Landcare Notes

Farm water in dry times: a checklist

David Cummings, Melbourne

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This Landcare Note lists key issues which need consideration with the advent of a dry period.

The steps for planning farm water use during a dry period are as follows:

- carefull evaluation of current reserves;
- estimation of how the status of theses reserves may change over time;
- consideration of how this will influence the management options available ; and then,
- action.

Good management of stock water supply is inextricably linked to managing ground cover. Preservation and maintenance of this cover is the prime requirement for protecting land during dry times (See Landcare Note LC0076: *Protecting the land in dry times*). Hence, consider water needs in tandem with land needs.

The following points need careful consideration with the advent of a dry period.

How much water do you have available?

Volume in storage.

How big are your dams?

Make an allowance for sediment in the bottom?

How much water is in the dams right now?

Other supplementary sources

Do you have bore, spring or soak water?

How much will they reliably yield?

Have you checked bore rates by pumping?

Springs and soaks are notoriously affected by extended dry periods.

What about salt content?

How will the availability and quality of this water change over summer?

Expected losses by evaporation

Evaporation losses from open bodies of water can be massive. They could well remove the top 1200mm from your dams between December and May. The real benefit of deep storages show up clearly in drought times (See Landcare Note LC0080: *A drought reserve dam*).

Expected losses by seepage

All earth dams have some level of seepage. Do you know the rate of seepage of each of yours? If there is still water in the dam after a dry winter, seepage is probably within acceptable limits.

Salt content

Evaporation concentrates the level of salt in a dam. During a drought year, low water levels can result in doubling of salt concentrations over the summer. Is this going to cause problems for your stock?

What is the current salt level?

Dry sheep can routinely use water of up to 12000µS/cm (7000ppm). However they can be conditioned to use water of up to 20000µS/cm. Lactating animals, young animals, pigs, poultry and humans have tolerances well below these figures.

Water samples can be tested for salt content at a water laboratory. See the yellow pages of your local telephone directory.

Pollution

During the 1982/1983 drought, many dams in northern Victoria were severely polluted by manure and dried vegetation blowing from bare paddocks. The water turned black and gave off a putrid smell. Stock stopped drinking. However after 3 or 4 days, of considerable stress most stock started drinking again. However, it is thought that tender fleeces resulted in some cases.

Retention of ground cover on adjacent paddocks will avoid the problem developing.

Algal blooms

These are common over summer months. Blue-green algae will produce toxins, and suspected outbreaks will need to be evaluated by a water laboratory (see Landcare Note *LC0098: Has your dam got a blue green algae problem?).*

What demands will be placed on water supply?

Stock water needs

Sheep need up to 40L of water per animal per week. Cattle need about 500L per week. It soon adds up.

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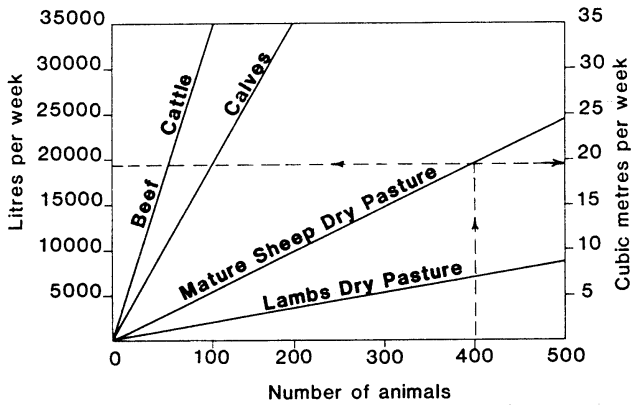


Are your watering points being used by other animals to any significant level?

Domestic needs

Rules-of-thumb for an active household are as follows:

People	1	2	4	6
L/week	1250	1900	2380	2650

Garden needs

These are highly variable depending on the type of garden and the watering method. For each block of garden of 10m by 10m water use could be in the range of 200L/week(drip irrigated shrubs) to 1000L/week(well watered vegetables).

Is demand likely to outstrip availability?

Work logically through the above points and make your conclusion.

What options are available?

Reducing stock numbers

A key issue for any drought period is the number of stock kept on the property. Too many and vegetative cover will drop to critical levels.

