

Focus Orchard Trial: Replant – Comparing fumigants and bioinoculants.

Orchard: Three Bridges

Orchardist: Kevin and Peter Sanders

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Trial details

The Block

2 year old Ruby Pink on M9 planted on 12 November 2012 at a spacing of 4 m by 0.6 m on V trellis (4744 trees/ha). Transplanting from the nursery at 2 years old is a common practice at Sanders' orchard.



The Question

Many fumigants and bio inoculants, also called root promoters, are available on the market. Which of them will maximize healthy root development and growth on a replant block during the critical year of transplanting in the orchard?

The Treatments

Rows	1-2	3-4	5	6	7-12	13-32	33-35
Treatments	Double dose Basamid + Radifarm	Basamid + Radifarm	Basamid + Plantmate + Radifarm	Basamid + Radifarm	Basamid + Plantmate + Radifarm	Chloropicrin + Plantmate + Radifarm	Chloropicrin

Treatment 1	Treatment 2	Treatment 3	Treatment 4	Treatment 5
Row 2 - Bay 6	Row 4 - bay 3	Row 9 - Bay 3	Row 21 - Bay 3	Row 33 - Bay 3

No control: This replant trial had already been set up by the grower when it was selected as a Future Orchard trial.

Every treatment is one bay containing 9 trees each, except for treatment 1 which contains only 8 trees.

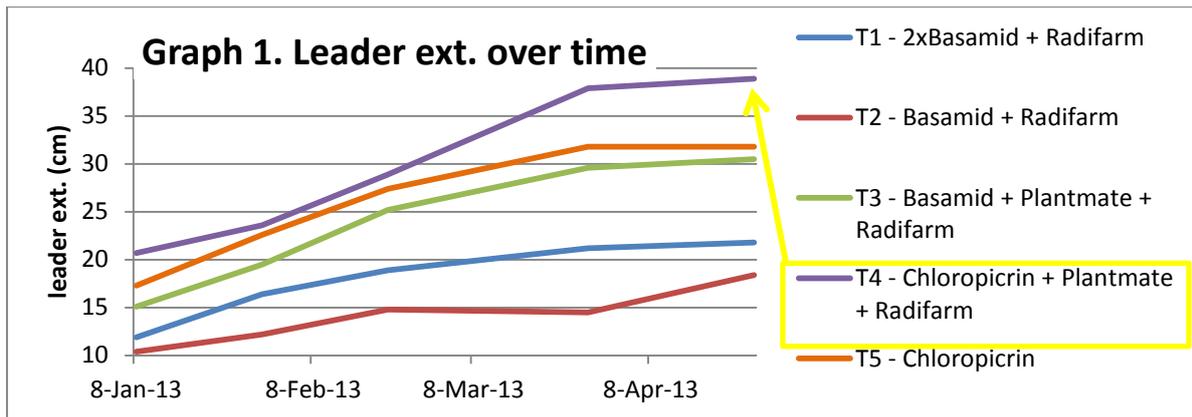
Technical Information

Label information	
RadiFarm	Root promotor and helps overcome transplant stress Contains vitamins, amino acids, steroid glucosides, betaines, polysaccharides and microelements
Plant Mate	Root zone booster Contains multiple strains of trichoderma harzianum and nutrients
Chloropicrin	Fumigant Contains chloropicrin (98.5%)
Basamid	Fumigant Contains Basomet (98-100%)

The results

General leader extension yields were disappointing in this block this year, partly due to a late transplant on 12 November. Meteorological conditions forced Sanders to wait until 12 November to transplant the 2 year old trees from the nursery. Graph 1 below shows distinctively better growth with treatment 4; Plantmate and Radifarm bio inoculants added to Chloropicrin fumigant with an average leader extension of 38.9 cm over the treatment.

