

CRITICAL PERIODS OF INTERFERENCE: CAPEWEED IN LUCERNE

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Capeweed is one of the most widespread annual weeds in southern Australia. It has the potential, through the development of herbicide resistance, to pose a serious threat to crop and pasture productivity. Lucerne is the most widely grown and valuable, perennial, forage crop in Australia. In common with other perennial pasture species, lucerne is susceptible to weed competition during establishment and, with age, stands of lucerne often become weed infested. Current management of weeds in lucerne is largely by herbicides. We carried out a number of experiments to examine competitive, interactions between lucerne and capeweed, including, manipulation of capeweed seed dormancy, comparative growth at a range of temperatures, and interference between the species due to capeweed population, potassium supply and form of competition in additive and replacement design experiments. This poster reports a pot experiment in which we sought to define the critical periods of interference, during establishment, of capeweed in lucerne.

Lucerne was grown either weed-infested (capeweed removed) or weed-free (capeweed added) for periods of 0, 4, 6, 8, 10 and 16 weeks. At 16 weeks the lucerne was harvested. Size of lucerne (shoot and root weight, leaf area and height) was described as functions (Gompertz or logistic respectively) of the weed-infested or weed-free duration. These functions were differentiated with respect to duration to delimit the periods over which change in size of lucerne was greatest, thereby, defining windows during establishment of lucerne when competition with capeweed should be avoided.

The results indicated that lucerne was most sensitive to infestation with capeweed during the first, five weeks of establishment. In general, growth was maximised when lucerne remained free of capeweed for between 2 to 10 weeks from about 8 weeks after sowing, although, the position and duration of the weed-free window varied with the measurement of growth.