

Focus paddocks - remaining weeds are hard to control

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KEY MESSAGES

Growers have eroded their ryegrass seed banks from an average of 183 ryegrass / m² in 2001 to 7.6 ryegrass / m² in 2012 which equates to a 96% reduction over twelve years across 31 focus paddocks. They have achieved this result while maintaining an average cropping intensity of 84%.

The vast majority of growers now comment that they have fewer weeds than ever, but the ones they have left are very difficult and therefore very expensive to control with herbicides. Wild radish is now often quoted as being the number one weed that is costly to control.

METHOD

At the beginning of a GRDC funded project that commenced in 2000, four small grower groups were formed to participate in IWM research and extension. These growers nominated a focus paddock in which ryegrass populations have subsequently been monitored in response to the implementation of weed management programs. Throughout this period ryegrass population densities were recorded by DAFWA technicians Glenn Adam and Trevor Bell each August by counting surviving plants in 20 quadrats (0.5m²) in a designated area in each paddock.

RESULTS

Enormous reductions to in-crop ryegrass populations resulted from the implementation of ryegrass management programs in focus paddocks. On average, ryegrass numbers decreased by 96% in the 31 focus paddocks over twelve years of monitoring (Figure 1). Average ryegrass densities decreased from 183 plants / m² in 2001 to just 7.6 plants / m² in 2012. However, in 2012 the majority of paddocks had much lower ryegrass densities than this average plant density. For example 11 of the focus paddocks had 0 ryegrass / m² in August 2012 while fifteen paddocks had less than 1 ryegrass plant / m² in August 2012.

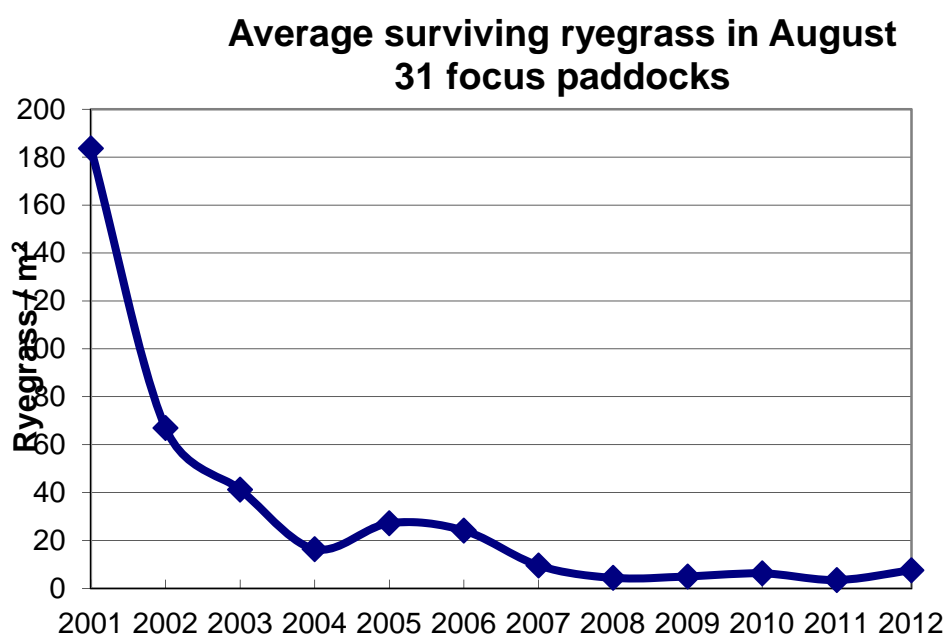


Figure 1: Average surviving ryegrass numbers across 31 focus paddocks counted each August.

Harvest Weed Seed Control (HWSC)

The following data relates to a selection of 24 of the focus paddocks where the growers are cropping dominant with no livestock in the farming system.

Eight of the growers regularly practice harvest weed seed control (HWSC) either in the form of windrow burning or towing a chaff cart. On average, these growers practiced HWSC in 58% of years while achieving an average cropping intensity of 88.5% (Table 1). The frequency of HWSC is a little lower than expected, however the droughts of 02, 06 & 07 reduced the amount of harvest weed seed management due to a lot of paddocks either not harvest or not cropped. Also, some growers used HWSC for 5 years in a row by which time weed numbers were down so they cut back to burning lupin and canola windrows only.

Sixteen of the growers practiced HWSC in the form of narrow windrow burning in only 12% of years (i.e. Herbicides only group). This includes some whole paddock “cool burns”. If we remove these cool burns the amount of windrow burning drops to 8% of years. These growers maintained a cropping intensity of 88% (Table 1), almost identical to that of the plus HWSC group.

Table 1: Cropping intensity (%) and the percentage of years in which harvest weed seed control (HWSC) was practiced for 16 cropping dominant growers who rarely practice HWSC (Herbicides only) compared with eight cropping dominant growers who regularly practice HWSC.

	Herbicides Only	Herbicides + Harvest Weed Seed Control
% Crop	88	88.5
% of years using Harvest Weed Seed Control	14	58

The plus HWSC group have been on or very close to the “zero line” for ryegrass since 2008, demonstrating the benefits of removing weed seeds at harvest. This group started with 183 ryegrass /m² in 2001 compared to 125 ryegrass /m² in 2001 for the herbicides only group.

