

Suppressing common ragweed biomass with integrated farming methods

Ulrike Sölter, Arnd Verschwele

Julius Kühn-Institut, Federal Research Centre for Cultivated Plants,
Institute for Plant Protection in Field Crops and Grassland, Messeweg 11/12, 38104 Braunschweig, Germany;
e-mail: ulrike.soelter@julius-kuehn.de



DOI 10.5073/jka.2016.455.26

Common 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 field trials were conducted in 2011, 2012 and 2013 with sunflower, maize and horse bean respectively. The treatments were the same for sun flower and maize: two row spacing with 35 and 70 cm widths (8 plants*m⁻² in each case) in combination with or without undersown white clover (*Trifolium repens*). Horse bean was sown in 25 and 50 cm row widths with 40 plants*m⁻² in each case and with or without perennial ryegrass (*Lolium perenne*). 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-leaf stage to five plants per metre (one plant every 20 cm). The common ragweed was harvested when its growth stage was in the range of beginning of budding until beginning of flowering in each year. At the same time the sunflower, maize and horse bean plants directly neighbouring on the left and right side of the 1 m common ragweed row were harvested too. Fresh matter of sunflower, maize and horse bean and dry matter of common ragweed was determined in order to detect the impact of row spacing and the undersown crop on common ragweed, sunflower, maize and horse bean biomass. The plots were irrigated if necessary.

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 horse bean plots showed different results: significantly lower (*P<0.05) dry matter of common ragweed was found in the plots with the undersown crop and in the narrow spacing plots. In the wide spaced plots common ragweed had the highest dry matter yield. The same was determined for the horse bean fresh matter: plots with the undersown crop and the narrow spaced rows affected the fresh matter of horse bean negatively. The results show that there is an impact of competition on dry matter of common common ragweed and it can be assumed that seed production would be reduced as well. While sunflower and maize dry matter was not affected by narrow spacing and / or the undersown crop, horse bean reacted sensitively to this integrated methods with lower fresh matter yield.