



Straw Rake & Roll Trial



What is the problem?

Water destined for drinking water must adhere to the drinking water standards; an individual pesticide must not exceed 0.1µg/l (0.1ppb). This is an extremely small amount and can be equated to:

- 1 stem of hay in 111,000 bales
- 1 grain of wheat in 390 tonnes
- 1 second in 320 years
- 1p in £100million

Herbicides used to control blackgrass, a common arable weed, are often detected above the drinking water standard and some of those herbicides are difficult to treat by Anglian Water treatment work processes.

The situation presents problems for both the water company with pesticide detections and the agricultural sector with a problematic weed – it is important both sectors work together to find sustainable solutions.



Mechanical Weed Control Trial

Black-grass, can seriously reduce crop yields through competition for nutrients, On average, black-grass populations of 12 – 25 plants/m² cause yield losses of 0.4 – 0.8 t wheat /ha but losses can be much higher in conditions which favour black-grass (e.g. uncompetitive crops), up to 70% in the worst cases (CROPPROTECT).

To most effectively control black-grass a combination of cultural (mechanical) and chemical methods needs to be employed. One **mechanical method** of control that can be used in the black-grass control strategy is the **straw rake and roll**.

The Straw Rake and Roll works by **minimally disturbing the soil surface and allowing the black-grass to chit**.

It is **hypothesised that the more passes by the Rake and Roll, the greater the amount of black-grass that chits and therefore the bigger the chance of glyphosate killing off the black-grass seeds, prior to drilling**.

The greater the amount of black-grass that is killed off prior to drilling, the less that should come up once the crop is drilled, reducing overall black-grass burden for that crop.



Mechanical Weed Control Results

Autumn 2019 was exceptionally wet and accessing the land was difficult. The trial is being taken through Spring 2020 until harvest when results and conclusions will be reviewed. The trial is also being extended for a second year from Autumn 2020 into 2021.

Mechanical Slug Control Trial

The Rake and Roll is also suggested to be able to **control slugs** as the action of the **rake kills slug eggs** and also **distributes the straw** so that there is less clumps of straw sitting in patches for slugs to eat/hide under and to impede crop growth.

The aim is to go over the land **many times before drilling**- e.g. up to 5 times **ideally to keep killing the slug eggs as they emerge**. The stubble is then sprayed off and drilled the next crop into it.



Data from the autumn 2019 showed overall high slug pressure, with up to 85 slugs found in a single trap. Average slug numbers were lowest in the area that had received 2x passes with the Rake & Roll. In terms of black-grass control, although differences between treatments were seen, the results were not significant this season.

Anglian Water is carrying out ongoing trial into the efficacy of a Straw Rake and Roll to control slugs and black-grass. The trial began in autumn 2019 on two fields of heavy clay focusing on slug and blackgrass control and the trial will be repeated again in autumn 2020 looking at the efficacy of the straw Rake and Roll on different soil types using different straw rake models.



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More information about Anglian Water's work in catchment to improve the quality of our drinking water can be found at

<http://www.anglianwater.co.uk/environment/our-commitment/our-plans/catchment-management.aspx>

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