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HERBICIDE RESISTANCE SURVEYS

As farming systems and practice changes the effectiveness of weed control continues to be impacted by the progression of herbicide resistance, both within and between species. There has never been a more important time to monitor, map and understand the status of weeds on farm.

NIAB has led nationwide weed surveys on wild oats (2019) and Italian rye-grass (2021), and have subsequently carried out resistance testing on each sample sent in.

Wild oats

Wild oats occur as two distinct species with contrasting germination biology – the spring or common wild oat (*Avena fatua*) and the winter wild oat (*Avena sterilis ssp. ludoviciana*). The survey revealed much higher frequency of the winter wild oat detected than previously thought. This changes the practical implications on the management of this species, so understanding your population is vital. From a resistance perspective, the majority of samples sent in were susceptible to key herbicides, which means that the majority of herbicide failure is down to application timing and conditions around application (Figure 1).

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Italian rye-grass

Italian rye-grass is a priority weed species in the UK, and this is largely due to the intensity and rate of development of herbicide resistance. This provided an update on the resistance status of the weed against key contact herbicides, and identified the emergence and development on-farm of a new herbicide trait effecting the performance of some pre-emergence herbicides, including flufenacet, which is a key active for the control of the weed.

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Baseline surveys

By understanding new weed problems in evolving agricultural systems and identifying where there is an over-reliance on particular herbicides, efforts can be focused on high herbicide resistance risk scenarios as they develop. Usually, these proactive emerging weed baseline surveys involve a lot of effort for very little short-term gain, but this work is essential to try to address problems as they develop rather than waiting until they become a significant threat to crop production. NIAB has identified two species; Bur Chervil and Rat's Tailed Fescue as priorities for this work (Figure 2).

Figure 1. Frequency of occurrence of herbicide resistance observed in wild oat samples (2020). R ratings summarise the intensity of herbicide resistance in an individual sample: RRR "resistance confirmed, highly likely to reduce herbicide performance", RR "Resistance confirmed, probably reducing herbicide performance" and R? "Early indications that resistance may be developing, possibly reducing herbicide performance". The S populations are fully susceptible

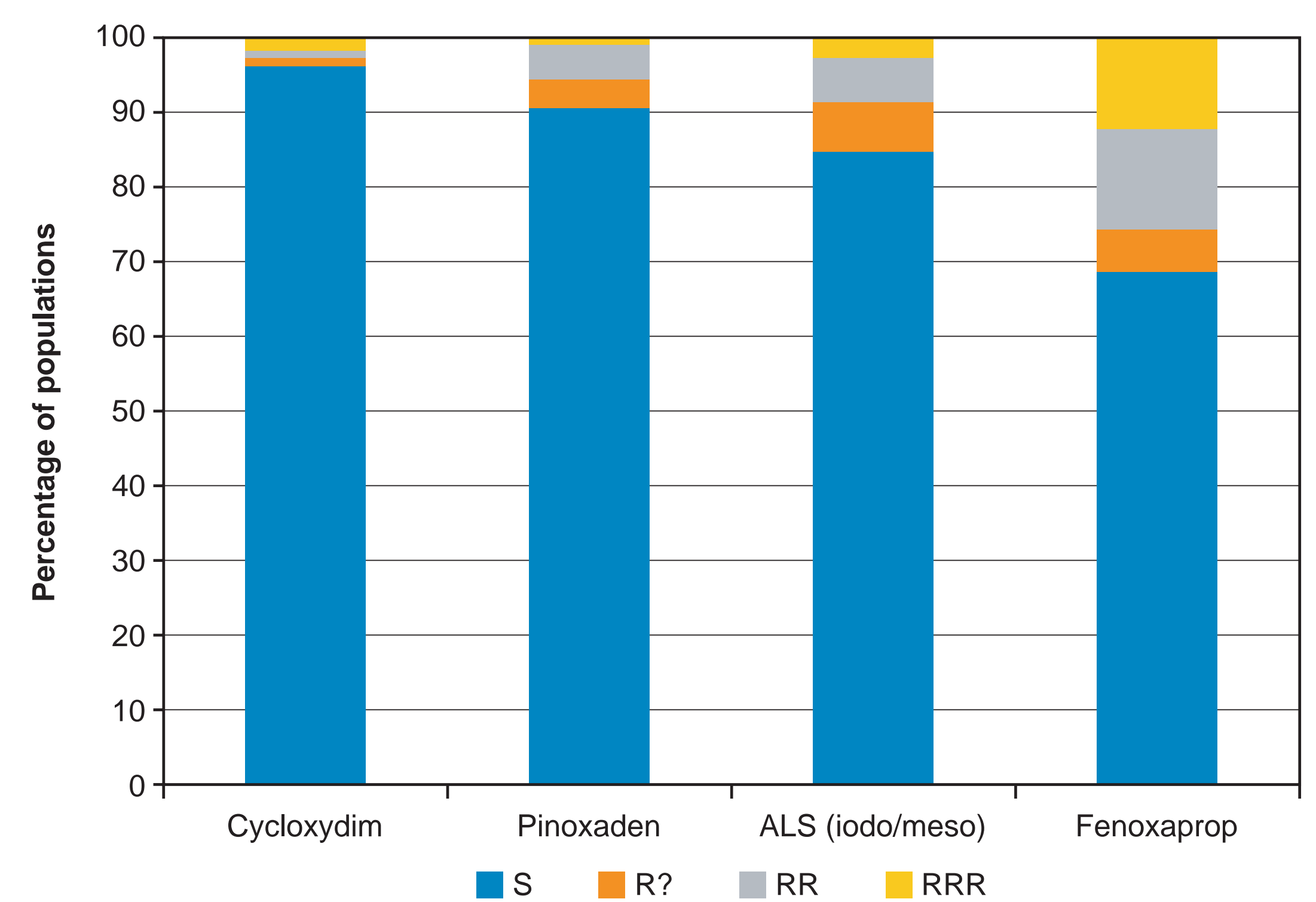


Figure 2. A baseline assessment of *Vulpia myuros* and *V. bromoides* sensitivity to Atlantis (a.i. iodosulfuron-methyl-sodium + medosulfuron-methyl) and a.i. glyphosate in the glasshouse at NIAB Park Farm



If changes in weed issues are being found, associated with conservation agriculture practice, please get in touch (John Cussans – john.cussans@niab.com). If farmers and agronomists have Bur Chervil and/or Rat's Tailed Fescue on-farm NIAB would welcome another sample for the baseline work. NIAB offers a commercial herbicide resistance testing service – go to niab.com/services/laboratory and NIAB LabTest.

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