in some cases intensive investigation is unable to resolve suspicion in the short-term eg high-risk introductions only resident for a short period of time, and recently destocked prior to investigation.

Figure 6. OJD prevalence areas



Bovine Johne's disease zoning

Zoning is an internationally accepted principle for disease control. The aim of zoning is to help stop the spread of a disease from an area of higher-disease risk to one of a lower-risk. Zoning is being used as part of the overall program for the control of Johne's disease in cattle in Australia.

Zones in Australia are ranked as 'Residual', 'Control', 'Protected', or 'Free' – depending on the level of disease and the control measures that are in place. There are specific requirements that have to be met to move animals from a lower zone to one of a higher status.

Declared Zones

A **Protected Zone for BJD** is assessed as an area where there is low risk of the disease being present. There are restrictions on the movement of stock into the area from Control and Residual Zones.

A **Control Zone** is an area where there is still a significant level of disease. There are movement restrictions into the area from areas of lower status (Residual Zones).

PURCHASING STOCK

It has always been a problem when purchasing stock to obtain an assurance that they are not affected by Johne's disease. As the disease is not always obvious, an owner's assurance in itself is not adequate. The Market Assurance Program (MAP), however, provides the best possible assurance of this as stock enrolled in this scheme have a very-low risk of carrying infection.

Market Assurance Program

The Market Assurance Program is a nationally-accepted scheme whereby owners submit their stock to a whole-herd test and adopt a high-level of management to minimise the risk of disease introduction. If the test results are negative, the herd is given the status of 'Monitored Negative' (MN). Zoning provides another level of assurance, particularly when Market Assurance stock are not available at the time you want them.

Beef Only

The *Beef Only* classification recognises the fact that BJD is far more common in dairy herds than in beef herds, and that beef herds present a much lower risk of introducing the disease. A beef herd can be classified as *Beef Only* if it meets **all** of the following five requirements at the time the declaration is made on the BJD Animal Health Statement.

1. No animal has been part of a herd classified as 'Infected' (IN), 'Suspect' (SU) or 'Restricted' (RD).
2. No animal has had contact with dairy cattle or dairy-cross cattle at any time during the previous 5 years, unless those dairy cattle were from a herd enrolled in CattleMAP.
3. No animal has grazed on land on which adult dairy cattle (2 years old, or older) have grazed in the previous 12 months, unless the dairy cattle were from CattleMAP herds.
4. Any animals for sale from a Beef Only herd that were not born in the herd must have been introduced into the herd or onto the property from herds which are of the same (Beef Only) or higher status (BC-TAS, MN1, MN2, MN3) for bovine Johne's disease (BJD) and must have come with a BJD vendor declaration to that effect.
5. Any animal which is for sale as Beef Only must be individually identified under the National Livestock Identification System (NLIS).

Cattle from *Beef Only* herds must be identified on, and accompanied by, a **completed approved vendor declaration (BJD Animal Health Statement)** issued by the owner or person in

Order of risk for buying stock

Best bet

- Stock from a level 3 (MN) herd in the MAP from any zone
- Stock from a level 2 (MN) herd in the MAP from any zone
- Stock from a level 1 (MN) herd in the MAP from any zone
- Stock from a Protected Zone
- CHECKTEST stock from a Control Zone
- Untested stock from a herd in a Control Zone

Worst bet

- Untested stock from a herd in a Residual Zone

charge of the animals, which declares that all the above criteria have been met. **The purchaser should retain this BJD Animal Health Statement, preferably for the lifetime of the cattle to which it applies**, so that it can be made available to an inspector should any question as to the cattle's status occurs.

The *Beef Only* classification **is accepted for entry into a Protected Zone in:**

- NSW
- Tasmania
- South Australia

but is not accepted by:

- Queensland
- Northern Territory
- Western Australia

without additional testing. (Victoria does not have Protected Zones.)

MOVEMENT RESTRICTIONS

Into a Protected Zone

The borders of Protected Zones are not closed, but stock do have to meet certain requirements. Producers and agents outside of Protected Zones should also be aware that certain movements are still allowed with minimal restrictions.

People moving cattle into a Protected Zone should consult the most recent version of Agnote DAI-322 *Stock permitted into NSW BJD Protected Zones*. Essentially, controls are aimed at stopping the widespread movement of untested stock that may be carrying infection.

Breeding stock coming into these areas must come from herds in other Protected Zones or from herds that have enrolled in the MAP and have a status of at least MN1, meet the *Beef Only* criteria or are from a CHECKTEST herd.

CHECKTEST

A CHECKTEST herd is one in which 50 of the older adult animals have tested negative for BJD in the previous 12 months. The testing must be done by an approved veterinarian. The status can only apply to home-bred stock and is valid for 12 months.

