



Glyphosate Resistance Confirmed in New Zealand

The first New Zealand case of glyphosate resistance has been confirmed in annual ryegrass on a Marlborough vineyard. The discovery was made as part of a project led by the Foundation of Arable Research (FAR) and funded by the Ministry for Primary Industries' Sustainable Farming Fund (SFF).

Resistance means that some individuals in the target species have developed a means of avoiding the effects of the chemical.

Mike Parker, Project Manager for the *Avoiding Glyphosate Resistance* team, says glyphosate is the most frequently used herbicide in New Zealand agriculture and although there have been some anecdotal reports of resistance, this is the first confirmed occurrence. He says the resistance finding should provide a wake-up call for all users of the broad spectrum weed killer.

FAR CEO Nick Pyke says at present it is an isolated case, but it is a warning to users of glyphosate that they need to be aware of the danger of resistance developing and be careful how they use it.

He says glyphosate is one of the most environmentally friendly herbicides on the market, and the repercussions of losing the use of it would be serious.

“Environmental repercussions would include the increased use of, and dependence on, less environmentally friendly herbicide options; greater dependence on more intensive cultivation leading to greater degradation of soil structure and soil health; and the risk of some weeds spreading as the cost of controlling them would increase.

“On-farm the impacts would include reduced income, due to increased chemical costs and reduced crop yields. Removing glyphosate from the suite of available chemicals would also increase the resistance pressure on other herbicides.”

Where and how was the Marlborough incidence identified?

Research and testing within the *Avoiding Glyphosate Resistance* project is being led by Dr Trevor James from AgResearch, and Dr Kerry Harrington of Massey University. Dr James explains that the Marlborough case was identified following a report from a chemical company.

“In the autumn of 2011 we received a call from a chemical company representative stating that glyphosate was not killing all the weeds, specifically some grasses, on a vineyard in Marlborough. We obtained some of the surviving plants and grew them on in the glasshouse until some of them set seed in autumn 2012. The seed we collected was then grown in the spring of 2012, and these plants treated with various rates of glyphosate. We found that nearly half the tested plants showed symptoms of glyphosate resistance.”

How to avoid development of glyphosate resistance

Dr Trevor James from AgResearch says the best way of avoiding glyphosate resistance is to ensure it is not the only chemical used on the same paddock year after year. Instead, he recommends mixing it with a herbicide from a different mode-of-action group every three or four years. This will kill any weeds that may be building up resistance.

Sector-specific strategies on avoiding resistance will be developed as part of the *Avoiding Glyphosate Resistance* project. Anyone who is aware of weed populations surviving glyphosate treatment should contact the group as soon as possible, so that testing and follow-up action can be taken.

Background information on herbicide resistance

- Since the 1970s there has been a steady increase in the numbers of weed developing herbicide resistance worldwide.
- There are now 393 confirmed resistant weed biotypes in 61 countries with an average of nine new cases being identified each year.
- The first case of weed resistance to a herbicide in New Zealand was recorded in 1982, when populations of faden (*Chenopodium album*) were found to be resistant to the chemical atrazine.
- The list of herbicide resistant weeds in this country now comprises ten confirmed cases, four of which are associated to perennial pastures.

The SFF *Avoiding Glyphosate Resistance* Project

The SFF-funded *Avoiding Glyphosate Resistance* Project is bringing together representatives from a range of agricultural and horticultural industries, chemical companies and regional authorities to highlight the problem and formulate and disseminate national and also sector-specific strategies for avoidance. It is led by Mike Parker of the Foundation of Arable Research.

Mr Parker says raising the level of awareness is critical.

“Unless all sectors work together, particularly with wind-dispersed seeds like fleabane, everyone is going to lose. The development of glyphosate-resistant weeds is rapidly occurring in other countries, hastened by repeated use around roadside markers, crop boundaries, vineyards and orchards.”

The co-funders for the SFF project include Foundation for Arable Research, DairyNZ, Vegetables Research and Innovation Board, Road Controlling Authority Forum NZ Inc., BASF, and Nufarm. In-kind assistance also comes from Waikato Regional Council.

Contact:

Anna Heslop
Communications Manager
Foundation for Arable Research
Phone 03 345 5783 or 027 960 058
heslopa@far.org.nz