

**Evaluation of different empirical models of crop/weed competition
to estimate yield and LAI losses from common lambsquarters
(*Chenopodium album*) in corn (*Zea mays*)**

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ABSTRACT

Usefulness and validity of different empirical yield loss models to predict the effect of common lambsquarters competition in corn were evaluated in a two year experiment in Karaj, Iran during 2001 and 2002 growing seasons. Experimental factors were 2, 5, 10 and 15 plants m⁻² in the first experiment and 6.6, 13.3 and 20 plants m⁻² in the second experiment and relative time of common lambsquarters emergence of simultaneous to, at 2-3 and 4-5 leaf stages of corn in the first experiment and simultaneous to, at 2-3 and 5-6 leaf stages of corn in the second experiment. Results indicated that the highest corn yield and LAI losses were observed at simultaneous emergence of weed and corn resulted in 85 and 92% yield loss, and 73 and 53% LAI loss in the first and second years of experiments, respectively. Also, delaying common lambsquarters emergence reduced its competitive ability against corn. Comparison of different empirical models revealed that the empirical yield loss models based on density and the relative time of weed emergence, and the weed relative leaf area, also the rectangular hyperbolic yield loss model based on weed density were more reliable at predicting corn yield and LAI losses according to their high coefficient of determination (R²). Also, results indicated that the negative effect of the relative time of common lambsquarters emergence on corn yield loss was more than weed density, so that the rectangular hyperbolic yield loss model based on weed density was more capable to predict yield loss at each of weed emergence times.

Key words: empirical yield loss model, relative damage coefficient, weed density, weed, emergence time.

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