



The BHU Future Farming Centre

Permanent Agriculture and Horticulture: Science and Extension

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Better than herbicides?

Herbicides have been the mainstay of weed management for over half a century, but they are on an inexorable downward trend due to: increasing resistance (especially in GE crops), a lack of new chemistry, increasing consumer intolerance and legislative prohibition. It is therefore becoming vitally important to develop alternative non-chemical weed control technologies. However, few non-chemical techniques provide the sledgehammer effect of herbicides, most are more like 'little hammers'.

There is, however, one non-chem approach that rivals, and can even outperform herbicides. Imagine a technology that was:

- broad spectrum, i.e. kills practically all weeds;
- had a residual period as long as the crop's production cycle;
- could be used in any crop;
- had a nil withholding period;
- had no risk of releasing xenobiotic materials into the environment;
- had exceptional reliability levels (i.e., always works); and
- had no risk of evolved resistance.

This is not a pipe-dream, and it can only be achieved using physical, not chemical control. Called, intrarow soil thermal weeding (ISTW), it was originally developed by scientists Denmark using steam, however, steam requires large expensive equipment and the fuel use is still quite high.

Research at the Future Farming Centre has demonstrated that hot air can be used instead of steam for soil heating, which Dr Charles Merfield, Head of the Future Farming Centre, says "The use of hot air dramatically simplifies the equipment needed for heat generation, so reducing capital costs, however, there is a double dividend, in that heat can be recycled from soil heated with hot air, which has the potential to slash fuel use." With the proof of concept research completed, Dr Merfield said "I am very keen to take this knowledge to the final stage of creating end-user ready machinery. Considering the silver-bullet list of abilities of ISTW, I consider it vital that this technology is put in the hands of growers and farmers, as soon as possible, so they have the assurance, that the hard old days before herbicides were invented don't return"

The full reports on ISTW are available from the FFC website at <http://www.bhu.org.nz/future-farming-centre/information/weed-management/istw> and an FFC Bulletin article at <http://www.bhu.org.nz/future-farming-centre/information/bulletin/2013-v2/better-than-herbicides>

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For further information please contact:

Dr Charles Merfield
Head of The BHU Future Farming Centre
www.bhu.org.nz/future-farming-centre
021 0231 8901
charles.merfield@bhu.org.nz

