

# Water Buffalo Farming in Southern Australia

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## INTRODUCTION

Buffalo are now raised in every state of Australia. The largest number is in the Northern Territory (NT), where they were first introduced in the 19<sup>th</sup> century. They particularly adapted very well to the conditions in the Top End of the NT. Their distribution to other states mainly occurred after 1990. The total number has remained fairly static on farms in the NT during the last 20 years since BTEC. However, the proportion of the Riverine type and its availability has been increasing steadily.

In some states, licences with varying conditions in place are required to keep buffalo, some with annual licence fees. In the NT, buffalo are considered as stock. Other states need to relax regulations as Riverine buffalo and their crosses increase in number, building the buffalo dairy industry.

The most common reason for buffalo farming is diversification. Compared with cattle, buffalo are efficient converters of poorer quality pastures. They are better able than cattle to ingest a wider range of forages and can help to reduce reeds, which cattle will refuse in irrigation channels. They can also utilise swampy areas and help reduce fire burdens. Buffalo are capable of producing meat and milk adequately from grass alone without the need for a large concentrate component in the diet usually needed by dairy cows.

There is also a market for buffalo meat, which is not dissimilar to beef, but which has significant health benefits compared with beef and other red meats. As such, there is scope for establishing production and marketing programs particularly aimed at the local high quality table meat market, including restaurants. This would take advantage of consumer preference for low fat and low cholesterol buffalo meat. TenderBuff® is of particular interest in the NT market as it is a quality-assured product with a grid pricing system which pays according to the specifications a carcass achieves. A strip brand identifies carcasses which meet all specifications.

More recently, there has been increased interest in the dairy aspects of Riverine buffalo around Australia. Cheeses and yoghurt made from buffalo milk are now increasingly available in most states.

## WHAT IS THE AUSTRALIAN WATER BUFFALO?

The most common water buffalo in Australia is the Swamp type (*Bubalus bubalis*). It was first introduced from South-East Asia. There are also two other domesticated types in the world known as the Riverine (dairy) buffalo and the Mediterranean (dairy/meat) buffalo. The Riverine type was introduced in the last 20 years from the US and Italy/Bulgaria. The Riverine buffalo is a dairy breed originally from India and Pakistan. There are photos in the State Reference Library of the NT of numerous Riverine buffalo taken in Darwin at the turn of the 20<sup>th</sup> century. These animals were imported to Darwin during the 1880s, but their contribution to the buffalo population must have been diluted over time, or they did not escape from captivity and are thus not recognisable in the current local buffalo population.

The Swamp type are usually grey (light to dark), but in the natural population, there are also significant numbers which are pink (common), albino which are white (rare) or piebald, which are grey with white patches. Females can have two, three, four or five teats per udder. Four are the most common.

The Riverine type are usually much darker (blackier) but often have some white markings on the head, legs or the tail tip. Riverine buffalo have horns shaped quite different from those of Swamp buffalo, with a lot more curl than the wide rearward sweep of Swamp buffalo horns. Italian buffalo have shorter horns than Swamp buffalo but are less curled than those of the Murrah (Indian), influenced by US Riverine imports. There are many breeds of Riverine buffalo in India and Pakistan, which often display regional differences. Italian dairy buffalo semen has been available in Australia for around 15 years as a source of genetic variation to the first imports from the US into the NT for improved milking traits. The quality of the semen has improved greatly, with a good number of bulls now which meet the export requirement.

## **SUITABLE AREAS FOR BUFFALO FARMING**

Buffalo are known to eat a wider range of forage than cattle and are physiologically better able to handle poorer quality feed (lower protein) compared with cattle. They may need better shelter from the cold than cattle but appear to have handled most conditions in southern Australia well. They are now found in every state of Australia. Very cold areas with open country and little wind protection would not be recommended due to the more tropical origins of the animal. However, buffalo have successfully survived in some quite cold tableland areas of NSW provided they have good shelter to protect them from the elements in winter. Losses in winter cold snaps have however, been encountered in Swamp buffalo. Riverine types appear to be much better cold-adapted than the Swamp type in southern Australia and grow a better protective coat of hair than Swamp buffalo in cold conditions.

## **DIFFERENCES FROM CATTLE**

When working with buffalo, subtle differences emerge that handlers will need to be aware of and allow for.

Buffalo should be worked quietly and gently, with a less confrontational attitude. When in close contact, buffalo will tend to stand up and face people or dogs rather than try to retreat or avoid. They do become very docile when handled carefully and frequently, but can also become cranky if handled roughly. They should be given time to adjust to new surroundings and will usually adapt favourably. Hand feeding is a very quick and sure-fire method for gaining their confidence. They usually behave favourably with the owner once he/she is used to them. However, owners will also need to be careful when strangers visit, as the animals will be less relaxed if they have not had frequent exposure in the past to people. Patience and understanding their nature are the keys to working successfully with water buffalo.

