Outcompeting common ragweed by sowing different seed mixtures combined with various cutting regimes

Gerhard Karrer, Ivana Milakovic

Institute of Botany, Department of Integrative Biology and Biodiversity Research, University of Natural Resources and Life Sciences, Gregor Mendel Str. 33, 1180 Wien, Austria; gerhard.karrer@boku.ac.at

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This experiment was originally set up during the Austrian national RAGWEED-project (Karrer et al. 2011) and continued during the HALT-Ambrosia project. Three seed mixtures (1: 15% *Festuca ovina*, 35% *Lolium perenne*, 42% *Festuca rubra rubra*, 5% *Lotus corniculatus*, 3% *Medicago lupulina*; 2: Mixture 2: 8% *Festuca ovina*, 47% *Festuca r. rubra*, 5% *Festuca r. trichophyla*, 40% *Lolium perenne*; 3: 10% *Lotus corniculatus*, 10% *Poa pratensis*, 15% *Festuca rubra*, 30% *Lolium perenne*, 25% *Festuca ovina*, 10% *Festuca arundinacea*) were combined with three different densities of common ragweed (*Ambrosia artemisiifolia*) (0 Ragweed plants/m^2,100 Ragweed plants/ m^2 und 500 Ragweed plants/m^2) and 4 different mowing regimes that were developed in agreement with the road maintenance services. Gravel was the regularly used type of soil material – not very friendly for development of vegetation. In the first year (2010) germination rates of common ragweed was very low but that of the intended competitors even lower. In the second year germination rates and biomass production of competitors increased. But common ragweed benefited by that (facilitation affect by accumulated biomass). In the 3rd and 4th year (2012, 2013) facilitation effects still can be seen but no serious competitive depression by the seeded plants.

We conclude that this experiment makes evident that utilisation of competitive effects by roadside vegetation on common ragweed is not possible if adverse soil material is used for road shoulders. These results are in contrast to pot experiments under greenhouse conditions where co-occurring vegetation was able to outcompete common ragweed almost completely (Milakovic & Karrer, 2011, Karrer *et al*. 2011).

Reference

Milakovic I. & Karrer G. (2011) Competitive suppression of common ragweed in early successional stages of revegetation. - In: Bohren, C.; Bertossa, M.; Schoenenberger, N.; Rossinelli, M.; Conedera, M. (eds): 3rd International Symposium on Environmental Weeds and Invasive Plants. Abstracts. October 2 to 7, 2011. Monte Verità, Ascona, Switzerland. Birmensdorf, Swiss Federal Institute for Forest, Snow and Landscape Research WSL. p 111. Available from http://www.wsl.ch/epub/ewrs.

Karrer, G., Milakovic, M., Kropf, M., Hackl, G., Essl, F., Hauser, M., Mayer, M., Blöch, C., Leitsch-Vitalos, M., Dlugosch, A., Hackl, G., Follak, S., Fertsak, S., Schwab, M., Baumgarten, A., Gansberger, M., Moosbeckhofer, R., Reiter, E., Publig, E., Moser, D., Kleinbauer, I., Dullinger, S. (2011). Ausbreitungsbiologie und Management einer extrem allergenen, eingeschleppten Pflanze – Wege und Ursachen der Ausbreitung von Ragweed (*Ambrosia artemisiifolia*) sowie Möglichkeiten seiner Bekämpfung. Endbericht, BMLFUW, Wien. 315 pp. German version available from: https://www.dafne.at/dafne_plus_homepage/.