

The Effect of Seed Treatment and Depth of Sowing on Forage Brassica Crop Establishment in No-Tillage Situations

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Introduction

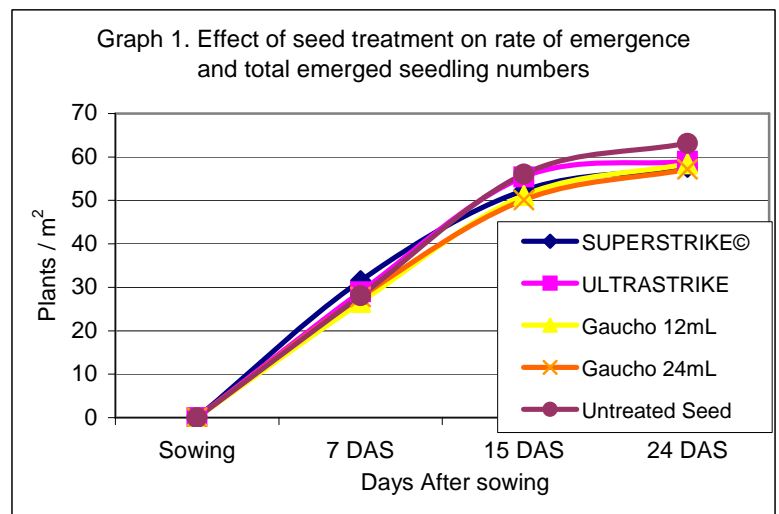
Brassica forage crops provide farmers with a large amount of high quality feed (high in energy and protein) for their stock and should be considered in any situation where "pasture quantity or quality" is limiting the potential of livestock. When a brassica forage crop doesn't reach its maximum yield potential it can affect crop profitability. One area that can have large influences are the management practices occurring around establishment; including paddock preparation, sowing and post-emergence management.

Concerns with unreliable establishment prompted an investigation to determine if current commercially-used brassica seed treatments or depth of seed placement at sowing affected the rate of emergence of establishing forage brassica crops. Three trials were sown on 12 November 2004 at the AgResearch Aorangi Research Station near Feilding, Manawatu.

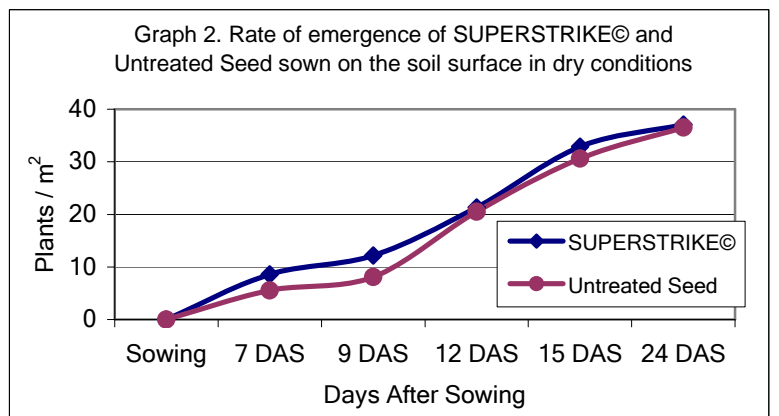
For each trial, a single seed line of the turnip cultivar, Barkant™, was sown by no-tillage in conditions managed to minimise invertebrate pressure. (See Table 1 for details of seed treatment product registration claims). Rate of emergence was measured by seedling counts taken at multiple stages over the first 24 days after sowing. Trials 1 and 2 contained an untreated control.

Trials & Results

Trial 1 tested the effect of seed treatment (SUPERSTRIKE®, ULTRASTRIKE™, Gaucho® and untreated seed) on seed sown at a depth of 10mm. Results of this trial showed that although there were slight differences in early rates of emergence (7 days after sowing), there was no difference in total number of seedlings emerged between any of the seed treatments and the untreated control sown into a seedbed free from invertebrate pests (Graph 1).

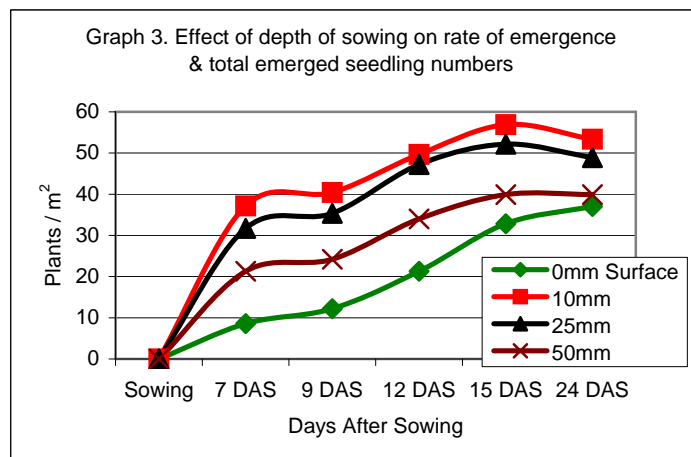


Trial 2 tested the effect on the rate of emergence of sowing SUPERSTRIKE® treated seed and the untreated control on the soil surface (0mm). Results showed that initially the SUPERSTRIKE® treated seed had an advantage in rate of emergence (7 & 9 days after sowing) but by 12 days after sowing there was no significant difference, nor was there a difference in total number of seedlings emerged at the final count, 24 days after sowing (Graph 2).



Trials & Results (continued)

Trial 3 tested the effect of sowing depth (0mm (surface), 10mm, 25mm & 50mm) on the rate of emergence and total seedling emergence. Initial results showed that seed sown at a depth of 10mm was faster to emerge (7 days after sowing). Subsequent counts established that 10mm and 25mm depths had equivalent rates of emergence and had reached the highest total number of seedlings emerged by 15 days after sowing (Graph 3). Surface sown seed (0mm) or seed sown at depth (50mm) had a slower rate of emergence and lower total numbers emerging.



Summary

In conditions managed to minimise invertebrate pest pressure:

- Treated seed (SUPERSTRIKE®, ULTRASTRIKE™ and Gaucho®) emerged at the same rate as the untreated control when sown at a depth of 10mm.
- Treated Seed (SUPERSTRIKE®) emerged at the same rate as untreated seed when sown on the soil surface, in conditions considered to be relatively dry.
- **The optimum sowing depth for forage brassica seed is 10mm**, with seedling emergence substantially reduced when sown below 25mm or on the soil surface (0mm).

Table 1: Comparison of Brassica Seed Treatment Options (not published in journal)

Seed Treatment	Invertebrates				Fungal Pathogens			Additives			
	Springtails	ASW	Aphids	Nysius	Fusarium	Pythium	Rhizoctonia solani	Nutrients	Bird Repellent	Weight Buildup	Sowing Rate
SUPERSTRIKE®	Y	-	-	-	Y	Y	Y	Molybdenum	Y	10%	Same as untreated seed
ULTRASTRIKE™	Y	Y	Y 10 weeks	Y	Y	Y	Y	Molybdenum	Y	Nil	Same as untreated seed
Gaucho® 12ml/kg	Y	Y	Y 8 weeks	Y	-	-	-	-	-	Nil	Same as untreated seed