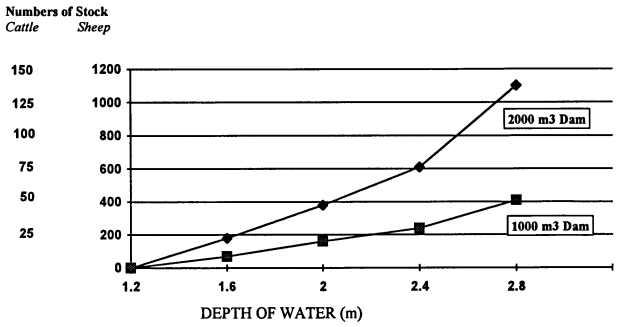
What are your core stock numbers? How many do you want to keep? How many do you need to keep? How many can you afford to keep? Can you agist some?

Relocating stock

Perhaps stock could be confined in a relatively small and safe area with water and feed delivered to them rather than having them chase it. There are advantages of soil protection with this approach

Combining stocks of water

One large deep dam is better than numerous shallow ones in terms of conserving water. The following graph demonstrates this:



Hence, depending on dam location etc, it may be advantageous to pump the contents of a number of smaller dams into a single dam to minimize evaporative loss and save water.

Reticulating from dams rather than direct access

This avoids pugging and bogging problems and furthermore allows a more efficient use of the water. However systems must be simple, reliable and of sufficient capacity to meet peak demands. Schemes should include troughs.

Site any troughs, tanks and pipes to suite future needs where at all possible.

Protecting dams from wind-born contamination

Keep adequate ground cover on the paddock to prevent material blowing in the first place.

If groundcover is already low, fencing can be used to trap blowing material before it reaches the water.. A closed-wired fence on the windward side is a worthwhile investment.

Once material is in the dam, aeration of the water is necessary to improve its condition and make it more palatable to stock. This is bestdone by pumping to a tank and subsequently reticulating to a trough. If aerated water is returned to the dam then the organisms growing on the organic material will quickly remove all the air again. Further information is provided in Landcare Note LC0074: *Organic pollution in farm dams: prevention and treatment.*

Carting water

This is a labour intensive operation.

For valuable stock it presumably is a valid option. It is best regarded as a last resort.

Check quality of possible water supply for carting. Many streams and bores are quite salty.

Its a waste to put carted water into an earthen dam - use tanks and reticulate to troughs.

In 1982/83 figures were produced to show for example that for a flock of 500 sheep, carting water say 16 km cost in excess of $1000 per month. What would it cost now? Better to save that money to build a better farm watering system when the weather improves.

Sinking bores

Investigate likely water yields and likely quality before drilling emergency bores.

Digging new dams

Don't bother when soil moisture is low. Only build earth dams when soil is appropriately moist for for getting maximum compaction.

The garden

Trickle irrigate and mulch

When seasonal conditions improve.

Build up a contingency plan for the next dry period. "Drought-proof" your property and its enterprises. Don't get caught by the next dry period.

Bigger and deeper dams

Make the storage big enough and deep enough too hold sufficient water for your needs over known periods of no run-off. Perhaps this should be up to 30 months for northern Victoria.

Consider fencing-off all dams and reticulating to troughs.

Consider ways of reducing excessive exposure of dams to any wind born debris. Use strategic shrub and tree protection. Look for sheltered sites to locate new dams This will reduce both evaporation and the potential for future wind-born pollution.

Permanent reticulation systems

Supplying sufficient, good quality water to stock for any given year, and in such a way that any damage to land and streams is minimized, is a hefty challenge. Water collection, water storage, water distribution, and water supply might need to be looked at as separate (although component parts) of the farm water system.

Re-evaluate the concept of 'a dam ineach paddock' as a viable management option.

Rectifying seepage problems

Seek local and or professional advice on the ease of fixing problems with seepage.

Bore sinking

The availability of adequate water of suitable quality will determine the usefulness of this option..

Further Information

Please contact your local office of the Department of Sustainability and Environment

Related Landcare Notes

LC0064: M*easuring the salinity of water*
LC0065: *Water conservation on rural properties*
LC0069: *Assessing soil materials for farm dams*
LC0072: *Paddock protection and stock management during dry times.*
LC0073: *How long will my water last?*
LC0074: *Organic pollution of farm dams: prevention and treatment.*
LC0075: *Stock containment areas*

Acknowledgements

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