

Performance summary

Nemaguard was not among the top seven highest performing rootstocks in terms of cumulative yield but had similar yields to Brights Hybrid, Adafuel, Cornerstone (planted one year later) and GF557. Cumulative yield was significantly higher for Nemaguard than Krymsk 86 for this trial site and management practices. Leaf analysis showed low levels of Ca and Mg and high levels of leaf sodium may have contributed to low yield performance.

Key observations

Tree Habit

Using trunk circumference as an indicator of tree growth, Nonpareil trees grown on Nemaguard (549.8mm) were similar to Spare Nemaguard (556.25mm) in 2020 and were significantly smaller than Adafuel (600.2mm), Monegro (608.8mm), Felinem (605.4mm) and Hansen 536 (619.6mm) but not other rootstocks.

In 2020, Nemaguard produced smaller tree canopies with heights of 4.65m (4.78m wide) and together with spareNemaguard, of similar height 4.83m (4.9m wide), ranked in the bottom four tree heights. Visually the rootstock promoted strong light interception through the spacing of the canopy (Figure 43).

Production

Seasonal yields on Nemaguard were typically mid-range with some rootstocks achieving higher yields e.g. GF749, Monegro, Felinem, Hansen 536, Garnem, GF677 and others less e.g. Krymsk 86, and GF557. While earlier yields for Adafuel and Brights Hybrid were similar to Nemaguard they may surpass Nemaguard in future years if their upward trajectory continues.

Figure 41 shows the variability that makes up the average yields for Nemaguard and spare Nemaguard.

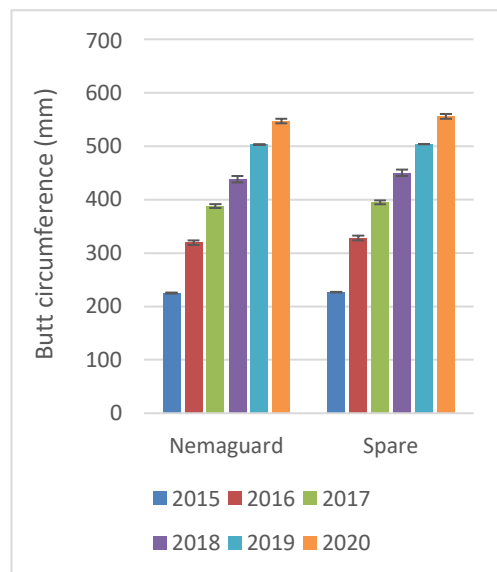


Figure 40. Average trunk circumference.

Table 16. Average annual yields (kg/ha).

Rootstock	2016	2017	2018	2019	2020	2021	Cumulative
Spare Nemaguard	482	893	2,144	3,486	3,502	2,736	13,243
Nemaguard	508	731	1,831	2,919	3,377	2,373	11,738

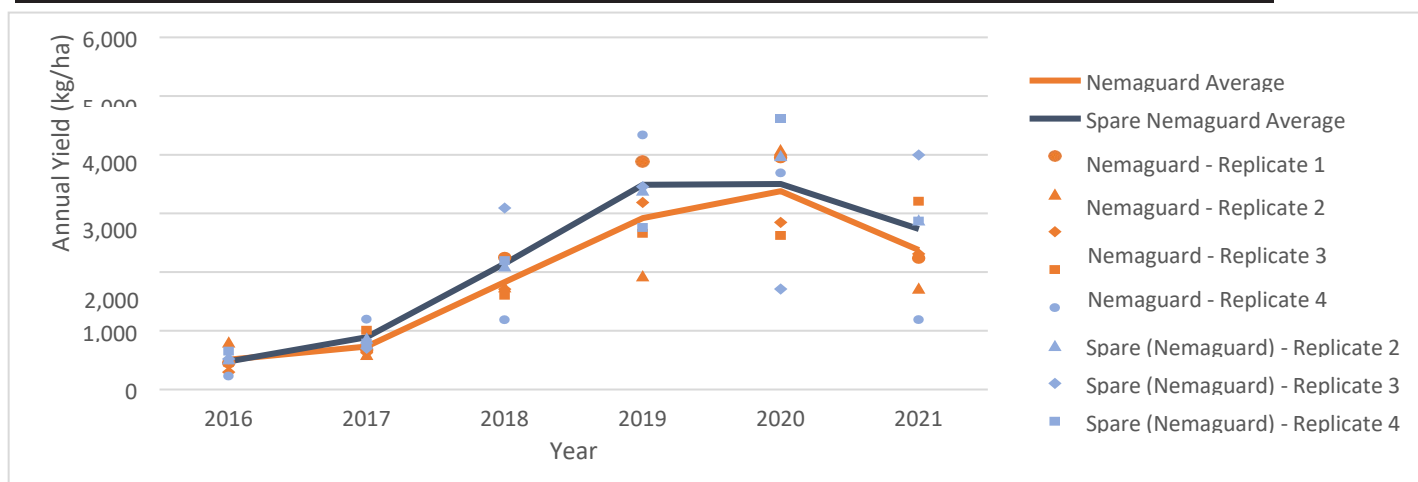


Figure 41. Average annual yields 2016 to 2021 (3rd to 8th leaf).

Rootstock characteristics

In 2021 leaf analysis indicated a significant correlation between yield and leaf Ca and Mg levels with the two Nemaguard rootstocks having the lowest leaf Ca and Mg levels. Similarly, there was a significant correlation between yield and leaf sodium with high sodium levels correlating with low yields. The highest levels were observed in Krymsk and Nemaguard. Both Krymsk and Nemaguard have been found to be poor excluders of sodium and chloride and may have contributed to low yield performance even when soil salinities were below the level considered to affect yield (1.5dS/m).

Table 17. Rootstock characteristics.

Root knot Nematode	Lesion Nematode	Ring Nematode	Crown Gall	Armillaria	Phytophthora	Salt exclusion	Chlorosis	Vigour	Propagation by cuttings
High	Medium	Medium	Medium	Susceptible	Medium	Sensitive	Susceptible	Medium	NA



Figure 42. Juvenile tree - 2017.



Figure 43. Mature tree - 2021.



Figure 44. Graft union - 2021.