Exemptions

- Steers are considered to be a minimal risk of BJD as they are usually slaughtered before they have the opportunity to pass on the disease – no restriction (there are, however, restrictions on steers from Residual Zones, such as from Tasmania).
- Stock going direct to abattoirs – no restriction.
- Cattle going to special 'slaughter-only' saleyards or sections of saleyards – no restriction.
- Some feedlots, where all stock leaving that

Figure 7. BJD zones

feedlot go directly to an abattoir, may be allowed to take stock without restriction – those feedlots have to be 'approved' (see your district veterinarian).

- Some other movements may be approved as specific exemptions such as for agistment, heifer-rearing, and movement to dry runs.

Notes on restrictions

The intention of zoning is to apply disease control principles with the minimal possible disruption to normal stock movement and trading patterns.

Protected Zones, though, have to collect monitoring test data over several years before they are in a position to mount a case for Free status – the next stage of zoning.

To obtain the necessary certification or to obtain advice on specific movements of stock into Protected Zones, you should consult your local RLPB.

SUMMARY

- Stock can move without restriction from a Protected Zone to a Control Zone.
- Stock can move without restriction from a Protected Zone to another Protected Zone.
- Stock can move without restriction from a Control Zone to another Control Zone.
- Stock cannot move from a Control Zone to a Protected Zone unless:
  - they are from a MAP herd;
  - they are from a CHECKTEST herd;
  - they are *Beef Only*, or
  - they are steers or are exempt, as listed above.

As zoning is an important part of the solution to Johne's disease, producers and others in the industry should work together to make the system work.

The goals of the Australian cattle industry include reducing Johne's disease contamination of farms and farm products and protecting the status of non-infected herds and regions.

Reassessing water requirements after a drought

As you come out of drought, a reassessment of your water needs should be part of your property management plan.

STOCK AND DOMESTIC SUPPLIES

After a drought, it is important to reassess your property's stock and domestic watering system in the light of what was learnt during the drought:

- Were there sufficient watering points in all paddocks?
- Were dams/tanks big enough?
- Were dam catchments able to be maintained satisfactorily?
- Were bores, pipelines, pumps and troughs adequate?

Dams/tanks which may have become partially-filled with silt, manure and other debris from bare catchment areas will have a reduced capacity. During drought, many landholders will take the opportunity to de-silt tanks and dams.

Adequate groundcover should, therefore, be maintained in water catchment areas and constructed waterways in order to keep water clean and prevent a loss of capacity. The area around the inlet is particularly important, and good cover here can act as a filter and as a silt trap.

The NSW Department of Natural Resources, formerly the NSW Department of Land and Water Conservation (DLWC), provides advice and assistance in farm and domestic water supplies of all kinds. Low-interest loans are available for farm water supplies and systems. The *Cap and Pipe the Bores* program also provides assistance to minimise the wastage from artesian bore drains.

IRRIGATION

Limited irrigation water during droughts is best used on permanent or the most valuable crops

– it is better to adequately-irrigate a small area than to under-irrigate a large area.

If soil below the root zone is saline, salt may also move up the soil profile during drought. Unless rains have been sufficient to flush accumulated salts from the root zones of crops, additional irrigation water should be applied and the depth of the wetted soil profile checked to ensure that the root zone has been flushed.

During drought, irrigators have the opportunity to check over their system so that it is able to be operated efficiently when irrigation water is again available. All the mechanical and delivery components of the system should be checked (in both pressurised and surface irrigation systems).

After long periods of not being used, check the system carefully for blockages caused by dust, insects, and other debris in pipes and sprinkler outlets, and flush the system thoroughly.

After a dry spell, the opportunity should be taken to frequently monitor the infiltration depth of rainfall and irrigation. This will indicate when there is enough water available within the crop root zone. Using a moisture monitoring device, such as a soil probe or tensiometer, will indicate where water is within the soil profile.

WATER QUALITY

During drought, the quality and flow rate of water in unregulated rivers and streams may deteriorate. In tidal sections of rivers, the salt can also move considerably further upstream than would be the case in a normal dry spell.

After rain, the quality of water in some streams may be variable and should be monitored before using it for stock, garden watering or irrigation of crops.

FURTHER INFORMATION

- Agfact A0.5.4 *Water requirements for sheep and cattle*
- Agfact AC.2 *Farm water quality and treatment*

FURTHER ASSISTANCE

- Advice on your irrigation system is available from your local NSW DPI Irrigation Officer.
- Assistance with advice on stock and domestic supplies can be obtained from the NSW Department of Natural Resources.