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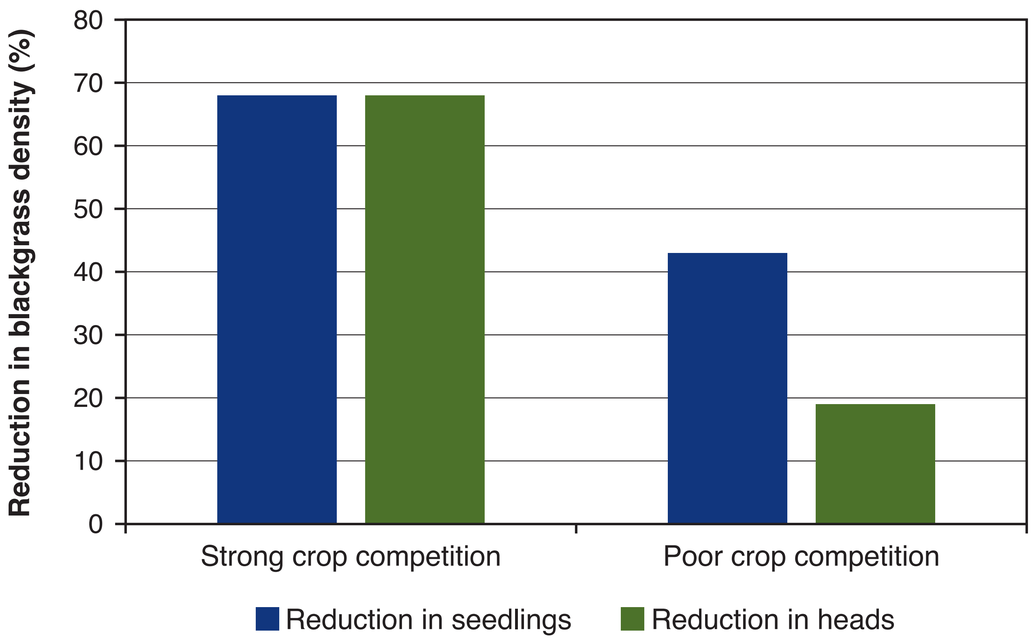
THE ROLE OF CROP COMPETITION FOR WEED MANAGEMENT

Herbicides are presented as the most important component of a weed management strategy, and whilst their contribution cannot be understated, the role of the crop itself is often forgotten. Absence of a competitive canopy allows weeds to dominate, exaggerating seed return and putting further pressure on the rest of the rotation.

Do not compromise crop vigour

Delaying the establishment of winter crops is a superb tool against all autumn germinating weeds. However, if left too late and the crop emerges slowly then even low populations of competitive weeds such as black-grass or Italian rye-grass can return extremely high numbers of seed (Figure 1). Where crop competition is strong the control of black-grass heads remains high, whereas when competition was absent (due to drilling later in poor conditions) the control of black-grass heads is compromised. Herbicides can be an incredibly effective tool, but there can be a risk of crop damage, often undetected, associated with using too much.

Figure 1. Effect of crop competition on black-grass density



Use all available crop species

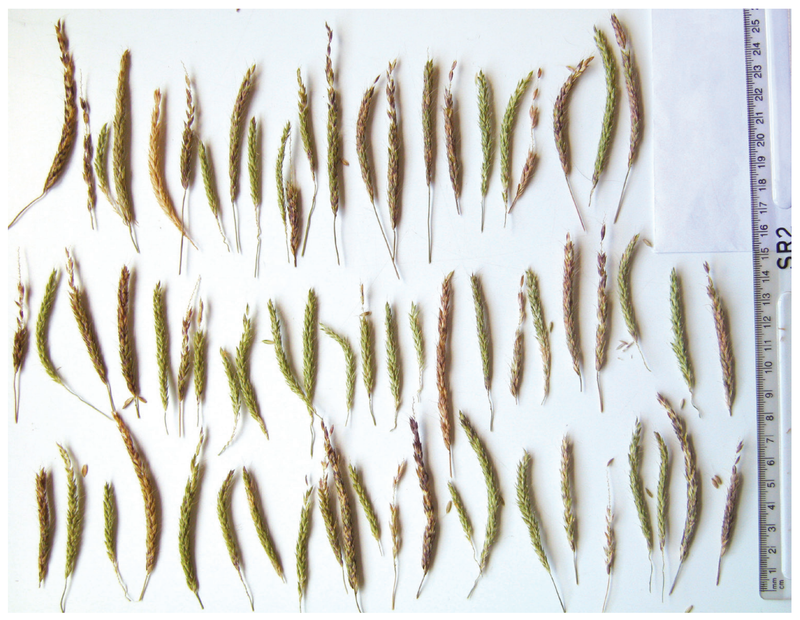
Wheat, both winter and spring, is relatively uncompetitive among the cereal options available (Figure 2). Using winter barley, in particular 6-row varieties, can reduce the size of weed within the crop. Spring barley is the most competitive, and combined with spring drilling, is able to have the most impact on reducing seed return. Oats are another competitive species, however the range of chemical options is limited, so the weed burden is too high in the first place.

Variety choice – avoid similarity

NIAB's work on variety interaction for weed control indicates that in any given season the variety may be important, but differences are inconsistent between years as modern varieties generally have similar heights and growth habits. Older varieties, which can be taller and more freely tillering, may be worth considering, particularly in lower input systems where lodging risk is reduced. However, older varieties are inherently lower yielding and it is unclear whether competitive ability can be combined high yield potential.

Drawing on the wide and recombined genetic diversity of the NIAB wheat pre-breeding materia, lines have been identified with high early vigour and dense canopy traits. These should be better able to compete with weeds, whilst maintaining the other characteristics that growers desire, including yield and moderate height.

Figure 2. Size of black-grass heads from a range of species



Winter wheat

Spring barley

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This is just one example of the research information, digital tools and advice delivered alongside NIAB TAG's extensive and exclusive member-funded field trials programme, supplying impartial cost-effective crop production strategies specifically for our members.

Innovation in CROP AGRONOMY

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