As they have fewer sweat glands, buffalo can over-heat more quickly than cattle if they are over-stressed or run for long distances in hot weather, or are mustered during the heat of the day. Buffalo will wallow to reduce heat stress if water is available. They also wallow to counter heavy external insect attack from buffalo flies, sandflies and mosquitoes. Observations suggest that in southern climates, the wallowing is much less frequent than in tropical areas; however, a dam for swimming is usually very well frequented and appreciated, particularly in summer. A water stream from a hose is an instant pacifier for buffalo particularly when they are overheated or stressed.

Buffalo appear to be more intelligent than cattle and appear to exhibit a better memory of past events; that is, they learn more quickly.

You will need to aim to work with smaller numbers than is possible with cattle. Do not crowd buffalo into a small confined space.

Races will need to be built wider if you are going to run Riverine cows; a width of 760-800 mm will be necessary.

Normal yard management of buffalo, such as drafting, vaccinating, pregnancy-testing and weighing, tends to take a little longer per head than for cattle, so you should reduce the numbers for a given work space. Buffalo tend to work through the yards better if numbers are kept low and they are not worked in large tight groups. It is better to split a small group off the side of a larger group and work them through, then come for the next group. A free run through the yards without a stop is beneficial at any time for future confidence in the yards.

We recommended low stress stock-handling techniques and training, which can be learnt from a number of courses that are available throughout Australia. For example, see [www.lss.net.au](http://www.lss.net.au)

Buffalo should be worked without undue pressure. Excessive pressure will cause problems. However, once settled, most buffalo are extremely tractable with their owner. They just need a little time to adjust and trust, particularly with strangers.

## **DISEASES AND PARASITES**

It appears that buffalo are very susceptible under southern conditions to malignant catarrhal fever. It is recommended that they do not have direct contact with sheep in the same paddocks, as mortalities may occur. It appears to be a greater problem when buffalo are heavily stressed, are in poor condition and arrive on a new property during a very cold period. Their immunity is very low under these conditions.

There have been some reports of deaths from ostertagiasis (brown stomach worm). Owners should be aware of this and monitor worm egg levels and tactically drench until a strategic drenching program is established for each region. Newly introduced buffalo from the NT would be expected to have little immunity to this worm. Again it should be noted that they would be more susceptible when in poor condition and under stress from transport or change of feed.

In winter and spring, some buffalo losses have been blamed on yersiniosis (enteric bacterial infection) where thin and copious scouring is usually seen. This has been mostly reported in the Gippsland area. Early tetracycline treatment can help.

Treatment with the 7 in 1 vaccine (Clostridial plus Lepto) is recommended for all states, together with whatever other recommendations are for cattle in a particular area, such as botulism and vibriosis vaccination (Campylobactor).

There has been no contact in the NT with buffalo and Johnes disease.

## **LICE**

Buffalo lice (*Haematopinus tuberculatus*) are common on buffalo in northern Australia and are sometimes found on buffalo in southern Australia as well. They cause anaemia and loss of body condition. They need to be controlled, particularly if animals lose condition. Small calves can build up significantly high numbers when control will be necessary. Lice eggs are readily visible (creamy in colour) if numbers are high, attached to the hairs of a buffalo's coat. Adult buffalo lice are grey in colour, up to 6 mm long and can be easiest seen on pink or light skin areas, such as inside ears and between legs/around udders. Treatment is usually effective with a pour on louseicide and is best carried out twice 14-18 days apart to ensure the life cycle is completely broken. All buffalo on the property should be treated at the same time. Chlorpyrifos-based lice treatments should be avoided as they have been found toxic to some buffalo, particularly in hot weather. Most other cattle lice formulations, including single dose types, are effective as pour-ons or sprays. Two consecutive doses of a synthetic pyrethrin based pour-on at 16 days appear to have been effective in eradicating lice at Beatrice Hill Farm, near Darwin. All new buffalo should be quarantined and treated on arrival and not mixed with resident buffalo until deloused, (probably for a month). Re-treatment is advisable as soon as new lice are observed.

## TICKS

Buffalo usually do not carry cattle ticks except under exceptionally stressful conditions. They are not a normal tick host. Ticks have only been seen on buffalo when buffalo are in poor condition and mixed with tick-infested cattle.

