

MANAGING CAUSTIC WEED IN COTTON

Graham Charles

(NSW Dept of Primary Industries)

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Caustic weed, also known as doily weed, is an annual weed that most cotton growers have, but ignore.

Background

Caustic weed (*Chamaesyce drummondii*), also known as doily weed, is an annual weed that most cotton growers have, but ignore. Seedlings emerge throughout the season and can establish at high densities, sometimes resulting in a 'green carpet' in fields, with plants covering much of the furrow and hill. It has a tap root and prostrate growth habit, and individual plants may exceed 50 cm in diameter. Due to its habit and density, it is expensive to chip, and is not normally controlled in cotton; chippers generally 'fail' to see it. However, some growers have found that if caustic weed

germinates at sufficient densities early in the season, it can reduce cotton yields. Caustic weed can also be problematic in dryland cotton, competing for moisture and nutrients.



Caustic weed can occur at high densities, sometimes resulting in a 'green carpet' in fields. Individual plants may exceed 50 cm in diameter. Due to its growth habit and density, it is expensive and impractical to hand chip.

Herbicides for pre-emergent control of caustic weed in cotton

Dual and Stomp both gave some level of control of caustic weed when applied and incorporated prior to cotton planting (Table 1). A high rate of Stomp was very effective in controlling caustic weed when surface applied and not incorporated.

Table 1. Control of caustic weed with residual herbicides incorporated pre-planting in an irrigated cotton crop at Narrabri. Control was assessed 5 weeks after application.

| Herbicide | % Control |
|----------------------------|-----------|
| Incorporated | |
| Dual (720 g/L) 2 L/ha | 64 |
| Stomp (330 g/L) 3 L/ha | 46 |
| Treflan (400 g/L) 2.8 L/ha | 0 |
| Surface applied | |
| Dual (720 g/L) 2 L/ha | 50 |
| Stomp (330 g/L) 4.5 L/ha | 90 |
| Cotoran (500 g/L) 4.5 L/ha | 23 |
| Untreated | 0 |

Of the other residual herbicides that might be applied pre- or post- cotton planting, Diuron gave the best control 35 days after application (Table 2). These herbicides were applied at layby and were not incorporated.

Table 2. Pre-emergence control of caustic weed with residual herbicides applied at lay-by in an irrigated cotton crop at Warren. Control was assessed after 35 days.

| Herbicide | % Control 35 days |
|---------------------------------|----------------------|
| Diuron (500 g/L) 2 L/ha | 43 |
| Diuron (500 g/L) 3 L/ha | 67 |
| Cotogard (250 + 250 g/L) 2 L/ha | 20 |
| Gesagard (500 g/L) 2.2 L/ha | 7 |
| Cotoran (500 g/L) 2.8 L/ha | 0 |
| Untreated | 0 |

Herbicides for post-emergence control of caustic weed in cotton

A range of herbicides were applied post-emergence in January to a heavy infestation of caustic weed growing in cotton (Table 3). Roundup CT, higher rates of Diuron, and Daconate all gave good control of caustic weed 35 days after spraying. The control with Diuron was improved by the addition of DCTron oil at 1%.

Table 3. Caustic weed control with post-emergence herbicides applied over-the-top of an irrigated cotton crop at Warren in January. Control was assessed 18 and 35 days after application.

| Herbicide | % Weed kill | |
|---|-------------|---------|
| | 18 days | 35 days |
| Roundup CT 1.2 L/ha | 93 | 100 |
| Roundup CT 1.2 L/ha + Goal 75 ml/ha | 100 | 100 |
| Diuron (500 g/L) 2 L/ha | 23 | 44 |
| Diuron (500 g/L) 2 L/ha + 1% DCTron | 65 | 70 |
| Diuron (500 g/L) 3 L/ha | 73 | 100 |
| Daconate 2.8 L/ha | 27 | 90 |
| Diuron (500 g/L) 1.4 L/ha + Daconate 1.4 L/ha | 53 | 83 |
| Cotoran (500 g/L) 2.8 L/ha | 0 | 3 |
| Cotogard DF (250 + 250 g/L) 2 L/ha | 10 | 29 |
| Gesagard (500 g/L) 2.2 L/ha | 42 | 30 |
| Untreated | 0 | 0 |

The results of a second experiment on a dryland site were similar (Table 4), although the caustic weed was moisture stressed following application and the herbicides were less effective than in the previous experiment. Higher rates proved more effective than lower chemical rates in all cases. Diuron again gave the best level of control, with the addition of DCTron oil improving the efficacy of the Diuron treatments. Roundup CT was less effective on stressed caustic weed, but higher rates could be expected to give a better result. The addition of Goal reduced efficacy rather than improving it in this instance. It is likely that the

Goal killed the foliage of the stressed caustic weed before the glyphosate was able to translocate throughout the plant, resulting in the observed reduction in control with the addition of Goal. Daconate was also ineffective in stressed conditions.

Table 4. Caustic weed control with post-emergence herbicides applied on a dryland site at Narrabri in January. Control was assessed 34 days after application.

| Herbicide | % Weed kill 34 days |
|---------------------------------------|------------------------|
| Roundup CT 1.2 L/ha | 57 |
| Roundup CT 1 L/ha | 53 |
| Roundup CT 0.6 L/ha | 42 |
| Roundup CT 1.2 L/ha + Goal 75 ml/ha | 24 |
| Diuron (500 g/L) 3 L/ha | 92 |
| Diuron (500 g/L) 2.5 L/ha | 57 |
| Diuron (500 g/L) 1.5 L/ha | 32 |
| Diuron (500 g/L) 3 L/ha + 2% DCTron | 100 |
| Diuron (500 g/L) 2.5 L/ha + 2% DCTron | 79 |
| Diuron (500 g/L) 1.5 L/ha + 2% DCTron | 63 |
| Daconate 3 L/ha | 0 |
| Gesagard (500 g/L) 3 L/ha | 10 |
| Untreated | 0 |

Summary

Caustic weed is a minor weed of cotton that competes for nutrients and water, and at high densities can reduce cotton yields. It is relatively easily controlled and is often ignored, but it is a persistent weed that may become more problematic in reduced input systems.

Stomp and diuron gave the best control of the residual herbicides, with diuron giving good post-emergence control as well as some pre-emergence control of caustic weed. Glyphosate (Roundup CT) also gave good post-emergence control of caustic weed in an irrigated field.

An integrated weed management system including inter-row cultivation, residual herbicides and glyphosate should effectively control this weed. A mid-season directed application of diuron may be a useful tool in fields where no pre-planting residual herbicides are used.