

STUDIES OF THE BIOLOGY OF GALINSOGA

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Galinsoga parviflora is one of the most serious weeds of vegetable crops grown in coastal south east Queensland. Populations in excess of 1×10^9 seeds/ha in the top 15 cm of soil have been recorded. It is capable of germinating throughout the year and it is a particular problem in lettuce, cucurbits and tomatoes, where it is tolerant of herbicides currently used. We are investigating the effects of environment (including depth of planting and light intensity) on the germination behaviour of *G. parviflora* with the aim of developing cultural methods of control.

Work in Holland has shown that *G. parviflora* is photoblastic (requiring light for germination). American workers have found that a 6-mm layer of soil over the seed inhibited germination. This information suggests that field emergence could be controlled by manipulation of either of these factors.

Germination studies using freshly harvested *G. parviflora* seed under different, continuous lighting regimes in a growth cabinet showed that the light requirement to break dormancy was low. A mean of 49 per cent of seed germinated in 5 days at an illumination intensity of 4 lumens per square foot and 94 per cent at 200 lumens per square foot. It is possible that some germination could occur at even lower light exposures, still giving significant weed populations where high seed populations exist.

A study of the effects of depth of planting on seedling emergence using field soil with a high natural population of *G. parviflora* showed that a flush of emergence occurred within 5-8 days from the commencement of the experiment with only sporadic emergence thereafter. A great majority of seedlings emerged from the top 12 mm of soil, with few from greater depths, and virtually none from 25 mm. Results suggested that seed whose dormancy requirement had been met before or during gathering of the soil were incapable of emerging from deeper than 25 mm. It is possible that seeds which emerged from below 12 mm received their light requirement during their collection, a period of less than 30 minutes. The bulk of the emergence from the uppermost layer of soil was due to light-induced germination during the 5-8 day period.

The possibility of using a shallow layer of weed-free soil or other medium over soil containing this weed as a method of weed control is being explored and is discussed in another paper (see this Conf. handbook p.2(a)-2). The results also suggest