Improving the competitiveness of sunflower and maize against common ragweed (*Ambrosia artemisiifolia)*

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Common ragweed (*Ambrosia artemisiifolia)* is a tall erect annual species of the daisy family (Asteraceae) native to North America. It has been inadvertently imported to many countries in Europe, Asia and Australia. It has an impact on public health, agriculture and biodiversity, which cannot be denied. Therefore the European Commission, DG Environment, is funding a 3-year project on common ragweed. Six institutions in five European countries representing high infested countries like Hungary, Slovenia and Austria, beginning infestation in Germany and the not yet infested country Denmark are involved. The overall aim of the project is to contribute to the reduction of the prevalence of ragweed in European countries. The presented trial was carried out in Germany.

Ragweed can be a strong competitor to open row crops like sunflowers, maize, potatoes, pumpkins and legumes and can lead to high yield losses. But it also reacts very sensitively to competition. Therefore small plot (3x3 m) field trials were conducted in 2011 with sunflower and in 2012 with maize. The treatments were the same in both years: two-row spacing with 35 and 70 cm widths (8 plants m^{-2} in each case) in combination with or without undersown white clover (10 kg ha^{-1}). 2 g of common ragweed was sown along one metre between two rows in the middle of each plot and were thinned out at the four-leafe stage to five plants per metre (one plant every 20 cm). The common ragweed was harvested at a growth stage from beginning of budding until beginning of flowering at the end of August in both years. At the same time the sunflower and maize plants directly neighbouring the ragweed row were harvested too. Fresh sunflower and maize matter and dry common ragweed matter was determined in order to detect the impact of row spacing and undersown clover on common ragweed, sunflower and maize.

Significantly lower (*$P<0.05$) dry matter of common ragweed was found in narrowly spaced sunflower and maize plots with undersown white clover compared to the other treatments. Fresh matter of sunflower and maize therefore was not affected by wide or narrow spacing or by undersown clover.

The results show that there is an impact of competition on dry matter of common ragweed and it can be assumed that seed production would be reduced as well. To verify this assumption further investigations have to be carried out.