COTTON RESEARCH & DEVELOPMENT CORPORATION

NSW AGRICULTURE

Weed Control in Cotton

Final Report

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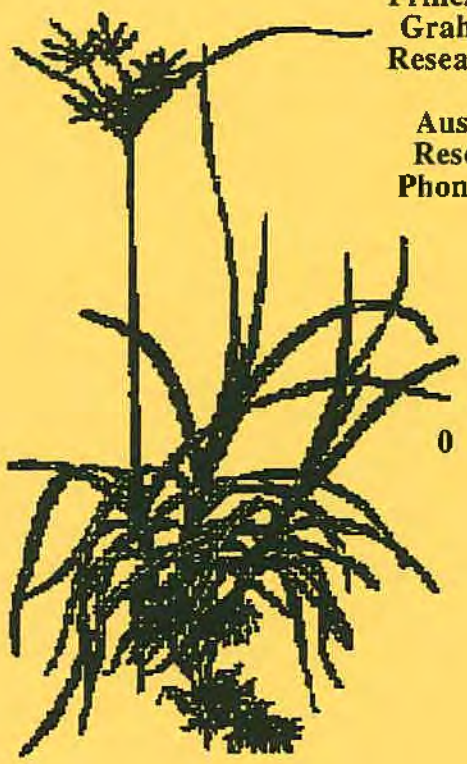

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Summary

Abstract

Nutgrass control was examined in field and glasshouse studies. A nutgrass control strategy was developed based on Zoliar and in-crop Roundup, and in-fallow, cultivation in dry conditions and Roundup in wet conditions. Many unresolved aspects of nutgrass ecology and control remain.

Future research should focus on developing weed management packages and identifying weaknesses and solutions for current and future weed management systems.

Introduction

In 1989 cotton growers identified nutgrass control as the area of highest research priority. Purple nutgrass (*Cyperus rotundus*) is the weed species most seriously affecting cotton production, although another 7 *Cyperus* species occur in the cotton area.

This project commenced in 1992 to continue the work on nutgrass ecology and control in cotton begun in project 60C.

Objectives

- *to examine the ecology of nutgrass and new and alternative nutgrass control combinations and techniques, to develop an effective, integrated nutgrass control strategy.*
- *to establish cotton plant-back periods for the commonly used rotation crop herbicides .*

Results

Aspects of nutgrass (*C. rotundus*) control have been examined in the field, glass house and laboratory.

Experiments in bare fallow at Glencoe and Norwood showed that repeated Roundup applications virtually eradicated nutgrass, with the level of control closely related to the number of treatments. Roundup applied monthly from October to May gave a 98% reduction in the nutgrass population compared to untreated plots.

In-crop experiments showed that nutgrass can be controlled with herbicides in cotton. A nutgrass control strategy based on in-crop, shielded applications of Roundup was successful in reducing the nutgrass population and the adoption of this strategy will improve with the introduction of Roundup Ready cotton (transgenic, Roundup tolerant cotton) in the near future.

Laboratory experiments found that *C. rotundus* produced large amounts of viable seed, potentially with thousands of seeds per seed-head. This seed is very hard, but storage for 12 months and treatment with potassium nitrate gave 17% germination.

Glasshouse experiments examining nutgrass control with Roundup show that nutgrass age per se has little effect on efficacy although flowering plants are generally less susceptible to Roundup than vegetative plants.

Information on herbicide plant-back periods was published in 1993 in 'The Australian Cottongrower'.

Conclusions

An effective nutgrass control strategy of Zoliar and in-crop Roundup applied through shielded sprayers, and in-fallow, of cultivation in dry conditions and Roundup in wet conditions was developed. Nevertheless, many aspects of nutgrass ecology such as seed production and its importance in infestations, tuber dormancy, the depth of shoot emergence, and herbicide translocation are still not well understood and require further work.

Future weed control research should focus on developing weed management packages and identifying weaknesses and solutions for current and future weed management systems.

Communication of Results

Every opportunity was taken to disseminate information on weed control in cotton, fallows and rotation crops through phone calls, visits, field days, seminars and conferences.