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**Extension and irrigation guidelines for
poppies in Southern Tasmania**

Brian Chung

**Tasmanian Department of Primary
Industries**

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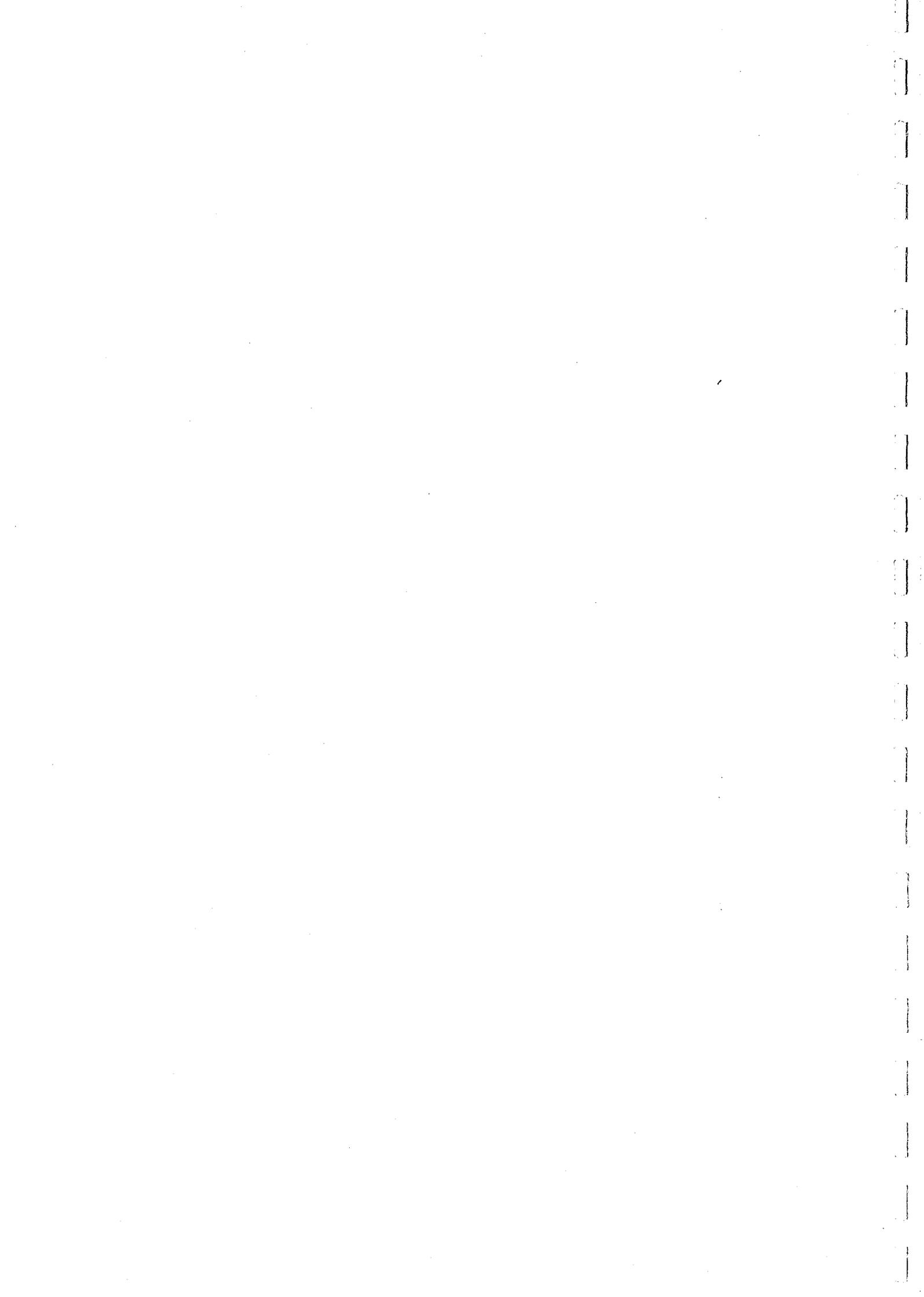
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(6) SUMMARY

A field plot observation study was conducted at Ouse in Southern Tasmania to obtain yield response data to irrigation for poppies under local conditions. The benefits of irrigation and other aspects of irrigation management were presented to growers at two evening meetings which attracted a total attendance of 63 participants. This project created considerable interest in irrigation of poppies by local growers. With continued extension by company field staff, irrigation management and returns from this crop should improve steadily in the future.

EXTENSION OF IRRIGATION GUIDELINES FOR POPPIES IN SOUTHERN TASMANIA

A. INTRODUCTION

An estimated 8 000 ha of poppies was grown in Tasmania during 1991/92, with 1 200 ha grown in Southern Tasmania. Approximately one third (400 ha) was grown under dryland conditions and half (600 ha) was inadequately irrigated.

Research by the Department of Primary Industry, Fisheries and Energy in Northern Tasmania has shown that the maximum yield of poppies (90% greater than non-irrigated crops) is obtained by providing adequate irrigation from the hook stage to leaf senescence (Chung, 1987). Currently, many growers only irrigate to the flowering stage and research has shown that yield increases of 30% are possible by applying two extra irrigations (to the leaf senescence stage). Hence, there is a need to further improve those who are already applying irrigation and to encourage more dryland growers to adopt an irrigation strategy. Assuming a success rate of improving 50% of those who are currently under irrigating their crops and converting 20% of dryland crops to irrigated crops, an overall benefit of \$100 - \$150,000 could be realised annually.

