

THE ANNUAL BCPC WEED REVIEW 2016

Ken Pallett (Editorial Board Member)

The 53rd annual BCPC Weed Review “*Changing practices: improving weed control*” took place at Rothamsted Research on 10th November 2016, comprising an audience of 72 invited delegates.

In his chairman’s introduction, Jason Tatnell (Syngenta and Chair of the BCPC Weed Review) reminded the audience that the focus of the 2015 Review was the true cost of weed control and covered regulatory, environmental, political and technological considerations. This year’s focus followed on from these by addressing emerging responses to changes in weed control and adapting to the issues and threats.

The focus of the entire morning session was on cover crops, their role and practical perspectives from both agricultural and horticultural growers as well as impacts on weed control and environment. The session was ended with an open debate and discussion with questions from the audience. The afternoon session comprised three presentations on soil health and management, energy crops and non-agricultural weed control.

Paul Brown (Kings Seeds), in a presentation on cover crops and implications for weed control, started by reminding the audience that cover crops were not new and in the past were part of traditional crop rotations. Their use is now increasing. They are fast growing annuals, often preceding spring crops. They are usually a mixture of a cereal with one or more non-cereals, e.g. rye and vetch, oat and radish, oat and mustard. Sunflowers, Phacelia, linseed are also used. The benefits of their use include: nutrient capture; reducing run-off and leaching; improving soil structure; reducing cultivation costs; reducing weeds; and yield improvement. Data were presented showing reductions in nitrogen loss (an average of 73kg/ha) in cover crop trials compared to bare land and a 59% reduction in nitrogen loss with cover crops compared to over-winter stubble over a 6-year period. These benefits are not universal and are dependent on the cover crop itself and are farm- and environment-specific. Cover crops can also have Ecological Focus Area (EFA) benefits if a mix of cereals and a brassica. Fast biomass establishment is critical so early autumn sowing is important, although too-much biomass can be a challenge at cover crop termination, for which glyphosate remains the preferred chemical option.

Andrew Barr, a farmer from Kent, summarised his experiences over 10 years of conservational agriculture and experimenting with using cover crops. He emphasised that the key was an early establishment of the cover crop. One clear message was the variability in benefit between locations and differences between one year and the next.

Angela Huckle (ADAS) addressed weed suppression in horticultural crops. The same benefits were listed as in agricultural crops by Paul Brown. In a case study with commercial salad, weed suppression increased and the use of winter cover crops had a role in integrated weed management, although

weed control was stated as being secondary to the other benefits of using cover crops.

Mike Green (Natural England), Ian Pigott (OBE and farmer) and John Cussans (NIAB), joined the 3 speakers as an expert panel to address questions and to debate cover crops. Not surprisingly, several questions from the audience concerned the specific impacts of cover crops on weed management. It was stated that relief of weed suppression once the cover crop is terminated was likely to be maintained if there was minimal subsequent soil disturbance, although it was claimed that there was little evidence to support this statement. However, there is plenty of evidence showing that avoiding soil disturbance has a clear role in managing blackgrass (*Alopecurus myosuroides*). Allelopathy was mentioned as being a contributor to weed suppression but again data proving this are limited. The likelihood of the cover crop itself becoming a weed problem in following crops was identified as being a potential issue, although this was seen as a greater risk for mustard, Phacelia or buckwheat as cover crops. Avoiding the flowering of the cover crop would clearly reduce this potential risk although, as for other aspects of cover crops, there appears to be an absence of scientific data to support this. A number of downsides for cover crops were identified such as slugs, clubroot (*Plasmodiophora brassicae*) in brassicas, an issue identified if a brassica was also the following spring crop. The two main challenges were identified as getting the cover crops to grow then removing them the following Spring. One further issue for cover crops was stated as the quality of the seed, as there are less stringent certification standards for seed produced for cover crop use.

The afternoon comprised three presentations. Firstly, Kirk Hill (ADAS) addressed the principles, practices and benefits of maintaining good field drainage conditions and the role of drainage in weed management. Good drainage provides a better growing environment for the crop, a more rapid crop establishment and competition over weeds. It was stated that better drainage alone would not solve blackgrass problems - but it would help.

Chris Gamble (DLF, Trifolium) addressed anaerobic digestion (AD), the sustainability of energy crops and weed control issues. Biogas production via AD is primarily from manure and slurry, food and food waste, with crops and crop residues only a minor component. Currently, 2.5% of UK arable crops are used for biogas production via AD and this is projected to double. Crops and crop residues enhance biogas production and so it was concluded that there is a clear benefit of producing and including crop waste for AD. With respect to weed control, blackgrass and other weed seed is killed in AD and so it was also concluded that it has a role in weed management.

The final presentation dealt with non-agricultural weed control; Neil Strong from Network Rail, reviewed the current weed control practices on railways. One third of the UK

population lives within 500 metres of railway land and public opinion is a prominent consideration for weed management on railway track and surrounding areas. Options for weed control are principally limited to a combination of diflufenican and glyphosate, triclopyr or glyphosate alone. There is an opportunity to target chemical use better by using weed recognition technology. To avoid resistance, rotations of alternative herbicides are desirable and although non-chemical options are being investigated there is a reliance on the limited chemical solutions available.

The Review also provided a platform for young researchers to be exposed within the BCPC Weed Review community, with eight posters covering post-graduate research activities in the UK.

In the wrap-up, Jason Tatnell once again highlighted the need for change. A change in the system to increase diversity and to include cover crops, energy crops, as well as horticulture; changing the cropping environment to address soil drain-

age, nutrition and structure and to change the mindset from traditional rotation and to include taking AD into account.

I left the review feeling that there were more questions than answers concerning how to respond to the need for changes in the practices for future weed management. There is a clear need for further research to prove that new approaches lead to effective weed management, as highlighted above for cover crops where complexity of environment, climate and soil type need to be dissected to provide conclusions and recommendations for weed management.

I found the promotion of the post-graduate posters at the Review a very positive contribution which should continue to be encouraged. However, I am left with the feeling that we need far larger scale research programmes and initiatives to address the needs for new approaches to IWM to meet future challenges for agricultural and non-agricultural weed control.

Ken Pallett, 19th November 2016