



Managing wet soils: case study of stand-off areas

Updated: January 2006

AG0950

ISSN 1329-8062

Ashleigh Michael, Maffra

Stand-off areas have been used in conjunction with “on-off” grazing by Frank and Tina Hoffman of Arawata in Gippsland. They have been very successful in reducing pugging damage to soils and pastures during wet winters.

The stand-off area is “very low cost and it does the job”.

It allows cows to be removed from wet paddocks when unacceptable damage is likely to occur.

Future plans include two additional stand-off areas, a pad for feeding hay and silage in wet conditions and a calving pad. This system will enable an autumn calving to take advantage of winter milk incentives while minimising pasture and soil damage through pugging.

Background

Frank and Tina Hoffman have been farming at Arawata (130km southeast of Melbourne and 10km north west of Leongatha) in south Gippsland, for 18 years. Annual rainfall is 1200mm with winter rainfall greatly exceeding requirements.

The farm consists of 85 hectares of “bluegum” hill country (heavy clay loam grey soils) adjoining 16 hectares of leased land of a similar soil type. These heavy clay loam soils are prone to waterlogging and pugging between June and October. A turn out block (five kilometres away) of 32 hectares is leased for dry stock and cutting hay and silage. It was selected partly because of the free draining red soil type, which is less susceptible to winter pugging than the main farm. This hill country has many soaks (water seeping from the side of hills) and is susceptible to landslips.

Between 185 and 200 Friesian cows are milked with a stocking rate of 1.8 cows per hectare. Calving is spread over six to eight weeks starting on August 1st. The cows are milked in a 16 swing over herringbone dairy.

Pugging risks

Between June and October this farm is susceptible to pugging in most years. From 1997 to 1999 unusually dry conditions meant that pugging was not a serious problem, therefore the stand-off area was not used. In 1995 and 1996 conditions were very wet and the stand-off area was used frequently between August and October to reduce

pugging damage. Ideally Frank would like to start calving the herd at the end of April to take advantage of higher winter milk prices. Wet conditions prevent him from doing this with his current infrastructure (see future plans). Although pugging could potentially occur in June and July, this is not an issue as the herd is at the out paddock.

Through experience Frank knows when the soil is too wet for cattle to graze safely without causing unacceptable pugging. This knowledge has been developed through his experience on the farm and observation. This experience was gained through careful observations with normal grazing practices under wet conditions. Frank assesses the risk of pugging to the pasture by walking across the paddock prior to grazing keeping in mind recent rainfall. If he starts to sink into the soil he knows that unacceptable pugging could result from grazing. In this case cattle are only left on the pasture for 1.5 to 2 hrs (or until they consume most of the pasture) in an “on-off” grazing approach to wet soil management. Currently cows need to graze for at least 1.5 hours to achieve sufficient pasture intake for the day. Cows can not be kept off the pasture all day, as there is no means of fully feeding the cows conserved fodder off the paddock.

Frank also considers how cow’s behaviour can cause pugging. He knows not to start the tractor near a paddock of cows. This alerts the cows, they begin to walk around, believing they are going to be fed hay, and this causes more pugging damage.

There are problems feeding out conserved fodder when the soil is wet. As a result hay and silage has to be fed out on tracks, around water troughs and on dry rises in paddocks. Future plans include a feedpad as a solution to the problem, this will assist in moving forward calving (see future plans).

Other benefits of not causing excessive pugging include easier to cut hay and silage, the longevity of machinery is increased and worker comfort is improved.

Frank believes that pugging is more serious on hill country as there is less support for the soil on a slope. The cows tread on the wet soil, this action causes soil to be pushed down the hill and water settles in the depressions.

Pasture management

To ensure good pasture management, the farm is sub-divided into 52 paddocks (initially the farm was divided into two paddocks). Block grazing is used when the herd is calving. Frank has found block grazing the herd to be superior under his conditions compared to strip grazing, as cows walk less and less pugging results.

Paddock size has been matched well with herd size to enable good utilisation of the pasture. Paddocks are fenced where possible on the contour of the land, to give uniform soil conditions to assist in wet soil management. In spring the grazing rotation is 17 to 20 days and in winter the rotation is up to 60 days.

Maintaining pasture quality has always been a priority on this farm. Young stock are used to clean up rank pasture in spring, as topping the hill country can be difficult.

Between four and five hectares are resown each year to new productive varieties of perennial rye grass and clover. Many areas of the farm are impossible to plough and resow or cut for hay and silage, as they are too steep. Fertilising paddocks has been difficult because of the steep slopes. In the autumn of 1997 one third of the farm area was shallow cultivated by rotary harrow to remove pugging marks and oversown.

