

Vineyard Planning for Rehabilitation of the Fonthill Sand and Gravel Pit

Principal Investigator: Martin Smith

2009 Research Team: Mackenzie Brisbois, Sarah Lepp, Shay Agmon and Alex Hunchak

2008 Research Team: Brent Abernethy, William Barnes, Tracy Boese, and Sean Jones

Introduction

Lafarge Canada Inc. and Niagara College have been investigating the feasibility of constructing a productive vineyard. Analysis of the site has included research on weather, soil, topography and construction capital and operating costs. The overall goal is to plant a vineyard that will rehabilitate the land while increasing its value. An experimental vineyard will be planted to test the success of vine growth and to discover any challenges. A small test plot, planted in 2009, is being monitored in order to make future decisions about a larger vineyard. Current areas of concern include cold winter weather, high soil pH as well as soil compaction.

Test Plot

A test plot of 20 Riesling vines, grafted onto SO4 rootstock, was planted in June 2009. SO4 rootstock was chosen for its suitability to the soil type. The location of the test plot is a portion of the site that experiences some of the coldest temperatures throughout the winter.

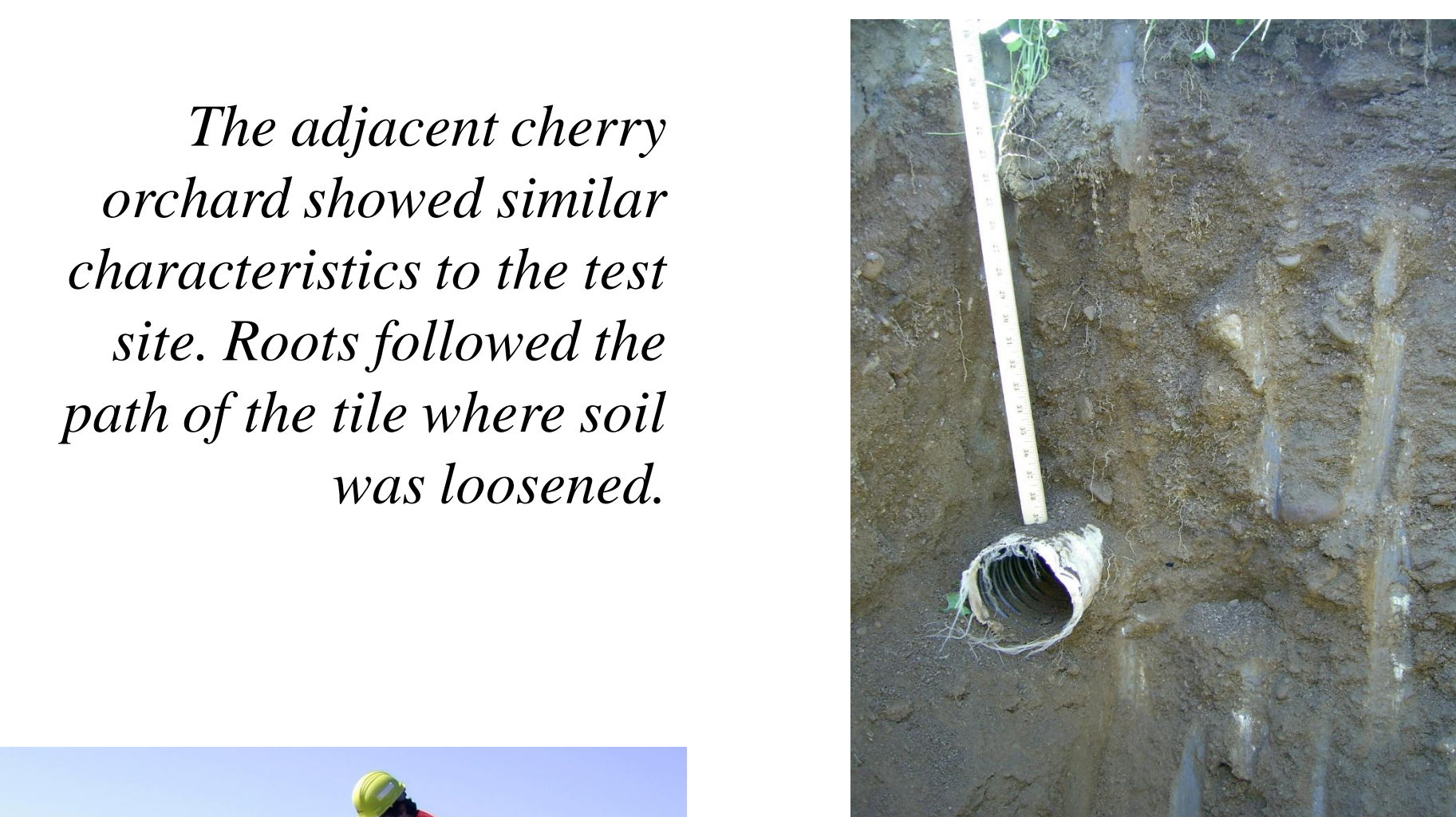


Methods

Soil samples were taken in both 2008 and 2009. Samples were taken from the proposed vineyard site, an adjacent cherry orchard and an existing on-site vineyard in an area of undisturbed soil. The overall pH is quite high for grape growth, ranging from 7.5 to 8.5. Careful observation of vines will be conducted to determine the need of foliar fertilizers. Compaction was discovered at all three sampling locations and may present a barrier to adequate root penetration.



