CHEMICAL CURING WITH GLYPHOSATE TO PRESERVE THE DIGESTIBILITY OF SUMMER PASTURES


Fodder may be conserved for utilization in summer as dry standing pasture, by preserving cut herbage as hay or silage, or by application of herbicides in an attempt to "freeze" nutritional quality in standing herbage. The benefits and losses associated with the use of herbicides are poorly documented. This paper reports the consequences of treating grasses with glyphosate (Roundup CT - Monsanto Ltd) prior to heading.

A perennial pasture containing mainly Agrostis tenuis and Trifolium subterraneum and growing at Woodend, Victoria, was sprayed on 28 November, 1986, with 0, 90, 180 and 360 g (active ingredient)/ha (spray volume = 40 litres/ha) of glyphosate in a randomized complete block design (n=4). Approximately 50 mm of rain fell between 28 November, 1986, and 13 January, 1987, at which time all plots were grazed with weaner sheep (26 sheep/ha) over two months. Samples of pasture were harvested at regular intervals, before and after grazing, and sorted into clover and grass fractions. Critical results are presented in Table 1.

Table 1  Yield and digestibility (mean ± SE) of the grass component of a perennial pasture treated with glyphosate prior to heading

<table>
<thead>
<tr>
<th>Treatment</th>
<th>IVOMD of grass prior to grazing (13/1/87)</th>
<th>Yield of grass prior to grazing (13/1/87)</th>
<th>Yield of dead grass after grazing (10/6/87)</th>
<th>Proportion of dead grass removed %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>56.1 ± 0.4</td>
<td>6.04 ± 0.50</td>
<td>3.28 ± 0.29</td>
<td>46</td>
</tr>
<tr>
<td>Glyphosate2</td>
<td>82.8 ± 0.6</td>
<td>4.12 ± 0.2</td>
<td>0.41 ± 0.09</td>
<td>96</td>
</tr>
</tbody>
</table>

1 IVOMD = In vitro dry matter digestibility
2 Data shown are means of effects of all rates: 90, 180 and 360 g/ha

At the time of treatment, the IVOMD of grass in the pasture was 68%. This had decreased by 5% units in glyphosate-treated pasture and by 12% units in the control pasture when grazing was commenced. NDF† of grasses remained constant (70%) for all treatments in the period prior to grazing indicating that soluble materials were not leached from either the control plots, which were starting to senesce when grazing commenced, or from the glyphosate-treated grasses, which were dead. The digestibility of NDF, however, had declined from 62% at the time of treatment to 44% in the control and 56% in glyphosate-treated grasses just prior to grazing. Assuming equal losses due to decay, wind removal etc., considerably more of the treated grasses were consumed by the sheep compared with the control grasses. Thus, although the treatment reduced the total amount of dry matter available, animal production may still have been increased by the treatment.

NDF† = Neutral Detergent Fibre. Ed.

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