

Competitiveness of common ragweed against different plant species

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In additive pot experiment the effect of competitor plant species (*Festuca rubra*, *Lolium perenne*, *Plantago major*) was investigated on common ragweed. The density of common ragweed was constant, while the density of the other (competitor) plant species was varied.

Factors:

A: plant species: *Festuca rubra* cv. Light; *Lolium perenne* cv. Lipresso; *Plantago major*.

Seeds were provided by JKI. *L. perenne* and *F. rubra* from Deutsche Saatveredelung AG, Weissenburger Strasse 5, D-59557 Lippstadt; *P. major* from Templiner Kräutergarten, Elsternest 1, 17268 Templin, Deutschland

B: densities/proportions: 100%, 50% and 25% of the three competitor plant species; common ragweed always 4 single plants in the centre of the pots (Table 1.; Figure 1.)

Table 1. Density of competitor plants

	<i>Plantago major</i> GA* nawn seeds/m ²	unk- seeds/pot	<i>Lolium perenne</i> GA 93% seeds/m ²	seeds/pot	<i>Festuca rubra</i> GA 83% seeds/m ²	seeds/pot
100%	2500	100	1970	80	2340	96
50%	1250	50	921	40	1170	48
25%	625	25	460	20	585	24

*GA: germination ability

Variants: 10

Replicates: 4

Pot size: 20 x 20 x 6 cm

Assessment: fresh and dry shoot weight of Ambrosia and other competitor plants/pot



Figure 1. Competition between common ragweed and *Lolium perenne* in additive pot experiments. The density of common ragweed is constant, while the density of the other plant species is varied.

Biomass production (fresh and dry shoot weight) of ragweed increased as the other plant's (*P. major*, *F. rubra*, *L. perenne*) density decreased. Biomass production of the other (competitor) plant's increased with the increased plant density but at higher densities the effect of intraspecific competition between individuals could be observed. *L. perenne* had the strongest competitive ability followed by *P. major* and *F. rubra* (Table 2, Figure 2).

Table 2. The change of fresh and dry shoot weight of common ragweed and competitor plants for a pot due to the different plant density (fresh shoot weight/dry shoot weight)

Densities of competitor plants	<i>A. artemisiifolia</i> + <i>P.major</i>		<i>A. artemisiifolia</i> + <i>L. perenne</i>		<i>A. artemisiifolia</i> + <i>F.rubra</i>	
	<i>A. artemisiifolia</i>	<i>P.major</i>	<i>A. artemisiifolia</i>	<i>L. perenne</i>	<i>A. artemisiifolia</i>	<i>F. rubra</i>
100%	11.3 ^c /3.4 ^d	17 ^a /5 ^a	6.7 ^c /2.6 ^d	16.45 ^a /4.6 ^a	27.65 ^c /7.9 ^c	5.9 ^a /0.93 ^a
50%	20.8 ^b /6.5 ^c	10 ^b /2.5 ^b	18.5 ^b /5.4 ^c	12.7 ^a /3.9 ^a	61.9 ^b /16.6 ^{ab}	5.1 ^a /0.8 ^a
25%	24 ^b /8.4 ^b	7.75 ^b /0.75 ^c	38 ^a /7.9 ^b	4 ^b /1.4 ^b	69 ^b /18.3 ^b	2.4 ^b /0.39 ^b
0%	44.6 ^a /14.6 ^a	-	44.6 ^a /14.6 ^a	-	44.6 ^a /14.6 ^a	-
LSD _{5%}						
	5.66/1.58	3.37/1.37	7.44/0.71	4.19/0.91	7.65/2.43	1.85/0.24

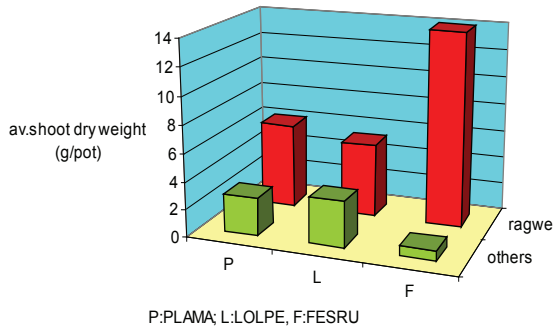


Figure 2. The average shoot dry weight/pot of *A. artemisiifolia* and competitor plants