In this photo compaction spans from a depth of approximately 25 cm to 45 cm

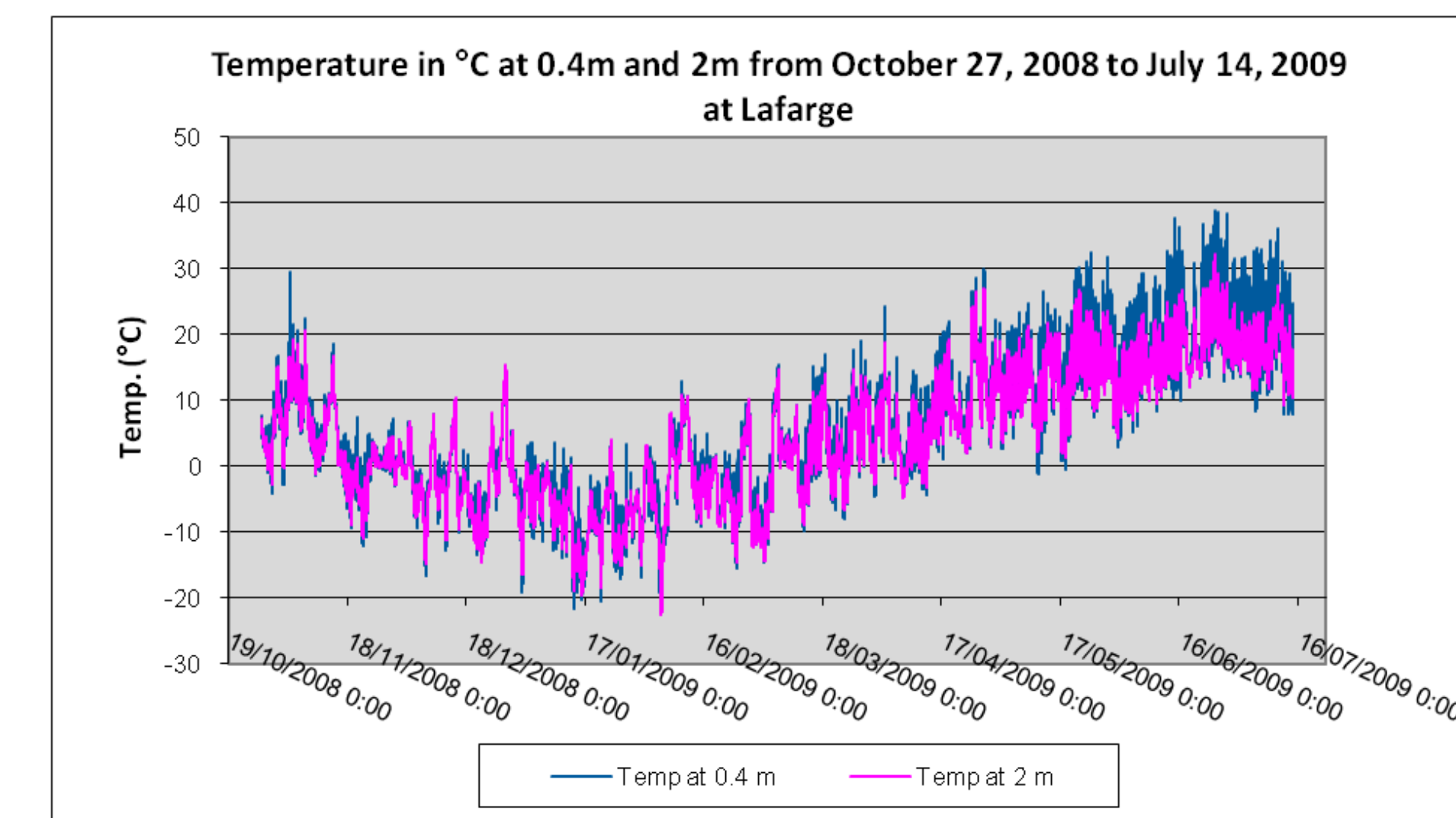


The adjacent cherry orchard showed similar characteristics to the test site. Roots followed the path of the tile where soil was loosened.

