Government of South Australia
Primary Industries and Resources SA

FACT SHEET

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FS 20/00

Building and maintaining contour banks

Introduction

Contour banks are a proven method for reducing water erosion on sloping arable land. More than 300,000 hectares of agricultural land in South Australia is protected by these structures.

Contour banks are surveyed using a slight grade (or fall) to ensure that water does not pond behind the bank, but runs to a waterway without scouring the bank channel itself. The length and spacing of banks are designed to suit the slopes and soil types in a paddock.

The standard contour bank used in South Australia is generally not big enough to handle the most extreme storms, but when well designed, surveyed and constructed, they will cope with most storm events.

The design and surveying of contour bank systems should be undertaken by a trained and experienced person. Contact PIRSA offices for information on people who can provide this service.

Preparation

As soon as possible after the bank line is surveyed, mark it with a ripper.

If the paddock is not worked up, cultivate the land deeply either side of the line when soil conditions are suitable, being careful not to lose the survey line. This will provide plenty of loose soil to build the banks.

Where the survey line crosses gutters or small gullies, fill these in, before the banks are built. Allow for any fill material to settle.

Building

Building banks during a cropping year can be an advantage because the banks can settle before stock are allowed into the paddock.

Ideally, the soil should be moist when banks are constructed. Banks constructed with dry soil are more likely to fail in the first year or so. The ideal moisture content for contour bank construction is about the same as that for sowing a crop.

Running a tractor or grader tyre along on the sides of banks during construction will help to consolidate banks if they have been built when the soil is a little dry.

Most contour banks are built by experienced operators using road graders. These can usually be hired from district councils or earthmoving contractors.

The number of runs needed to build a contour bank varies with soil conditions, steepness of slope and size of machine.

After one or two runs by the grader, it is a good idea to check for any low spots and, if necessary, push extra soil to these areas.

On steep slopes, pushing soil up from below the surveyed line can be a problem, in which case the bank might have to be built entirely from above the line.

The finished product should be at least 1.2 metres wide at the base and 60 centimetres high (Figure 1).

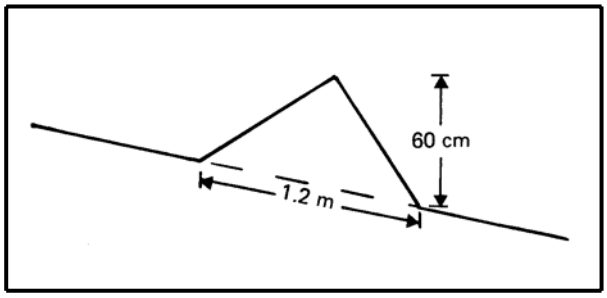

Figure 1: Cross-section of a contour bank

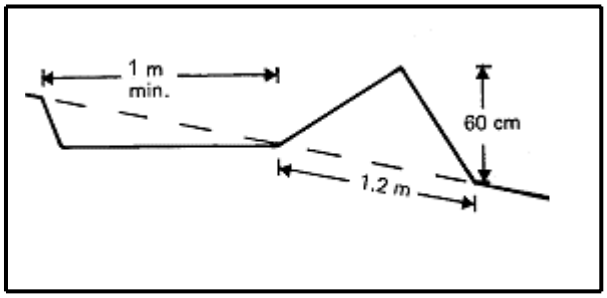

Figure 2: Cross-section of flat-channelled bank

Banks that require a greater capacity should be built with a flat, wide channel on the uphill side of the bank. This is achieved by digging the outside toe of the blade deeper. This channel should not be worked, but maintained as a grassed waterway. The size of these banks is the same as that of a normal contour bank (Figure 2).

Make sure contractors do not turn the ends of the bank downhill as they enter the waterway, as this will lead to erosion where the bank enters the waterway. Be careful not to damage the surface cover of any waterways when building banks.

To avoid driving on the waterway, work at right angles to the bank over its last four metres, pushing soil up or down to the bank line.

Contour banking ploughs can be used to build satisfactory banks on moderate slopes provided the soil is worked first. They are excellent machines for renovating contour banks.

Small offset-disc ploughs are also used to build banks. These dig and mound the soil into a bank in one action and can be used for building and renovating banks.

Neither the contour banking or disc ploughs are suitable for building side retaining banks on waterways as the surface cover on the waterway will be removed leaving it vulnerable to erosion.

Maintenance

Keep stock off banks until they have had time to settle.

When low spots develop, build them up with additional soil. Do not use stones as they will weaken the bank and let water through. Repair any breaks in the bank as soon as possible to prevent further damage.

Clean the channel out periodically (perhaps every five to six years) to maintain the bank's capacity. The soil from the channel should be used to top up the banks.

Do not over cultivate the land between the banks. Contour banks act as safety valves to handle any excess water when there is very heavy rainfall or the soil is saturated. Excessive cultivation leads to loss of soil structure and increased soil erodibility which reduces the soil's ability to absorb water and makes it more susceptible to erosion.

Make sure waterways are properly maintained and capable of safely conveying runoff from the banks.

Last update: February 2008

Agdex: 572

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