## BUFFALO FLIES (*Haematobia irritans exigua*)

Buffalo flies are present in the NT and Qld and are expanding their range slowly. Sprays, pour-ons and spot treatments are all useful to control buffalo flies, which breed in the dung. Buffalo treated just prior to departure should not introduce buffalo flies to other states. A large number of chemicals are available with varying effectiveness and price. Insecticidal ear-tags are also effective as longer term fly deterrents. Back-rubbers are very effective but need to be designed stronger for buffalo. The Qld designed buffalo fly catching walk-through tent structure may also be effective where buffalo that walk through, shed the flies, which are then trapped in the structure and die.

## PHOTOSENSITISATION

Whilst this condition has not been recorded in the tropics, it has been diagnosed under southern conditions in buffalo that have white facial patches in areas where certain plants are present. The appropriate treatment is to remove the buffalo from sunlight and the paddock with the offending plant and to keep them in the dark and then inject them with appropriate antibiotics.

## SHADE AND SHELTER

It is recommended that buffalo have access to good shade and shelter from heat in summer and cold in winter by using effective tree shelter belts or shade/shed structures.

Some tree trunks may need protection from buffalo eating or rubbing against them. Where bark is being eaten, provide salt/mineral blocks to reduce the craving. Increasing available fibre and roughage should also help. Buffalo should be removed from the paddock if tree guards are not practical, or the above preventative measures are not successful. Some success has been achieved using old car tyres, which are split across and placed on top of each other around the trunk up to a height of about 80 cm. When cut across the profile, tyres can expand with the growth of the tree.

## DROUGHT FEEDING

Sand impaction of the rumen has caused some deaths in many mature buffalo on sandy country in drought conditions, where they have been fed hay or grain on the ground. Feeding only in troughs may reduce this problem or you may need to remove the buffalo to a more clay-soil area, if available.

## DEHORNING

Naturally polled buffalo, which have small vestigial scurs, have been seen in the NT. These scurs remain small throughout life. The trait is passed on through family groups, so it appears to be genetic. The incidence is extremely low.

There are numerous advantages to dehorn buffalo, except where trophy hunting or excessive dog/dingo problems are encountered. Dehorning reduces damage to fences, yards, trees and people. Dehorned buffalo take up less space when transported and are less likely to cause bruising is. Dehorning in a dairy herd makes sense.

Buffalo can be dehorned as calves before two weeks of age using a hot iron or by using cup or scoop dehorning devices preferably before three months of age. Adult animals can be tipped only – a maximum of a third of the horn can be removed. Bleeding can be profuse if the horn is taken off closer to the head. A hot iron can be used to cauterise the main vessels, which will reduce bleeding significantly. As in cattle, a ring of skin (hair) around the horn butt must be removed to ensure no horn regrows in calves. Dehorning is not recommended later than four

months of age. Some social problems due to dominance occur when horned and dehorned mature cows are mixed. So, if the practice is adopted, all animals in the herd should be dehorned. Otherwise, horned and polled buffalo should be kept separately.

## **FIRE-BRANDING**

Fire-branding tends to be not permanent in buffalo as most brands fade after a number of years and become unreadable. However, it works well and is readable for many years on pink-skinned buffalo. Earmarking may be a better means of identification, but you will need to check your state's legal requirements. Brands need to be very hot; but should not be left on for excessive periods as blotching will occur. Some long-term brands have been observed on some buffalo.

Freeze-branding can be carried out on Riverine types as they are generally more hairy than Swamp types, particularly in cooler climates.

## **EAR TATTOOS**

Tattoos applied to the pink inner ear between the ribs of cartilage are permanent and readable when the buffalo's head is confined in a crush head bail. They are useful for permanent number identification as plastic ear-tags are prone to loss after several years, or even more regularly, in some individuals. It is suspected that other stock pull them out, or they get caught on fences or get pulled off by wild dogs or dingoes.

Tattoos are not an option with Riverine buffalo or crosses unless there is a significant pink patch on the inside of the ear. Most Riverine or crossbred buffalo ears are a consistent black on the inside, making tattoos unreadable.

Horn-branding can also be used, but it does become difficult to read after several years. It should be put in an area that does not get frequently rubbed.

Electronic IDs (NLIS tags) with the smaller ear-tags appear to give better retention rates than the large ear tags over the seven year period used at Beatrice Hill Farm. They can be applied on very young calves without causing any damage, making identification very easy, provided you have the portable wand or a race reader installed. They are now mandatory in most of Australia.

## **CASTRATION**

Both knife and elastrator rings have been used successfully, usually after four months of age, or whenever both testes have descended properly. Weaning time is usually the time to castrate. Larger ring pliers and rings than traditional lamb rings have been available in recent years that allow application at a later age. If swamp males are marketed before 2.5 years of age (no permanent teeth), there are probably no advantages to castrate as it is likely to reduce weight gains. This may be slightly earlier in temperate climates under good pasture conditions, in which case, turnoff to market would be earlier. Bulls will need to be separated from heifers of the same age before 300 kg live-weight, otherwise pregnancies may occur. Castrated males (steers) will deposit fat earlier than bulls; as such, fat specifications are easier to achieve in steers for TenderBuff during periods of poorer feed than in bulls.

