However, applications of 2,4-D at the crop post-tillering stage had a slight effect only on capeweed populations. At this later stage, the capeweed rosettes were often up to 12 in. (30 cm) in diameter, and the 2,4-D application caused only a temporary check in growth. Picloram applied at this later stage effectively controlled capeweed but, at the rates tested, caused some stunting of the crop. The early application of picloram and bromoxynil + MCPA also caused some stunting of growth and led to head distortion, particularly in wheat.

In the four wheat experiments conducted, significant grain yield increases were obtained with bromoxynil applied at 4 oz a.i. per acre (0.28 kg a.i. per hectare) and diquat applied at 2 oz a.i. per acre (0.14 kg per hectare) of the diquat ion. Both these materials showed good crop safety, and at the above rates gave additional returns of $6.54 and $5.98 per hectare, respectively. The ester of 2,4-D applied at 5 or 6 oz a.i. per acre (0.35 or 0.70 kg a.i. per hectare) after tillering gave similar additional returns of approximately $2.60 per hectare for each rate, but the higher rate gave more consistent responses.

With oats, however, despite the generally higher weed populations, a significant yield increase to herbicide application was obtained in only one experiment, where the capeweed population was 21.4 plants per sq ft (2.3 plants per dm). It appears that the general early vigour of oats may be sufficient to outgrow all but the heavy populations of capeweed, and consequently spraying may not be warranted.

THE CONTROL OF SOURSOB (*OXALIS PES-CAPRAE*) BY THE USE OF HERBICIDES IN SOUTH AUSTRALIA

M.J. Catt
Department of Agriculture, South Australia

Oxalis pescaprae is the most serious weed of cereal-growing areas in South Australia. An estimated 1½ million acres (610,000 hectares) are infested but long-term familiarity has reduced farmer concern. Crop yield reductions of from 20 to 50% by soursob competition are indicated by preliminary experiments. Sheep grazed on soursob-dominant pastures may suffer severe kidney damage.

Michael (1965*b*) suggested control measures based on a 'critical

cultivation' at 'old bulb exhaustion'. Under ideal conditions the technique is satisfactory. However, on heavy soils, the large amount of top growth plus the likelihood of very wet soils at the time of 'bulb exhaustion' makes cultivation extremely difficult. On sandy soils, sowing the crop early to prevent drift during the windy period of June-July must be foregone if critical cultivation is desired.

Various herbicides were tested during 1969 on the short-styled pentaploid variety using a mini-log sprayer. In pasture, soursob was sprayed at three stages: 3 weeks before, 3 weeks after, and at bulb exhaustion on heavy and light soils. Visual assessment was carried out after 3 months, the regrowth in April 1970 was again assessed.

The following table lists the herbicides screened, the peak dosages, and the rates in replicated fixed-dosage trials in 1970. (p. 8(a)-19).

The following points arise from the trials:

(1) Treatment at bulb exhaustion was the most effective for undisturbed soursob plants for each herbicide tested. This could be predicted from early work by Michael (1965*a*).

(2) Diuron is the most promising herbicide, giving 100% control at 1.5 lb a.i. per acre (1.7 kg a.i. per hectare) on sandy soil and 2.5 lb a.i. per acre (1.9 kg a.i. per hectare) on heavier soils. Replacement of fallowing by a spray treatment in the year preceding cropping is attractive to many farmers although, being a new practice, extension difficulties may arise.

(3) The herbicides were tested also on the midstyle tetrapoid variety occurring in a 10,000 acre (4,050 hectare) area of southern Eyre Peninsula. Resistance to all herbicides except amitrole 1 lb a.i. per acre (1.25 kg a.i. per hectare) was apparent. Of interest is the fact that neither 2,4,5-TP nor a mixture of amitrole plus 2,4,5-TP is effective on this variety of the weed which appears to set viable seed.

TABLE

Herbicide	P.D.	Rates lb a.i. per acre (kg a.i. per hectare) Non-crop or preceding crop	Crop
Nitrofen	3.4 (3)	-	-
Diquat	1.1 (1)	-	-
Paraquat	1.1 (1)	-	-
Diuron	5 (4.5)	* 1.7 (1.5) 2.8 (2.5)	* 1.7 (1.5) 2.8 (2.5)
Linuron	1.1 (1)	-	-
Diquat+linuron	1.1+1.1 (1+1)	-	0.28+0.28 (0.25+0.25)
Paraquat+linuron	1.1+1.1 (1+1)	0.52+0.52 (0.38+0.38)	-
Paraquat+linuron	2.2+1.1 (2+1)	0.52+0.26 (0.38+0.19)	-
Paraquat+diuron	1.1+2.2 (1+2)	0.52+1.0 (0.38+0.75	-
Atrazine	2.2 (2)	-	-
Dicamba	1.1 (1)	-	-
Amitrole	6.7 (6)	1.7 (1.5)	-
Fenoprop	4.5 (4)	2.2 (2)	-
Fenoprop+amitrole	4.5+6.7 (4+6)	-	-
Prometryne	2.2 (2)	-	-
Ametryne	2.2 (2)	-	-
Fenac	9 (8)	-	-
PP745 (ICI)	1.1 (1)	-	-
Mendok	22 (20)	-	-
Tribunil	4.4 (4)	2.2 (2)	2.2 (2)
Dichlobenil	1.7 (1.5)	-	-
2,4-D (Dacamine)	4.4 (4)	1.7 (1.5)	1.7 (1.5)
2,4-D (Weedone LV57)	4.4 (4)	0.6 (0.5)	0.6 (0.5)
2,4-D (amine)	4.4 (4)	-	-
2,4-D (ester)	4.4 (4)	-	-
MCPA	4.4 (4)	-	-
Mecoprop	4.4 (4)	-	-
MCPB	4.4 (4)	-	-

*lower rates apply to lighter soils