

Competition from great brome and barley grass reduces wheat yield

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Summary In Western Australia (WA), some minor weeds like brome grass (*Bromus diandrus*) and barley grass (*Hordeum leporinum*) are now emerging as major weeds with greater infestation and frequency. Information on extent of grain yield losses due to these weed species in intensive no-tillage cropping systems of WA is limited. With an aim of determining loss in wheat yield due to competition from these weed species, four field trials were carried out from 2016-2019 on sandy to sandy loam soils at the DPIRD's Wongan Hills Research Facility (-30°47'59.99" S 116°36'59.99" E). The trial sites were selected with very low weed burden and no prior seed bank of the target species. The trials were laid out in completely randomised split plot design with weed species as the main plot factor and weed density as the sub plot factor with four replications. Seed of each weed species was broadcasted at four densities (weed free, low - 125-250 seeds/m², medium - 250-500 seeds/m² and

high - 500-1000 seeds/m²) over a 5m x 1.1m area of each unit plot, prior to sowing wheat. Wheat cv Mace was sown using 50 kg/ha seed rate on 22 cm row spacing at the end of May-middle of June and machine harvested in November each year. The data was subjected to ANOVA using GENSTAT 19th edition. The results indicate that great brome at low, medium and high densities (averaged over four years) of 74, 141 and 214 plants/m² respectively, caused 13, 20 and 28% reduction in wheat grain yield compared to the weed free treatment. Similarly, barley grass at an average density of 74, 148 and 245 plants/m² resulted in 9, 11 and 18% reduction in wheat grain yield. Effect of seasonal conditions (e.g. rainfall) on weeds emergence and their competitiveness was important and will be discussed.

Keywords Crop-weed competition, wheat, weeds, grain yield loss