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Cereal production and weed control in Tasmania

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Introduction

In the early days of settlement Tasmania was the main cereal-growing area in Australia, but today production is negligible compared with the mainland States (Table 1). In addition to the area grown for grain, substantial areas of oats are also sown in autumn for winter grazing only (Table 2). Autumn and winter cereals grown in the south and north are normally grazed at least once when fully tillered, but spring cereals in the north west are not grazed at all.

By mainland standards some Tasmanian yields of wheat and barley are high (Table 3), and the published averages are substantially exceeded by the best crops. The practice of irrigating barley crops is becoming increasingly popular and serves to maintain high yields even in dry seasons.

Practically the whole Tasmanian barley crop is taken by the State's two breweries (BOAGS in Launceston and Cascade in Hobart) or maltsters for malting, and any surplus is used for feed. Tasmania does not produce a hard wheat

Table 1 Tasmanian cereal area and total production (Anon., 1981)

Year	1978–79		1979–80		1980–81	
	Area (ha x 10^3)	Yield (tonnes x 10^3)	Area (ha x 10^3)	Yield (tonnes x 10^3)	Area (ha x 10^3)	Yield (tonnes x 10^3)
wheat	1.4	2.9	2.0	3.7	1.8	3.7
barley	11.9	27.0	10.6	17.3	9.3	16.7
oats	8.6	11.8	7.5	8.0	7.8	10.7

Table 2 Sowing dates for cereals in Tasmania

Region	Wheat	Barley	Oats
south	March/April	April/September	February on
north	March/May[1] May/August[2]	September/October	February on
north west	May/August	September/October	March/April on[3]

[1]winter cv 'Isis'.
[2]spring cv 'Egret'.
[3]sown for grazing principally: very limited grain production in the north west.

Table 3 Tasmanian cereal yields 1978–79 in tonnes ha^{-1} (Anon., 1980)

Region	Wheat	Barley	Oats
south	1.39	2.15	1.36
north	2.40	2.28	1.40
north west	4.70[1]	2.40	1.57

[1]based on 40 ha only.

suitable for bread flour and the majority of the crop is used for feed. Additional quantities of feed wheat are imported from the mainland by the Wheat Board.

Most of the grain oat crop is harvested for feed grain, but some is cut and stooked in the old traditional way for sale as chaff with the grain still in the head to the large recreational and racing horse industries.

Tasmanian cereal weeds

Tasmania is principally a broad-leaf weed area and grassy weeds are of relatively little importance in cereals. Wild oats (*Avena* spp.) occur in all areas but only become significant if rotation is not practised and several wheat or barley crops are grown in succession. In autumn and winter cereals, winter grass (*Poa annua*) infestations can be severe if final seedbed preparation has been inadequate and the usual final cultivation omitted. Brome (*Bromus diandrus*) is a local problem in a small area of the south and midlands, while English couch grass or rope twitch (*Agropyron repens*) is an occasional, though increasing, problem in the north and north west. Toad rush (*Juncus bufonius*) becomes locally important in the north during wet springs.

The principal broad-leaf weeds are found throughout the State. Wild radish (*Raphanus raphanistrum*) is the most common crucifer, with charlock (*Sinapis arvensis*) significant only in the south, and wild turnip (*Brassica rapa-campestris*) most common in the north west. Fat hen (*Chenopodium album*) and fumitory (*Fumaria muralis*) occur in all parts of the State, the latter tending to have a discontinuous distribution outside the north west.

Other widely distributed and common species are shepherd's purse (*Capsella bursa-pastoris*), chickweed (*Stellaria media*), mouse-ear chickweed (*Cerastium* spp.), plantain (*Plantago lanceolata*), erodiums (*Erodium moschatum* and *E. circutarium*) and spurry (*Spergula arvensis*). Capeweed (*Arctotheca calendula*) is a cereal weed mainly in the south and sometimes in parts of the midlands, but is seldom significant in the north west.

In recent years black bindweed (*Polygonum convolvulus*) and especially wireweed (*Polygonum aviculare*) have spread considerably. The latter in particular has become a major cereal weed in many areas. Redshank (*Polygonum persicaria*) was once very localized but is now spreading in some areas. The increased importance and wider distribution of these three species has occurred following the introduction of mobile pea viners and, in the case of redshank at least, there is good evidence to suggest that these machines have spread the weed.

Chemical weed control

Chemical control of cereal weeds in Tasmania is based on the use of 2,4-D and MCPA, mecoprop, dicamba and bromoxynil or mixtures containing two or three of the last four.

Metribuzin has been introduced recently and has been shown to be capable of giving useful control of *Bromus diandrus* (Smith, Harradine and Hyde-Wyatt, unpublished trial results). Diclofop methyl and several other products are registered for wild oat control but are only used on a very limited scale, if at all, in cereals.

Damage following the use of the recommended herbicides is rare. Occasionally the MCPA/dicamba mix produces a slight head kinking in 1 to 2% of heads in barley, but grain production appears to be unaffected. The commercial introduction of a 2,4-D amine/dicamba mixture, however, was a failure giving poor weed control and serious crop damage on a number of properties. In the 1980–81 season instances of significant damage symptoms — head kinking and breaking, severe ear distortion, trapped awns and reduced grain set — were reported from some triticale crops following MCPA or bromoxynil/MCPA treatment. At present the significance of these has not been established since many other crops similarly treated were quite normal.

The vast majority of herbicides are applied by boom sprayer and relatively little aerial spraying takes place.

There are no extensive or significant weed problems in cereals which cannot be controlled satisfactorily with the materials currently available. The main problems are those of extension in ensuring that the correct products are used and that equipment is properly calibrated to ensure that correct rates are applied. The most important farmer education problem is persuading growers to apply herbicides sufficiently early in the crops' growth stage to ensure maximum weed kill and maximum yield increase.

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Glossary of terms

Agricultural and Veterinary Chemicals Association — The Australian association of manufacturers and distributors of agricultural and veterinary chemicals affiliated with the Australian Chamber of Manufacturers. Its broad objectives are to advance and promote the best interests of the industry in a responsible way consistent with the public good, and to provide a single organisation to whom Government and other groups may turn for discussion on matters of common interest.

Agricultural Areas — Fallow and land cultivated for cropping, including pastures; natural pastures.

Agricultural Chemical — A broad term used to cover pesticides, adjuvants, conditioning agents and other chemical tools used in improving agricultural production, protecting crops or controlling pests, diseases, and physiological conditions of crop plants. It does not normally include fertilizers.

Agricultural Chemicals Committee — Comprises representatives of each State, the Northern Territory and the A.C.T., together with a representative of each of the National Health and Medical Research Council, the Department of the Environment and Conservation, the Department of Science (Australian Government Analytical Laboratories) and the Department of the Capital Territory, with the convenor having the power to co-opt other persons for the purpose of seeking advice on particular issues, and members of the Co-ordinating Committee on Agricultural Chemicals having the right to attend meetings at their option.

Terms of Reference:

(i) to advise the Co-ordinating Committee on Agricultural Chemicals on the technical aspects of problems arising from the registration, use and effects of agricultural chemicals.

(ii) to report on investigations conducted to determine the incidence, levels, source and fate of residues of agricultural chemicals.

(iii) to recommend investigational programmes to evaluate residues of agricultural chemicals.

(iv) to review and investigate the distribution of agricultural chemicals in the environment and their effect on valuable components of the environment.

(v) to exchange and foster the dissemination of information and experience concerning all aspects of agricultural chemicals.