Wild Radish Control: Product Timing

Bayer

Aim:

To evaluate a range of herbicides for their efficacy of wild radish control in wheat.

Background:

Wild Radish (*Raphanus raphanistrum*) is a weed of growing concern for many on the Northern Yorke Peninsula. It can have multiple germinations throughout the year and is increasingly becoming resistant to Group B and Group I herbicides. Resistance has been building through the use of cheaper herbicides at rates that are often not enough to kill larger weeds. Recently there has been an increased interest in utilising more effective herbicides such as Velocity. This trial looks at various timings of common herbicides and observes their effects on controlling wild radish.

Details:

Planting Date: 10th May

Radish Density: 22plants/m²

Application Dates: 1st July (2-4 leaf radish, Z30), 6th Aug (8 leaf radish, Z33), 5th Sept (early flower)

GSR & Soil Type: 247mm. Sandy loam with high soil moisture at planting

Trial Size: Replicated 4 times. Harvested plot size 10 x1.35m

Results:

Table 4. Summary of weed control & yield assessments.

Early Post -Em. Trt.	Rate / ha	Late Post-Em Trt.	Rate /ha	Radish control* 16th Oct.	Mean Yield T/ha	Yield % of UTC
Velocity	1.0L			9.0	2.42 a	128
		Precept	2.0L	10.0	2.42 ab	128
Velocity	0.5L			8.8	2.13 bc	112
		Conclude	0.7L	9.0	2.12 bc	112
		2,4-D Amine 700	1.25L	9.0	2.11 c	111
Velocity	0.5L	Precept	1.0L	10.0	2.06 c	109
		Tigrex	1.0L	8.3	2.01 c	106
		Flight	0.72L	8.3	1.97 c	104
		Eclipse + MCPA LVE	0.05 + 0.5L	10.0	1.96 c	104
		Tigrex	0.75L	10.0	1.96 c	104
UTC				0.0	1.89 c	100
			Co-efficient of Variation	**14%**	**13%**	
			LSD 5%	**1.26**	**0.3**	

- Means followed by the same letter do not significantly differ.
- 8 leaf radish treatments are in blue, early radish flowering treatments are in red.
- * Assessment scale: 10 = 100% control, 8 = some weeds still growing even if affected by herbicide 0 = no control.

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Table 5. Summary 2013 & 2014 yield assessments.

Early Post-Em. Trt.	Rate /ha	Late Post-Em Trt.	Rate /ha	2013 + 2014 Ave. Yield % of UTC	Cost of Treat. ($/ha)	Return ($/ha)
Velocity	1.0L			127	$34.6	$87
		Precept	2.0L	127	$34.1	$85
Velocity	0.5L	Precept	1.0L	119	$34.4	$52
Velocity	0.5L	Tigrex	0.75L	118	$27.2	$54
Velocity	0.5L			112	$18.9	$32
		Conclude	0.7L	111	$12.7	$36
		2,4-D Amine 700	1.25L	110	$7.0	$39
		Tigrex	1.0L	106	$11.2	$13
		Flight	0.72L	103	$24.0	-$10
		Eclipse + MCPA LVE	0.05 + 0.5L	103	$18.8	-$5
UTC				100	$0.0	$0

- Return is the average APW yield increase over the untreated (@ $270/T) minus the cost of product (including Uptake). All figures GST Ex.

Discussion:
The location of this trial on the mid slope of a sandhill saw a reasonable distribution of wild radish across the site, however, as often occurs, there were clumps of radish seedlings that were denser in some plots. Thus the assessment of weed control was left late in the season where a visual rating was given, rather than an actual number of surviving weeds. Also, with the dry spring finish to the season, the wheat suffered in the sandy soil and yield results were somewhat variable between plots.

As this was the second year this trial has been conducted in similar situations, there are some trends that are showing. Table 5 gives the summary of the percentage yield increase averaged from 2013 and 2014 of the various treatments. When combined with the cost of the treatments and indicative return can be observed.

The summary in table 5 indicates that the use of a herbicide when the radish is at 2-4 leaf and not being shaded by the growing crop to any great extent, is the optimum time to control this weed. Whilst later applications can be effective, they generally will control less wild radish, partly because there is more shading from the crop, and thus less herbicide hitting the target, and partly because a bigger weed is essentially more robust at surviving the herbicide that does make it to the leaves (see photo 5 below).

In the two seasons that this trial has been conducted, there has been a noticeable “shut-off” in regards to spring rain, which has led to plots with surviving weeds competing for valuable moisture. Wild radish can rapidly grow to a large size during the cropping season and has a root system that can extract moisture from a wide area. Thus, in a plot that has even 2 or 3 weeds, the impact on crop yields can be great.

When an early tillering application is missed and a later application prior to first node is required, then applying a robust rate of Precept is shown to be quite efficacious. In this trial in 2014, the application timing was a bit late as the 3rd node was noticeable on a number of stems which is out of the typical application window for a number of herbicides. However, no noticeable crop effect was observed, nor any deformed heads in the harvest sample.

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Discussion Continued:
Generally, the herbicides that performed poorly in the summary table are all reliant on Group B and/or Group I herbicides. The exception is Flight, which to be fair, could have been applied earlier than it was. Other trials have shown that when applied early, it can have a great effect on controlling wild radish and be very economic to apply.

Whilst no specific testing occurred at these sites for herbicide resistance, the fact that some weeds were not killed by these herbicides is good reason to suspect resistance to these groups. Another generalization from the summary data shows that a cheaper herbicide mix does not control wild radish as well as more expensive ones. This is not a necessarily a recommendation to use herbicides that are more expensive, rather by understanding the herbicide resistance level and the weed numbers, an appropriately priced herbicide program can be put in place to cost effectively control wild radish.

Finally, full label rates of either Precept or Velocity easily out performed the “half” rates of either. The full label rates applied with just one timing also outperformed the “split” application of lower rates. This is a solid message about hitting weeds, particularly hard-to-kill ones like wild radish, with robust rates.

Take Home Points:

- Wild radish is a potentially significant problem in the NSS region.
- It germinates throughout the year and has seeds that can persist in the soil for many years.
- Controlling wild radish early with a robust herbicide is the best option.
- Understand what active’s are in the herbicides you are using so that you can rotate the groups to maximize the life of the herbicides and minimize resistance.
- When spraying late in the season, read the labels to ensure you are using a product that suits the stage of crop and that you follow withholding periods.
- Look to do a late salvage spray for weeds that have survived the first application.
- Do not rely solely on a late 2,4-D Amine application to control weeds in crop, they will be very large, and unlikely to die prior to putting out viable seeds.
- Understand resistance status of your wild radish (& other weeds) by testing @ Plant Science Consulting.
- Keep an eye on summer germinating wild radish to ensure it doesn’t go to seed.