Contour banks for filling dams

B a'B Marsh

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Although contour banks have been used in this State for many years to lead water into earth tanks or "dams," it is only comparatively recently that the idea has become really popular. Thanks to the publicity given to this matter during the last three years many farmers now know that dams may be filled by contour banks, but because they do not know the finer points of the method, they are apt to mislead themselves into thinking that their territory is unsuitable for putting it into practice.

If your dam does not fill as readily as may be desired, it is best to consider using contour banks before incurring greater expense.

Even though your particular piece of country does not appear to offer much scope, don't dismiss the idea as impracticable until you have made some test surveys.

Assume that the contour banks will run the water to the right spot and act on this belief by surveying the lines, no matter...
how sceptical you may be. You may find that your first impressions were right—but the chances are that you will be pleasantly surprised to find that contour banks can provide the answer to your water supply problems.

The eye is often deceived. Most of you have seen water which apparently runs uphill along contour banks. Even confronted with indisputable evidence we find it hard to believe that the line runs downhill. How much less reliable is the evidence of the eye when there are no contours surveyed.

My advice is to ignore your “snap judgments” completely and to go ahead with the surveying of the lines. No special ability is required—a hose level used in accordance with instructions in Department of Agriculture Bulletin No. 2284, is simple to operate and will pay for itself in a few hours.

Begin surveying about one or two chains above the excavation in order to give water a chance to spread out as it flows down to the dam. (If water is concentrated into the corner of a dam much erosion damage can result). Commence surveying so that each succeeding peg is 50 ft. away and $\frac{1}{4}$ inch higher than the last. After about 100 yards you will see where the line might be headed and you will know approximately how long it might be. Continue the $\frac{1}{4}$ inch rises for a total of about one-fifth of the estimated length of the line. After this increase to 1 inch in 50 ft. for a quarter of the remaining distance. For about the same distance again raise this to 2 inches in 50 ft. At this stage, try to judge whether the line will cross any depressions likely to run much water. If it seems likely, then continue on the 2 inch in 50 ft. rises till the creek or creeks are passed and for about 200 ft. past the creek. Whether creeks are crossed or not, at the end of the 2 inch fall section increase the grade to 4 inches in 50 ft. for half the remaining distance and the last section should be increased up to 8 inches in 50 ft. This last section should not be more than 10 chains long otherwise it might erode. Keep surveying until a fence or rocky ridge prevents the line going further. Rock heaps can be dodged by increasing the bank slope to cause the line to pass uphill from small rock heaps, or resurveying the whole line higher up in the case of larger obstructions.

Along this surveyed line, a contour bank should be built (see Bulletin No. 2335—
“Building Contour Banks with a Disc Plough”). A road grader can be used. This bank should be about 18 inches high and the channel must be flat and wide, certainly not a “V drain” otherwise serious erosion will occur.

The alterations in grade can be represented diagramatically as shown in Figs. 1 and 2.

The gradual decrease in grade towards the storage is designed to achieve the maximum and most efficient flow. A uniform grade or an increasing grade, will not allow water to accumulate as it flows and as a result it will run slowly and tend to soak in. With a decreasing grade as suggested, the water at the top end runs faster than the water collecting in the lower section and so is able to catch up and add to the flow in volume; this increases its speed of the water and its chances of reaching the dam. At the flat end of the bank, the water has depth so needs little or no slope to make it flow.

Contour banks for soil conservation are designed with an increasing grade towards the outlet, usually with a maximum of only 2 inches in 50 ft. Such banks can run water only very slowly in most rains and will only run water in quantity in excessive rains—when the water can achieve sufficient depth to make it run.

Do not be worried by salt creeks. Dams can be placed up the slope well away from underground salt water and still be fed by contour drains. Dams can also be placed anywhere convenient where there is holding ground. Contour drains can cross most salt creeks unless they run salty water for long periods. Normally, creeks and gullies showing signs of salt run fresh water during rain and it is not dangerous to collect this water.

It is not possible to make a rule as to the length of bank or size of catchment to fill dams of certain sizes, as there are too many variable factors. It is advisable to place contour banks leading into the dam from both sides and from as far away as possible. This method of filling dams can be used anywhere in Western Australia where dams can be built and where there is any slope to the land. Even in the dry areas, falls of reasonably heavy rain do occur and it is these that will fill the dams.
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