

Weeds in systems with dryland cotton: a scoping study

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Summary A scoping study is determining the main weed issues in the different cropping systems with dryland cotton.

Keywords Weeds, dryland cotton, sorghum, fallow.

INTRODUCTION

Weeds were identified by the cotton industry to be a major and expensive issue, although the extent and reasons for these problems have not been elucidated in dryland systems.

A scoping study was initiated to determine the dominant and difficult-to-control weed species in each crop and fallow component of the different crop rotations used for dryland cotton production in the northern region. As well, it is collating the various weed management practices, both non-chemical and herbicides, being used for weed control, with the aim to determine which current practices are exacerbating the weed problems.

METHODS

The study consists of three sections, starting with a mail survey to growers, then followed by in-depth interviews of selected growers and field surveys of paddocks at various stages of the rotations to determine the weeds infesting the crops and fallows and the residual weeds replenishing the seed-bank.

RESULTS

Cropping systems with dryland cotton are diverse. The mail survey identified that the rotations with dryland cotton are winter cereals only (46%), summer and winter cereal (18%), winter cereal + pulse (9%), summer cereals only (8%), summer and winter cereal + pulse (5%), whereas 11% grow dryland cotton only.

Common farming practices used for controlling weeds in dryland cotton include long fallow preceding the crop, high use of pre- and post-emergence herbicides, inter-row cultivation, use of shielded sprayers between rows, and pre-harvest desiccation. The winter cereals rely heavily on post-emergence herbicides only with very little use of non-chemical options.

The most common weeds in the main crops and fallows are presented in Tables 1 and 2.

The main weeds not controlled adequately, although not necessarily the most common, are sesbania (*Sesbania cannabina* (Retz.) Pers.) in central Queensland, common sowthistle, bladder ketmia and black bindweed in southern Queensland, and black bindweed and fleabane (*Conyza* spp.) in northern NSW. The in-depth interviews and field surveys are in progress, and will be used to validate the mail survey and to explore further growers' responses and reasons for choices of their weed management practices.

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Table 1. The most common weeds in summer components of the rotations.

Dryland cotton	Sorghum	Summer fallow
Bladder ketmia (<i>Hibiscus trionum</i> L.)	Bladder ketmia	Annual grasses
Caltrop (<i>Tribulus</i> spp.)	Caltrop	Bladder ketmia
Annual grasses	Annual grasses	Caltrop
Liverseed grass (<i>Urochloa panicoides</i> P.Beauv.)	Thornapple (<i>Datura</i> spp.)	Common sowthistle (<i>Sonchus oleraceus</i> L.)
Amaranths (<i>Amaranthus</i> spp.)	Liverseed grass	Liverseed grass

Table 2. The most common weeds in winter components of the rotations.

Wheat	Winter fallow
Turnip weed (<i>Rapistrum rugosum</i> (L.) All.)	Wild oats
Black bindweed (<i>Fallopia convolvulus</i> (L.) A.Love)	Common sowthistle
Common sowthistle	Turnip weed
Wild oats (<i>Avena</i> spp.)	Black bindweed
Paradoxa grass (<i>Phalaris paradoxa</i> L.)	Paradoxa grass