A comprehensive series of meetings, field days and seminars have been held in the main northern Tasmanian growing regions in recent years to extend these research findings to growers. Discussions with southern growers and both poppy companies have indicated a need to obtain complimentary yield responses to irrigation under southern conditions and to extend these results to local growers. Improved yields will benefit growers returns and reliability of yield for the companies.

B. OBJECTIVE

To improve the irrigation management of poppies grown in southern Tasmania by creating an awareness of the benefits of irrigation. This objective will be achieved by conducting a large field plot comparison of different irrigation strategies in the local area, evening meetings, cultural notes and input by poppy company field officers.

C. MATERIALS AND METHODS

A large field plot comparison of different irrigation strategies was conducted on the property of Mr. Chris Johnston, Ouse during 1991/92. The treatments were:

- IR0 Dryland, no irrigation
- IR1 One irrigation (33mm) at the "closing of the rows" only
- IR2 One irrigation (33mm) at the 50% flowering stage only
- IR4 One irrigation (33mm) at the early stem elongation and the 50% flowering stages only
- IR5 One irrigation (33mm) at the "closing of the rows", stem elongation, 100% hook, 50% flowering and 80% green capsule stages.

Treatments IR1, IR2 and IR3 defined the best time to apply irrigation if the grower has the resources for only one irrigation during the season. IR4 defined the yield potential if the grower can apply only two irrigations while IR5 gave the potential yield when irrigation resources are not limiting.

Irrigation was applied using solid set sprinklers at 7 m spacings. The experimental design was a randomised block of five treatments and two replicates. Irrigation commenced on 15 November 1991, the "closing of the row" stage and was completed by 10 December 1991, the 50% flower stage. Unseasonal rain after the 50% flower stage precluded the need for any post flowering irrigation. Harvest took place at the dry maturity stage on 21 January 1992.

A evening meeting was held at Hamilton on 20 November 1992, the start of the irrigation season, to explain to growers the importance of good poppy irrigation management and the objectives of the field plot comparison. The results of this field plot comparison was presented to growers at a meeting on 6 July 1992. These results were provided to the company field staff and will be incorporated into their cultural notes for growers.

D. RESULTS

1. Field observations

The 1991/92 season was dry during November, the vegetative stage of growth. There were several unseasonal rainfalls during mid-late December, the flowering period which affected the treatments.

The lowest yield of 1.5t/ha was achieved by the dryland treatment (Table 1). The December rainfall helped this treatment to reach this relatively high yield. One irrigation at the "closing of the row" stage during mid November or at the 100% hook stage during early December increased the yield to about 2t/ha, an increase of 33% above the dryland plot. Irrigation at the flowering stage (mid December) gave the highest yield of about 2.4t/ha, an increase of 60% above the dryland plot.

The dryland plot had shorter plants and there were more small, withered plants which obviously did not survive the early dry conditions. Irrigation did not have any significant effects on the capsule morphine concentration. Hence, the morphine yields generally reflect the dry weight yield, although there was a trend showing a small 5% reduction in morphine concentration with irrigation at the flowering stage.

This study was conducted on a wind blown sand site of moderate fertility. The neutron moisture probe data showed that root extraction of water took place to a depth of about 600 mm. This effective rooting depth is about 200 metres less than on the red krasmozen soils of the north-west coast.

Table 1

The effects of irrigation at different growth stages on the total head yield (t/ha).

GROWTH STAGES					
"Closing of rows"	Stem	100% hook	50% flower		
15 Nov	26 Nov	3 Dec	10 Dec		
IRRIGATION APPLIED (mm)				TOTAL	Yield (t/ha)
-	-	-	-	NIL	1.53
33mm	-	-	-	33	1.91
-	-	33mm	-	33	2.06
-	-	-	33mm	33	2.47
-	33 mm	-	33 mm	66	2.39
33 mm	33 mm	33 mm	33 mm	132	2.30

2. Meetings/Extension

The November meeting held at the start of the irrigation season attracted 28 people. The speakers included DPIFE staff, Glaxo field staff and local consultants and consisted of the following program:

SEMINAR

IRRIGATION MANAGEMENT FOR POPPIES IN SOUTHERN TASMANIA

WHEN: Wednesday 20 November 1991

TIME: 7.00 p.m. - 9.00 p.m.

WHERE: Hamilton Hotel, Hamilton

PROGRAM

1. Introduction:
George Sonners, Glaxo Australia
2. Crop Water Cycle and Irrigation:
Brian Chung, DPI
3. Response of poppies to irrigation
Brian Chung, DPI
4. Irrigation Systems:
Chris Thompson, Serve Ag
5. Lane spacing and travelling irrigators:
Brian Chung, DPI

A 20 page booklet consisting of these topics were provided for each participant.

The results of the field comparison study were presented to growers at an industry organised function during July 1992. This meeting attracted 35 participants and the results generated discussion on aspects of irrigation management. The results of the field comparison will also be a component of cultural notes a contracting company had designed for their growers.

Conclusion

The field comparison results confirms detailed studies conducted on the north-west coast which showed that poppies are very responsive to irrigation in Tasmania. In this wetter than normal season, yield increases of 60% were achieved with a good irrigation programme. The best results were achieved by adequate irrigation at the flowering stage of growth and worthwhile yield responses were also achieved by applying irrigation at the "closing row" and hook stages. From this and other studies poppies would benefit from an irrigation at the "closing row" stage if conditions are dry. Under normal seasons, irrigation at the hook, flowering and probably post flowering stages of growth would be warranted for high yields.

During the 1991/92 season, all the top three yielding poppy crops of one contracting company received 3-4 irrigations during the season. These achievements plus the results from our study under local conditions created considerable interest in the value of irrigation in the south of the state. With continued extension by the company field staff, the irrigation management of poppies should improve rapidly in the future.

Acknowledgements

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