Supplementary feed

The out paddock has been a key to Franks fodder conservation program. As only 20% of the home farm is suitable to be cut the majority of hay and silage is harvested from the out paddock. The poorly drained soils on the home farm prevent making early silage, as they are often wet and untrafficable, up until mid spring. On the other hand the better-drained soil on the out paddock allows silage cutting at the optimum time. The silage is transported to the main farm and hay is predominantly left at the out paddock for feeding dry cows and heifers. Four hundred and fifty rolls (300 to 400kg) of silage and 350 rolls of hay are cut annually. With the exception of the 1997 season (poor autumn growth) no hay or silage needs to be purchased. Normally 200 to 300t of barley is fed in the dairy.

Stand-off area

The stand-off area together with “on-off” grazing is the key to Franks wetsoils management. In Franks own words the stand-off area was “very low cost and it does the job”.

The stand-off area is an inexpensive easily constructed design for occasional use on wet days.

Why a stand-off area?

- Wet soils are a regular and serious problem on the farm.
- Due to steep nature of the land, sub-surface drainage systems are not suitable.

Frank spoke to his consultant about how he could reduce pugging damage. Using knowledge of a similar system in New Zealand his consultant suggested he try a stand-off area, so cows could be kept off wet pastures.

Site selection

- It was sited close to the centre of the farm.
- It is on a naturally well-drained area below the crest of a hill.
- Existing trees on one side shelter it.

Construction method

- Low cost local materials requiring little preparation were selected
- Soil removed down to the natural sandstone base.
- The sandstone was formed into a mound to allow drainage of water off the site.
- A 150 to 200 mm deep layer of coarse crushed bluestone was laid over the sandstone base.
- This was capped with 0.6 to 1.0 m of sawdust to form the surface.
- On the downhill slope, rows of tyres were used to keep the sawdust in place.
- The perimeter area was fenced with three plain electric wires to contain cattle, the area was sub-divided into three sections to reduce movement and crowding of cows.
- Built using own tractor and grader blade. About 2.5 days labour was required to build area.
- Frank said a future improvement would include water troughs.

Size and capacity of the stand-off area

- 5.5 m wide, 80 m long (440 square meters).
- Will hold 180 cows (2.5 square meters per cow), this allows enough room for cows to sit down and rest.

Management of the area

- Cattle need to be trained to use the area. This is achieved by putting groups of 20 cows on at a time.
- The manure and the most fouled sawdust is removed annually and spread on pasture.
- The area is capped with a new load of sawdust each year.

Use of the area

- Not used between 1997 and 1999 due to dry conditions.
- Heavily used in 1995 and 1996, as conditions were extremely wet if “on-off” grazing were not used, serious pugging would have resulted.
- Only used on days when serious pugging is likely to occur.
- This system has created more work in stock movement but the benefits of decreasing pugging, have more than compensated for this.
- Has resulted in a slight time saving in reduced udder washing.
- Not noticed a change in mastitis or foot problems when cows have been using the stand-off area.

Future plans

The stand-off area together with “on-off” grazing has been so successful that Frank intends to build two more strategically placed stand-off areas around the farm so that cows do not have to walk as far. He also plans to build a small feedpad so that cows can be fed silage or hay when conditions are extremely wet. This will allow cows to be held off the paddock all day if required. Cows will move on to the new feedpad following the morning milking and then move on to pasture. If pastures are too wet for any grazing, cows will be fed their total requirement on the feedpad and then move to a stand-off pad.

With this new system in place, Frank plans to move his calving date for at least part of the herd forward to April – May to benefit from the higher winter milk prices. Frank also feels that he will be able to better match the cows’ lactation with the pasture production curve.

This new system will not be aimed at increasing cow numbers. It will aimed at allowing better control of pasture growth, and allow cows to be fully fed. Tractor work should be reduced, as feeding out will be close to the dairy. Effluent from the new system will drain into the existing dairy effluent ponds.

The Water Act

The Water Act (1989) provides guidance for the management of waterways and swamps. Before considering draining a wet area you should contact your local Catchment Management Authority for advice, as a permit may be required.



Figure 1. South Gippsland hill country



Figure 2. Stand-off area before sawdust applied (note hilled up)

The previous version of this note was published in February 2002.

The advice provided in this publication is intended as a source of information only. Always read the label before using any of the products mentioned. The State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.