Prolonging glyphosate use in vineyards

Vineyard
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Vine Talk with Dave Antrobus

Across Australia, weeds resistant to herbicides are popping up everywhere. With our changing farming systems, glyphosate is ‘at risk’ with a significant number of resistant populations now appearing along roadside verges, under fence lines, in irrigation channels, orchards, driveways, railway lines, around buildings, in vegetable gardens and even on airstrips.

According to the Glyphosate Sustainability Working Group, factors that increase the risk of developing herbicide resistance in vineyards are:

- Continual reliance on glyphosate for weed control under vines;
- Not enough use of alternative herbicide modes of action including residual herbicides;
- Lack of non-herbicide weed control methods such as mowing, mulching, tillage or grazing;
- Allowing weed control escapees to set seed;
- Entering spring with high weed numbers;
- Poor vineyard hygiene (contaminated machinery, vehicles and livestock coming onto the property) leading to movement of herbicide resistant weed seed;
- Lack of competition from inter-row cover crops; and
- Poor application technique leading to sub-lethal rates of herbicide at the ends of rows (poor control = more weeds).

In the coming months, a golden opportunity will present itself in the form of the herbicide double-knock. Used extensively in broadacre farming, the double-knock technique utilises two different herbicide modes of action. Generally, it involves applying glyphosate followed by either GRAMOXONE® or SPRAY.SEED® five to ten days later. It can be a very useful tool, when done

correctly.

In theory, if any weeds survive, or are resistant to the first glyphosate application, they will be controlled by the second herbicide application, or ‘double-knock’.

In 2003, former Australian Herbicide Resistance Initiative (AHRI) researcher, Paul Neve, and Art Diggle from the Department of Agriculture and Food of Western Australia, built a computer model to determine the probability of glyphosate resistance evolving to a range of knock-down strategies. History has shown their model to be quite accurate. The model predicted that after 12 years of continuous glyphosate use, the probability of resistance begins to increase and glyphosate resistant ryegrass would start to escalate if glyphosate was over-relied on.

Paul and Art also modelled some alternative strategies such as rotating between glyphosate and paraquat, which reduced the probability of glyphosate resistance evolving, however the double-knock technique emerged as a clear winner.

The herbicide double-knock is very effective at controlling large, hard-to-kill weeds, including those that may remain from uncontrolled summer germinations.

When applying a double-knock, use high water rates for the GRAMOXONE or SPRAY.SEED products to achieve effective herbicide weed coverage.

Growers should use a robust glyphosate rate every time it is sprayed and double-knock with a robust rate of paraquat or SPRAY.SEED.

For more information contact:
Dave Antrobus
Solutions Development Lead
Syngenta
E: Dave.Antrobus@syngenta.com
M: 0429 133 436

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