

Increased apple rootstock growth with the application of soil biostimulant Mycorrcin

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Key words

Apple rootstock, increased growth, Mycorrcin

Overview

- Richard McKenzie has had over 28 years experience in orcharding, producing over 200,000 root stock annually
- The M116 are notorious for being difficult to establish and slow to push roots.
- Richard's main aim is to produce a well-rooted rootstock that his customers can then graft and plant out.
- The program used was 10lt/ha Mycorrcin applied to the rows 4 weeks prior to initial bed formation. A further 10lt/ha is applied once the beds have been formed. Only M116 and half of the M9 rows were treated.
- 4lt/ha of Digester was used early winter



Peter Roberts of Fruitfed Supplies with Richard McKenzie inspecting the new growth on one of the Mycorrcin treated beds

Results

Pack out M9(719) FSV

	2002	2003	2004	2005	2006	2007	2008
+10mm	1125	1600	1475		779	1175	3150
8-10mm	1250	1825	2000		1475	1175	3475
6-8mm	2050	2175	3025		1950	1825	2200
4-6mm	2050	1900	3900		1900	1750	1075
4-5mm	-	-	900		1550	1750	-
Total	6475	7500	11300	12600	7700	7675	9900

This table tracks production for the last 7 years. Only half the M9 beds were treated with Mycorrcin in 2008.

Pack out M116 FSV

	2002	2003	2004	2005	2006	2007	2008
+10mm	525	2175	3175		3975	3050	3675
8-10mm	1175	3625	4125		3250	3350	3675
6-8mm	2425	3725	4675		3275	4450	6775
4-6mm	1075	3450	3800		3050	3400	4650
4-5mm	950	650	550		3000	3500	1200
Total	6150	13625	16325	13629	18875	17750	19975

This table tracks production since 2002. Mycorrcin was applied to all the beds in 2008

Observations

- The 2008 season has seen good growing conditions. When compared to other good growing seasons the 2008 results are still impressive.
- At lifting the treated bed's roots stocks had developed significantly more rooting sites and were higher up the base of the stem. There were significantly more root branches and fine roots stems from the treated beds.
- Treated beds have earlier leaf emergence
- The treated beds packed out more stems in the ideal 6-8mm diameter range.
- The digester application quickly broke down the leaf litter. This enabled this season's growth an unobstructed route to the surface. Previously a gluggy mat of decomposing leaves had to be raked from the surface to enable the unhindered growth of new shoots.
- Richard will be expanding the Mycorrcin program across the whole orchard this year including his M9s and M106s

Root stocks at lifting



Untreated M116 root stock have sprouted only a few spindly roots.



Treated M116 root stock have sprouted a thick root mass with abundant fine roots.

Early spring emergence



Untreated M116 rows are still dormant and show few signs of spring leaf emergence



This photo taken on the same day as the one above shows Treated M116 rows have had earlier leaf emergence

Conclusion

- Mycorrhizae increased total production for the M116 by 5,583 root stocks over the previous 6 year average.
- Where only half the M9 beds were treated, Mycorrhizae increased production by 1,025 root stocks over the previous 6 year average.
- Mycorrhizae has shifted production into the higher diameter root stocks for both M116 and M9.
- Mycorrhizae has increased root mass of both primary and fine roots.
- Mycorrhizae has encouraged earlier spring leaf emergence.
- Digester increased the decomposition of leaf litter under the mother plants.