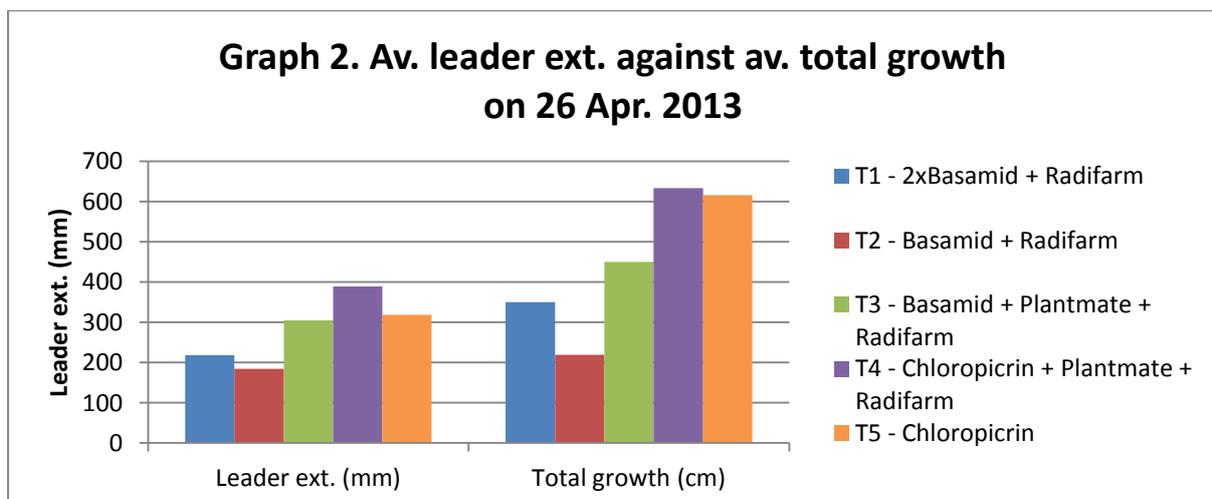




All three treatments with Basamid finished the season last in terms of leader extension, including the double rate Basamid treatment with an average of only 21.8 cm growth. When Plantmate and Radifarm bio inoculants were added to Basamid, trees yielded a leader extension close to Chloropicrin by itself (30.5 cm and 31.8 cm respectively). The Basamid and Radifarm combination showed the least growth out of all five treatments with an average of only 18.4 cm.

In addition to the treatments implemented prior to transplant, gibberellic acid was applied at 400ppm on Basamid treatments (treatments 1, 2 and 3) on 14 February when it was observed that general leader extension was disappointing.

Five leader extension measurements were taken on 9 trees per treatment (8 for treatment 1) throughout the season, following the apical growth curve from 8 January '12 until 26 April '13. The final measurement also included total growth on 3 trees per treatment. Short spurs were not included in the total growth. Graph 2 demonstrates that total growth and leader extension are directly related. As expected, none of the five treatments led into a disproportionately high total growth to leader extension ratio.



One must be attentive to product label when planning to fumigate:

PURCHASING CHLOROPICRIN

To purchase chloropicrin you will need to show you have completed the required training as specified in the WorkCover exemption for the on-farm use of fumigants.

In other words, a grower will most likely need to pay an accredited person to apply Chloropicrin. For this specific reason, application cost per hectare will vary depending on that person's costs.

Costs

The table below gives an example of the costs involved with these two fumigants and two bio inoculants.

Fumigants	Cost/ha	
Chloropicrin	\$12,000 - \$15,000	Varies with trained applicant
Basamid	\$7,725.00	
Bio inoculants		
Plantmate Granule	\$240 - \$1,290	Based on 3000 trees/ha at 5-25g/tree
Radifarm	\$7.20 - \$10.80	200-300mL/ha

Summary

- Growth over the entire site is below target probably due to the late planting date.
- Chloropicrin was superior to Basamid as a soil sterilant.
- As there was no control it is unknown as the whether the Basamid gave any growth promotion at all.
- The combined treatment of Chloropicrin, Plantmate and Raifarm was the best overall treatment

