

## WEED FILE: HERBICIDE RESISTANCE Part 2

*This Weed File continues from Part 1, which covered what herbicide resistance is, and how and why it happens.*

*Developed resistance affects many herbicides, but this Part 2 Weed File discusses glyphosate in particular.*



### WHAT TO WATCH FOR

The most common situation for a possible case of resistance is where you observe that a certain species (whether weed or grass) in a particular location has unexpectedly survived routine spray treatment. You've always used it in that location in the past, year after year, and it's always worked. Then suddenly it has a much reduced effect.

### GLYPHOSATE

Glyphosate resistance has been documented overseas since 1996, and alas it's also now confirmed in NZ. There are presently 29 weed species resistant to glyphosate world-wide and most of those species do occur in NZ.

Over the past 12 months sow thistle, windmill grass and Mucronate pigweed have been added to the international list of glyphosate-resistant species. Six species have now been confirmed to have site of action resistance (EPSPS gene). This usually conveys a high level of resistance on the species.

Wild oats is one of the most widespread resistant weeds, being found in fifteen countries.

A 4-year study in the USA showed that if a single resistant Palmer amaranth plant was allowed to 'escape' and set seed, in the third following year of crop production, complete crop failure occurred due to infestation of this weed.

### RYEGRASS

Annual ryegrass is now known to be resistant to glyphosate in eight countries, and perennial ryegrass in three countries. Glyphosate resistant ryegrass sites have now been confirmed in NZ, beginning with some Marlborough vineyards early last year.

### NZ RESEARCH

There's an ongoing major study into glyphosate resistance in NZ, conducted by the Foundation for Arable Research in conjunction with AgResearch. They're investigating and documenting the extent of the problem, and developing strategies to best contain or avoid it.



### WHAT TO DO?

The solution lies in treating affected sites with a herbicide having a *different mode of action* which also kills the target species but *including* its sub-population that has developed resistance to the original herbicide. In the case of ryegrass, a 2-3 year programme with an alternative herbicide will break the chain successfully, because ryegrass seeds don't last longer than 3 years in the soil.

### GLYPHOSATE ALTERNATIVES

This can be tricky because for many situations there's really nothing else that offers the same four advantages of glyphosate (low cost, very safe, non-selective, and no residual effect). There are alternative herbicides that give you two of those benefits, or maybe even three, but nothing else really has all four benefits. So to substitute something else for your glyphosate, you'll likely have to compromise on at least one of them.

What you use as an alternative depends on the situation, the location, the weed species affected, and what you're planning to do with the site after spraying. **Contact Rainbow & Brown and give us the details of your situation, we'll make some reasoned recommendations about alternatives, and their pros & cons.**

### JUMPING TO CONCLUSIONS

And one final word: just because you've had a poor kill against a particular weed doesn't automatically mean it's got to be a case of developed herbicide resistance. Lots of factors can affect the kill rate and sometimes, with any herbicide, you can get an unusually poor result for no apparent reason at all! But if it happens twice, then herbicide resistance has got to be considered. **Call Rainbow & Brown with all the details, and we'll get the weed resistance experts to have a look at it.**

