# Spiny emex (*Emex australis*) in the cropping zone of New South Wales

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## Abstract

**Spiny emex is most prevalent in the western, central and northern regions of the wheat-belt. Generally, it is spreading slowly but sudden dramatic increases can occur, especially after droughts or wet summers and autumns. There are no recent data on the distribution of emex in New South Wales, or its impact on crops and pasture. In heavy infestations, it is a strong competitor against crops and reduces pasture production, especially in lucerne. It damages the feet and mouths of farm animals. It is easy to control in pasture and cereal crops with herbicides, but no chemicals are registered for control in canola or safflower. Recommendations for future research are given.**

Spiny emex was introduced to New South Wales (NSW) and Victoria in about 1883 (Parsons and Cuthbertson 1992). A survey of the distribution of the weed in NSW was done in 1966 based on observations of agronomists (Anon. 1970). The most recent estimate of its distribution was made in 1990 (Parsons and Cuthbertson 1992), and emex is likely to have only spread slightly since then. Spiny emex occurs in the far west, the central and northern areas of NSW. It is generally not found in the Tablelands or the far south coast. Heavy infestations are along the Murray flood plain, presenting problems for vineyards, fruit growing and lucerne production. In the wheat-belt it is found in the western, central and northern regions. The most dense infestations occur in the south-western region (mallee soils and sandy loams around Balranald), the central region (West Wyalong, Narromine, Tottenham and Condobolin on the red loam light soils and the red pine-box soils) and the northern region. There are no recent quantitative data of the distribution of emex in NSW, or its impact on crop or pasture production.

In Victoria, a survey of cereal crops in 1981 (Velthius and Amor 1982) found emex only in the Goulburn and north-east region, at a relative abundance of 0.6 plants $m^{-2}$, compared to 39 plants $m^{-2}$ for wild radish and 835 plants $m^{-2}$ for capeweed. However, it is mainly a problem in the Mallee and northern Wimmera, an area not included in this survey.

Generally, spiny emex is spreading slowly in NSW, but sudden dramatic increases can occur, especially following drought, or wet summers and autumns. New infestations were recorded after the droughts of 1982 and 1994. Emex fruit spread on the tyres of vehicles, on shoes, in flood waters and as a contaminant of forage material. Therefore, it is often found in isolated patches along roadsides, near dams and around buildings. Seed in fodder can lead to dramatic, new and large infestations. Emex is not a major contaminant of crop grain.

Spiny emex is strongly competitive against crops and pastures. For example, Dellow *et al.* (1984) found that the grain yield of wheat was reduced 40% by emex at 30 plants $m^{-2}$. It damages the feet and mouths of farm animals, especially sheep, and can prevent sheep dogs working to the extent leather shoes are sometimes necessary. Heavy infestations reduce land values.

In cereals and pastures, a number of chemical control options are available. In wheat, the preferred recommendations are metsulfuron, dicamba plus MCPA and bromoxynil. Effective control is dependent on timing. Cyanazine and metribuzin are registered in chickpea, field pea, lentil and faba bean, except metribuzin is not registered in lentil. Some of these chemicals are dependent on moisture for activity and hence are sometimes unreliable. Imazethapyr is registered in field pea and faba bean. In pastures and lucerne, registered herbicides are: imazethapyr, methabenzthiazuron, diflufenican plus MCPA, diflufenican plus bromoxynil, bromoxynil and 2,4-DB. No chemicals are registered for control in canola or safflower, and this could be a major limitation to the adoption of these crops in the dryer areas of the wheat-belt.

Recommendations for future research are:

- Investigate alternative control options in canola and grain legumes.
- Determine impact of emex on crop and pasture production.
- Determine current distribution and factors affecting spread.
- Determine critical weed density / yield loss relationships in crops and pasture.
- Improve chemical control, e.g. cultivation x timing x rates in crops and pastures.
- Impact of control in pasture phase on weed seed bank in the soil.
- Evaluate more biological control agents, including bio-herbicides.

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