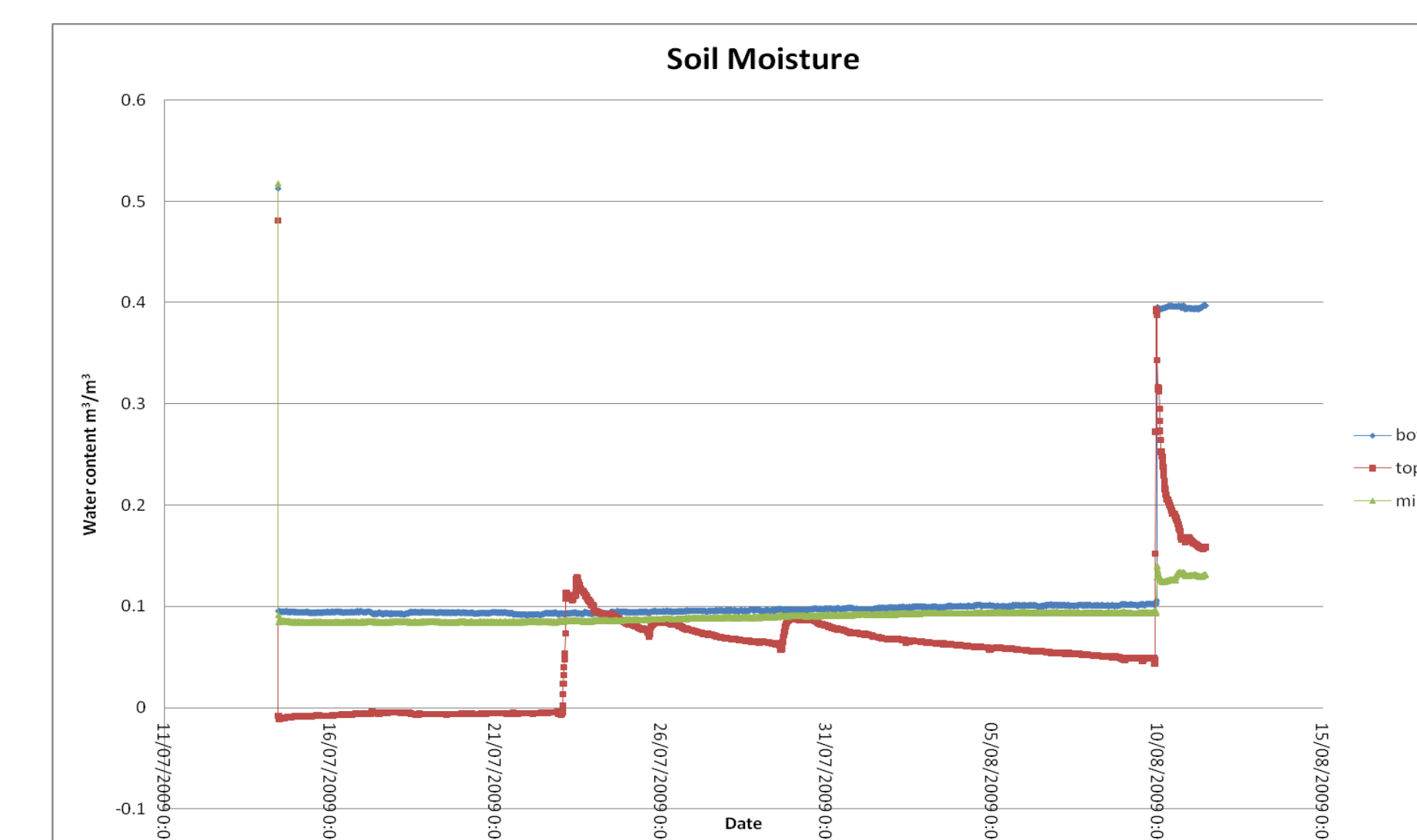


Weeds at the test plot were manually removed from around the young vines each week throughout the summer.

Weather data has been collected since the summer of 2008. Winter cold events and spring frosts have been identified along with the coldest locations on site. The coldest temperatures are being used to help identify the varieties to be planted.



The weather station located onsite was outfitted with three soil moisture probes in July 2009. The probes were placed at 25 cm, 90 cm and 140 cm. A compacted layer exists between 90 and 140 cm. The initial readings show moisture to be constant just below the compaction. The probe located above the compaction dries out very quickly. Prior to planting, soil should be deep ripped to help the young roots grow deeper, towards the moisture.



Pest Management

In 2009 several pests attacked the new vines, including rodents, deer and Japanese beetles. Furthermore, both downy and powdery mildew have become problems. To cope with pests an electric fence was installed and an integrated pest management plan is being developed.



The photos above show the damage caused by Japanese beetles.

Conclusion

Vineyards in the Niagara region will always face possible winter injury. A vineyard at Lafarge will face problems with cold weather as well as with soil pH and soil compaction. Research thus far has allowed for a better understanding of the site which will help with rehabilitation and the feasibility of constructing a productive and healthy vineyard.

Acknowledgements

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