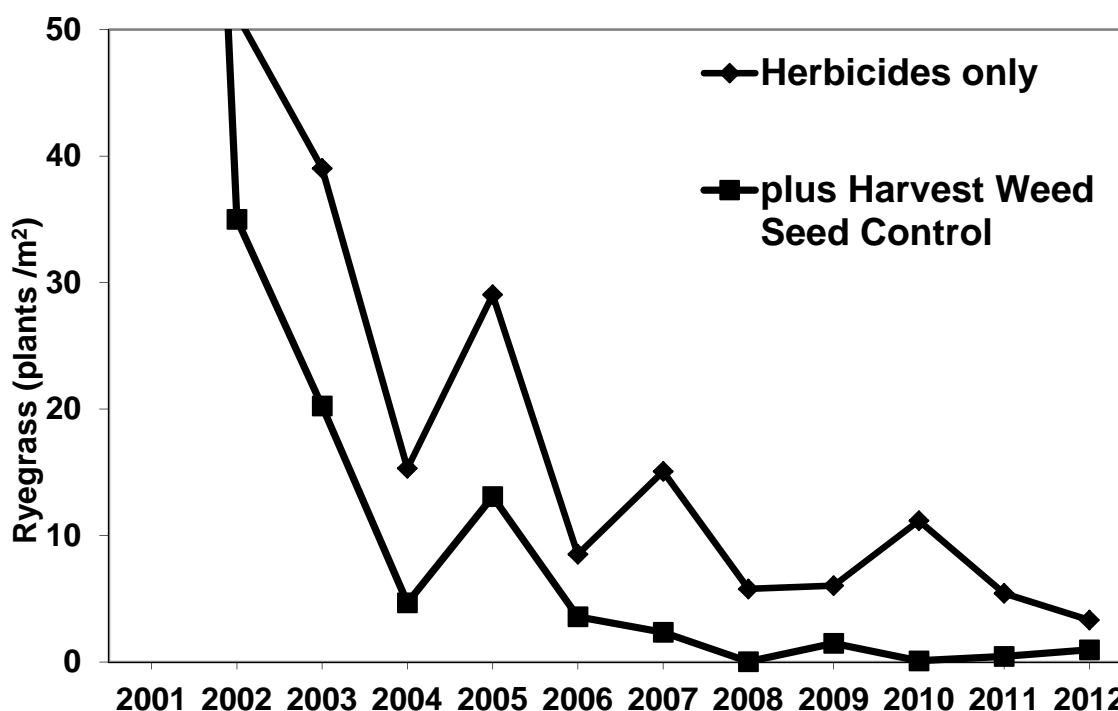


Figure 2: Average surviving ryegrass (in August) for 16 cropping dominant growers who rarely practice harvest weed seed control (HWSC) (Herbicides only) compared with eight cropping dominant growers who regularly practice HWSC.

CONCLUSION

The resounding comment from the vast majority of growers participating in these focus paddocks is that they have been successful at reducing their weed seed banks, and in many cases weed numbers are lower than ever, but the few remaining weeds are very hard, and therefore expensive to control. This goes for not only annual ryegrass, but for wild radish as well. In general, growers are confident that their weed control strategies are working, but they are very concerned about the increasing cost of weed control.

It is quite remarkable that growers have been so successful at eroding annual ryegrass seed banks of paddocks, while maintaining a cropping intensity of 84%. Many of the original messages about managing herbicide resistance in 1990's were built around the concept of phase farming, and rightfully so. However, these growers are demonstrating that it is possible to crop at high intensity while eroding the weed seed bank despite some of the highest levels of herbicide resistance on the planet.

Harvest weed seed control

The growers who have had the most success at managing ryegrass populations are those who have practiced harvest weed seed control in the form of narrow windrow burning or by towing a chaff cart (figure 1). These growers started with a higher seed bank which was eroded to very low levels in just four years. In the eighth year of using this practice these growers had zero ryegrass in their focus paddocks and have averaged less than 1.5 ryegrass plants /m² ever since. Harvest weed seed control does not fix a system that is broken but can be the key lynch pin to making a system work. The herbicides only group have also been very successful at eroding the ryegrass seed bank while maintaining the same cropping intensity as the plus HWSC group at 88%. However, the heavy reliance on herbicides of this group is likely to result in higher levels of resistance in these paddocks.

Aggressive approach

Low weed numbers does not necessarily have to be all about chaff carts and windrow burning. One particular focus paddock is demonstrating that having very high standards of weed control and excellent crop agronomy are very important elements. This grower is opposed to burning and would appear to be herbicide dominant. However, closer investigation reveals that he has very high standards for weed control and soil health (particularly liming for soil acidity) and he does what he can to maximise crop competition with weeds. In addition to this, every year he sprays out weedy patches of crop and leaves some paddocks out to chemical fallow. So yes he is reliant on herbicides, but his high standards and diverse range of strategies are producing outstanding results.

KEY WORDS

Focus Paddock, annual ryegrass, herbicide resistance, Integrated weed management

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