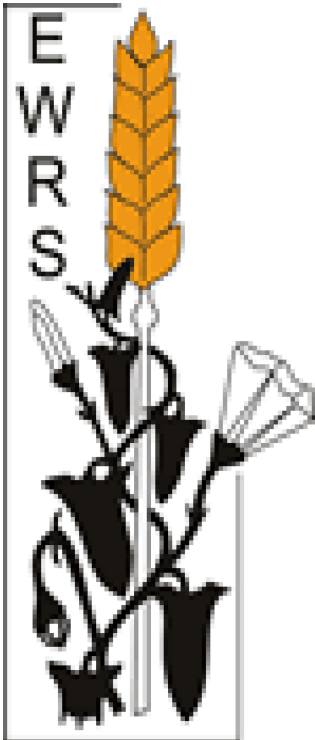


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Resource effective control of *Elytrigia repens*

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Couch grass (*Elytrigia repens* L.) is a problematic weed on northern latitudes. Once established in a field it spreads quickly through underground rhizomes. It is controlled either with glyphosate, or extensive stubble cultivations to fragment and starve the rhizomes. The aim of the project is to develop methods where couch grass is controlled without using chemicals and with insignificant nitrogen leaching. More specifically we test the hypotheses that perennial ryegrass and red clover cover crops under-sown in spring barley/oat reduce couch grass growth during autumn (1), reduce nitrogen leaching (2) and that mowing in autumn will further reduce couch grass growth (3). Moreover we tested if two stubble cultivations during autumn were significantly better for couch grass control than one time-optimized stubble cultivation (4) and if nitrogen leaching is smaller after cultivation with a goose foot cultivator (5 cm depth) than with a disc cultivator (10 cm depth), with similar effect on couch grass (5). Three experiments, each lasting two years, started in 2011 (results presented here) and repeated with start 2012. Exp. 1 and 2 were conducted at three different locations in Sweden and Exp. 3 at one site, all with four replicates in randomized complete blocks. In Exp. 1 the effect of mowing was investigated in main-plots and cover crops in sub-plots. In Exp. 2 stubble cultivation was conducted at different times in relation to harvest of spring barley/oat as the single factor. In Exp. 3, using separately tile-drained plots, the effect of different combinations of tillage and cover crops on N-leaching and couch grass was investigated. Measurements taken were e.g. abundance of couch grass shoots, aboveground biomass (cover crops and couch grass), rhizome biomass, soil mineral nitrogen (Exp. 1 and 3) and N-leaching (Exp. 3).

Preliminary results from the first experiments showed no significant reduction of couch grass shoots or rhizomes for any of the cover crop treatments, but cover crops reduced nitrogen leaching by almost a third compared to traditional disc cultivations after harvest. In one instance where mowing was applied, there was a reduction (approximately 27%) for shoot abundance at the harvest of the subsequent crop, without cover crop interaction. The difference in control of couch between two stubble cultivation during autumn and one time-optimized stubble cultivation was insignificant. Treatments with goose foot cultivator significantly reduced rhizome and shoot biomass compared to control and nitrogen leaching was less than after disc cultivation.

Results so far indicate that the combination of goose foot cultivator and cover crop, or using only one stubble cultivation after harvest, may combine reduction of couch grass