

ADOPT

Agricultural Demonstration of Practices and Technologies

Final Report – Jan 31, 2011

ADOPT Project #20090517

Varietal Selections of Dwarfing Winter Hardy Apple Rootstock.

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Objectives

This demonstration compared five of the latest varieties of dwarfing apple rootstock grown under Saskatchewan conditions. This demonstration was to provide producers with the opportunity to evaluate the winter hardiness and susceptibility to disease of these new varieties.

Rationale:

At present, dwarfing apple rootstock is not winter-hardy enough for Saskatchewan growing conditions and has some disease issues. Once identified, a truly winter-hardy dwarfing apple rootstock will reduce the risk of crop loss due to our winters and entice more producers to try this crop. This project demonstrated several new and alternative varieties that have not been widely available in the marketplace to date.

Materials and Methods:

Five different varieties of potentially winter-hardy apple rootstock were selected for planting in trial plots at the Conservation Learning Centre. Plantings at a second demonstration site north of Henribourg, Sk. will push the winter hardiness parameters, as it is one zone colder than at the CLC.

In May 2010 trees from each of four new varieties were planted at both the CLC and the Henribourg sites. The varieties planted were: Geneva 11, Geneva 16, Geneva 202, and M26 EMLA. The plot design, shown below in Figure 1, consisted of three rows with rows 8' apart and trees 5' apart within the row. Each varietal test unit consisting of 5 trees was repeated within each row for a total of 15 trees per variety over the three rows.



Figure 1. Plot design.

<u>Conservation Learning Centre</u>					
Row 3	G16 5 trees	G11 5 trees	M26 5 trees	V 5 trees	G202 5 trees
Row 2	G202 5 trees	V 5 trees	G11 5 trees	G16 5 trees	M26 5 trees
Row 1	G11 5 trees	M26 5 trees	G16 5 trees	G202 5 trees	V 5 trees
<u>Henribourg</u>					
Row 1	G202 5 trees	G16 5 trees	M26 5 trees	G11 5 trees	V 5 trees
Row 2	G16 5 trees	V 5 trees	G11 5 trees	M26 5 trees	G202 5 trees
Row 3	G11 5 trees	M26 5 trees	G16 5 trees	G202 5 trees	V 5 trees

Trees were irrigated as required with no amendments or fertilizers added. Each row was pre-worked with a rotoator to ensure a well aerated soil for root development. The first year's weed control within the rows was done by hand and between the rows was sprayed with glyphosate using an Enviromist.

Funding for this project was not secured in time to take advantage of early orders of rootstock. As a result, most suppliers were sold out of most of their stock and the CLC received varied quality levels of rooted material.

The acquisition of "V" line root material which was to be supplied by the U of S, was further delayed as "permission to propagate" was secured from Agriculture Canada. This delay will see this rootstock planted in the spring of 2011.



Results:

Variations in rootmass between the varieties appear to have had an effect on winter hardiness.

As this project deals with long-term perennial winter hardiness, a full assessment of varietal differences will be years away.

Initial observations taken in the first season suggest significant differences between the rootstocks.

- It appears M26 EMLA rooted quite well with Geneva 11 and 16 displaying less bud break, causing less vegetative growth.
- Material with the most rootmass rooted and flushed very well. Geneva 202, with minimal root mass struggled.
- Fruit budding was scheduled to start in Aug 2010, but delayed budding in some varieties appears linked to lack of rootmass on the plantings.

The Henribourg site was prone to deer browse as the wet spring conditions did not allow for the installation of the deer fence, with replacements required. This browse seems to have little effect as it was just the apical bud that was browsed. Wet conditions, along with variable root establishment, delayed fruit budding which is now expected in 2011.

Conclusion:

Receiving root stock so late in the season did not allow us to obtain consistent quality of rooted material, i.e. there was considerable variation in the amount and quality of the rootmass attached to the planting stalk. Some of the smaller rooted stock needing replacement. Initial observations suggest that the plantings with larger amounts of rootmass survived the 1st growing season better than those with less rootmass.

The CLC will continue to maintain and observe these plots beyond the time frame of this ADOPT project which has a completion date of January 15, 2011.

Tech Transfer:

Field Days:

Conservation Learning Centre – Annual Field Day – July 13th - 82 people
Conservation Learning Centre – producer visits during growing season – 3 people

Presentation by **Curtis Braaten** (Conservation Learning Centre) in March at Crop Talk 2011 in Prince Albert – 60 in attendance



Report on the project to be posted on our website

www.conservationlearningcentre.com

Supporting Information

Acknowledgements:

We would like to express our gratitude to the Ministry of Agriculture for the funding support and in-kind support with this project. To recognize the ADOPT program and the Ministry we had signage at the sites.

Abstract

Four new varieties of dwarfing apple rootstock were planted in May 2010 to demonstrate and evaluate their winter hardiness and disease resistance under Saskatchewan growing conditions. Plots were established at the Conservation Learning Centre (Prince Albert, SK.) and at Henribourg, Sk. A fifth variety will be incorporated into the plots in 2011.

First year results appear to be related, in-part, to the quality/quantity of rootmass on the planting material that was received. Funding for this project was not secured in time to take advantage of early orders of rootstock. As a result, most suppliers were sold out of most of their stock and the CLC received varied quality levels of rooted material.

Initial observations taken in the first season suggest significant differences between the rootstocks.

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Finances*Budget reporting categories:*

	Expenditures	Approved Budget
Salaries and Benefits		
• Students/contracts	500	
• Postdoctoral / Research Associates		
• Technical / Professional Assistants	1185	1285
Consultant Fees & Contractual Services	100	600
Rental Costs		
• Rentals	450	1300
Materials / Supplies	940	500
Project Travel		
• Field Work		
• Collaborations/consultations	610	610
Other		
• Field Day	200	200
• Administration	300	300
• Miscellaneous		
Total	4285	4795

Description of Finance Amounts**Salaries: all labour to conduct trial at research locations including**

Layout, hand planting, hand weeding, watering
\$400 in-kind contribution from the U of S

Contractual Service:

all labour to analyze, write report, and develop presentation of results for tech transfer.

Equipment Rental:

Includes tractor, sprayer, and tiller for both locations

Materials and Supplies:

Rootstock, glyphosate, Casaron, fruit buds, budding tape, signage

Collaborations:

Fruit budding at both sites

Administration - \$300

Field Days – field day at \$200