## **WALLOWING**

Wallowing is a common habit in buffalo, which they use for heat and insect control in the tropics. This can occur anywhere where a puddle forms, particularly near a leaking trough or pipeline or in very wet weather where there is a depression in the land. Buffalo can however, survive quite happily without access to a wallow, such as during the dry season in the NT. Buffalo appear less prone to wallowing under southern conditions, but still like to rest/swim in dams during hot weather.

## **BULLS**

There have been a few instances where bulls that are raised together will work cooperatively in the same cow breeder group; but this is the exception rather than the rule where cows are present and the bulls are five years or older. It will work with yearling and two-year-old bulls raised together since birth.

Bulls over three years of age that have mated cows are usually less than friendly to one another thereafter. They generally need to be separated and not kept in adjoining paddocks once they are mature. Damage to gates and fences because of fighting, is common. Some will tolerate others close by after a period of time if there are no cows nearby. It is a good policy to retain the minimum number of bulls necessary to maintain herd fertility. This is one bull to 40 cows where mating is seasonally controlled.

## **MARKETING**

Buffalo meat is similar to beef but has two marketing advantages over beef. The fat content is much lower for animals of the same age, and the amount of fat in the muscle is lower. Secondly, the cholesterol content is approximately 75% of that in beef in animals grown under similar conditions. The fat is also lower per 100 g of raw lean edible portion than in chicken, pork, beef and fish.

Zinc and iron content is high compared with other red meat.

When aiming for high quality meat markets, it is imperative that the animals are young - less than 2½ years of age (no permanent teeth), have more than 2 mm of fat over the P8 (rump) site and more than 150 kg dressed weight. Pre-slaughter conditions should be such that there is no stress during handling and transport, or in abattoir yards. Veal production could be possible but has not been tried yet in the NT.

After slaughter, the carcass should be electrically stimulated to reduce the effects of shrinkage of muscle in the chiller, known as "cold shortening". Preferably, the cuts should be vacuum-packed for a minimum of two weeks prior to sale and within four days of slaughter. The pH of the meat prior to vacuum packing should be less than 5.8 for a good tender product and keeping quality (shelf life). TenderBuff® is a quality assured product, which meets all of the above specifications and is a trade mark belonging to the Buffalo Industry Council of the NT. Contact the Council if you want to use this branding. Hanging (aging) is not recommended if vacuum packing is carried out as the longer aging compromises keeping quality in the bag and the skin surface darkens considerably with drying and aging, which results in wastage through trimming of the exposed darkened surface in the chiller. This is due to the lower amount of surface (subcutaneous) fat cover compared with sheep or cattle.

During the past 25 years, markets have been available both in Australia and overseas for buffalo meat breeding stock, in particular for Riverine types. Brunei has traditionally been a significant market for slaughter males but has declined over the last five years. A supermarket line has developed in Brunei. Newer markets include Indonesia, Sabah and West Malaysia, however, Vietnam has emerged in 2014 as the biggest importer of buffalo for slaughter from Australia.

Dairy buffalo breeders have been exported from Australia to New Zealand, Chile, South Africa, Qatar and Japan during the last 10 years.

## **COOKING**

Over-cooking should be avoided where possible as it renders buffalo meat dry, due to its low fat content. When grilling or pan-frying, steak should be cooked quickly at high temperatures to seal in the natural juices and keep the centre moist. Continual cooking and turning will tend to dry out the steak considerably, making it less palatable and less tender. In general, buffalo meat should be cooked slightly rarer than beef to retain juiciness. Wet cooking methods are highly suited to buffalo meat, especially for lower value cuts.

## TRANSPORTATION

Before transporting buffalo over long distances, please consult the various applicable guidelines/manuals that are available online. Consider animal needs for appropriate rest stops and feeding/watering intervals during long distance travel. If given enough space, buffalo will generally lie down and be quite comfortable during long distance travel. Sawdust, wood shavings or straw are recommended for bedding on long distance trips. The only other consideration would be for air circulation in cold or hot weather. In cold weather, some wind protection would be advisable to reduce the chill factor, whilst the opposite would be the case in hot weather.

## FURTHER READING

1. Agnotes on water buffalo handling:
  - No. J63 (611) Part I: General Principles
  - No. J64 (612) Part II: On Farm Considerations
  - No. J65 (613) Part III: Transport to Abattoir
2. Agnotes on preparation and cooking buffalo meat:
  - No. J28 (708): Buff – How to Cook it Successfully
  - No. J70 (690): Eating Qualities of Modern Buffalo

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