Smoking out blackgrass seeds

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Blackgrass is a problem weed in UK agriculture, but a new technique may help farmers to combat its resistance to herbicides. Application of a smoke particle solution called 'smokewater' has been found to cause blackgrass seeds to germinate early, becoming vulnerable to certain herbicides which they would normally evade.

Ten per cent of crops are lost due to weed growth - a statistic that is set to increase with climate change. Blackgrass is one especially severe weed in the UK that can evade traditional herbicide treatments by producing huge amounts of seeds which can stay dormant for long periods of time and germinate at the same time as useful crops.

By applying 'smokewater' to weed seeds, a research group at Royal Holloway University, London, working in collaboration with Syngenta, recently found that dormancy in blackgrass seeds is disrupted, effectively 'flushing' them out of hiding. Professor Gerhard Leubner, who leads the research group, explains: "Forcing dormant blackgrass seeds to germinate using smokewater may allow us to hit them with conventional herbicides or non-chemical methods for a more effective weed control."

PhD student, Thomas Holloway, who will be presenting his latest findings at the Society for Experimental Biology Meeting in Brighton on Wednesday July 6, 2016, also measured the temperatures at which blackgrass is most likely to germinate: "Blackgrass is a seasonal weed that germinates around spring and sometimes in summer," says Prof Leubner. "With a better understanding of the role of temperature

involved in blackgrass dormancy break and germination, we can go on to assess the biological mechanisms involved in this process and possibly design more targeted control strategies."

Smokewater is not yet widely used in the UK, though Prof Leubner believes it will be more common in future. "Along with climate change, we have other obstacles to weed control, such as herbicide resistance. Chemically manipulating weeds like blackgrass could help to overcome some of these obstacles in the coming years."

This poster will be presented by Thomas Holloway, Kazumi Nakabayashi and Prof Gerhard Leubner (Royal Holloway University of London, United Kingdom) at the annual meeting of the Society for Experimental Biology (SEB) in Brighton on Wednesday July 06, 2016.

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