

## Effect of *Lupinus angustifolius* and *L. albus* seedling interference on annual ryegrass

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**Summary** *Lupin* species are a valuable source of plant protein. Vegetative growth of lupins is slow and generally falls under high weed pressure during early establishment. The weed pressures subsequently reduced the grain yield. It is therefore important to keep lupins weed free in early establishment of the crop. Chemical herbicides are the most cost-effective and widely used weed control tactic. However, herbicide-induced crop injury, and development of weed resistance to chemical herbicides is another challenge. Non-chemical approaches such as crop interference is a good option to reduced herbicide use. Crop interference includes both crop competition and allelopathy. These phenomena can be influenced by crop agronomic factor such as crop density. This study evaluated the interference ability of two lupin species (*Lupinus angustifolius* L. and *L. albus* L.) on annual ryegrass (*Lolium rigidum* Gaudin) under laboratory

conditions. Three lupin densities (0, 5, 10 and 15 seedlings/beaker) were used against annual ryegrass (5 seedlings/beaker). Results showed that significance difference was found between genotypes in terms of the root length inhibition ( $P < 0.001$ ) of annual ryegrass and *L. angustifolius* had a more inhibitory effect on annual ryegrass. High densities (15 seedlings/beaker) of this species notably reduced the root length of annual ryegrass by 35%. The measured root length of both lupins species (14 days after sowing) were not significantly varied but their shoot length and total leaf area were significantly different and as a result *L. albus* produced the maximum (1.13 g/5 plants) dry matter. These results demonstrated that root length of annual ryegrass was inhibited by both allelopathic and competitive effects of lupin while *L. angustifolius* was more inhibitory than *L. albus*.