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Contour cultivation — cheap erosion control

By T. Negus, and
B. Barrett, Narrogin Office

Although the benefits of contour cultivation are well recognised, it makes cultivation more difficult, particularly if the paddock is split by contour banks and grassed waterways. However, a comparison east of Pingelly indicates that contour cultivation is little more expensive or time-consuming than ordinary cultivation.

For many years contour cultivation has been recommended to reduce water runoff and prevent erosion. To a limited extent it probably also helps conserve water for use by the crop.

The difficulty with cultivation on the contour is that the pattern of tractor driving during working up and seeding is disrupted, particularly if little thought is given to fence layouts in the farm plan.

To determine how serious this objection is, a comparison was begun in 1975 on the property of Mr G. Poultnay, east of Pingelly. In that year a 48 ha paddock was cropped in the normal square pattern (Fig. 1) and the time taken and fuel used in ripping up and seeding were recorded.

In 1977 the paddock was cropped again using the same tractor and machinery. Tyre pressures, gears selected, engine revs and depth of working were the same as in 1975. However before the 1977 cropping, the paddock was contoured for erosion control. This split the paddock into four contour working lands by three banks and a grassed water-way. Contour banks were spaced at 160 to 200 metre intervals.

Results

Table 1 shows the times recorded before and after contouring, and Table 2 shows the fuel use.

There was a very small increase of 0.8 per cent in the time required per hectare during cultivation and seeding. This increase was surprisingly low when it is considered that there were only three headlands before contouring and 10 after. Headlands require double working and seeding and considerably increase time spent turning corners.

Contour cultivation required 10 per cent more fuel, more than...
expected as the farmer reported that the motor was pulling more evenly working on the contour. In fact farmers in the past have reduced fuel use by contour working.

The increase in fuel use is thought to result from the braking on the extra corners and double working of the increased length of headlands. In addition, the tractor was two seasons older by 1977.

Table 1. Time use before and after contouring (minutes per hectare)

<table>
<thead>
<tr>
<th></th>
<th>Before contouring (1975)</th>
<th>After contouring (1977)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main area</td>
<td>Heads- lands</td>
<td>Total</td>
</tr>
<tr>
<td>Scarifier ripping up*</td>
<td>18.8</td>
<td>0.5</td>
<td>19.3</td>
</tr>
<tr>
<td>Combine seeding</td>
<td>16.7</td>
<td>0.6</td>
<td>17.3</td>
</tr>
<tr>
<td>Total both operations</td>
<td>35.5</td>
<td>1.1</td>
<td>36.6</td>
</tr>
</tbody>
</table>

* Scarifier working back figures were only recorded in 1975 as this weed killing operation was unnecessary in 1977.

Total working back time in 1975 was 16.6 minutes/hectare.

Table 2. Fuel use before and after contouring (litres per hectare)

<table>
<thead>
<tr>
<th></th>
<th>Before contouring (1975)</th>
<th>After contouring (1977)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scarifier ripping up*</td>
<td>3.13</td>
<td>3.35</td>
<td>up 7</td>
</tr>
<tr>
<td>Combine seeding</td>
<td>2.08</td>
<td>2.35</td>
<td>up 13</td>
</tr>
<tr>
<td>Total both operations</td>
<td>5.21</td>
<td>5.70</td>
<td>up 10</td>
</tr>
</tbody>
</table>

* Again fuel use figures for scarifier working back have been omitted; in 1975 they totalled 2.94 l/ha.

The increase in time required would have increased labour costs per hectare from $2.44 to $2.46, only $20 over a 1,000 ha cropping programme. Fuel costs increased six cents a hectare, from 68 to 74 cents a hectare.

Other changes which were not actually measured but were calculated were:

- Extra seed, sprays and fertiliser required for double working, costing about 68 cents per hectare.
- The area taken by the contour banks and lost to crop was 1.74 ha. With a wheat yield of 1 tonne/ha, this would be worth 38 cents per hectare overall.

However, it could be argued that crop in the grassed water-way would have been likely to fail because of waterlogging, and contour banks should increase yields in a wet year by evening out soil moisture over the paddock and by reducing the amount of washed out crop.

Assistance with contouring and planning paddocks for minimum disruption with contouring is available from the Department of Agriculture.

Acknowledgment
The assistance of Mr G. Poultney who owned the property, cropped the paddock and kept records of time and fuel use is gratefully acknowledged.