

NC-140 Apple Update

Rich Marini
Penn State University



Brief History

- 25% of federal research funds must be used for multi-state projects
- NC-140 was established in 1970 and is one of the largest projects
- Currently have cooperators from 24 states, 3 Canadian provinces and Mexico, Chile?

Apple Trials

- 16 Apple trials completed
- 3 Apple trials in progress
- 1 Apple trial planned for 2018
- Members have published 47 refereed papers related to apple rootstocks
- A paper on the history of NC140 was just published and is available on the NC-140 web site (<http://www.nc140.org/>)

Project Renewal

Multi-state projects must be renewed and approved every 5 years. Mike Parker (NCSU) led the renewal effort due December 2016.

Current Apple Trials

- 2015 Organic Apple Rootstock Trial (Wes Autio)
 - 15 locations, scion variety is 'Modi'
 - 10 Geneva rootstocks being compared to M.9 T337
- 2014 Apple Rootstock Trial (John Cline)
 - 16 locations, with 'Honeycrisp' and/or 'Fuji'
- Stocks: 8 Geneva, 4 Vineland, B.10 and M.9T337
- 2010 Apple Rootstock Trial (Wes Autio)
 - 15 locations with 'Honeycrisp'; 7 with 'Fuji'
 - Stocks: 9 Bud., 16 Geneva, 2 PiAu, Supporter 3, M.26, M.9 Pajam2, M.9T337

Multi-location trials show the importance of location on rootstock performance (TCA)

Stock	BC	IA	MA	NJ	UT
B.9	5.4	5.5	6.3	5.5	6.5
M.9T337	7.2	9.7	10.0	13.0	9.1
M.26	9.7	10.0	7.3	15.7	11.0
CG.5087	12.5	12.2	12.4	19.8	6.8

B.9 is most consistent across locations

CG.5087 is least consistent

Results for first 5 years of the 2010 Trial: 'Honeycrisp'

- Semi-standard: B.70-20-20
- Large Semi-dwarf: B.7-20-21 & B.64-194
- Moderate semi-dwarf: B.7-3-150, B.67-5-32, B.70-6-8, G.202N, CG.4004, & PiAu 9-90
- Small semi-dwarf: CG.3001, CG.4814, CG.5087, CG.5222, & PiAu 51-11
- Large dwarf: G.202TC, G.935N, CG.4013, CG.4214, M.9 Pajam 2, & M.26 EMLA

TC=tissue culture, N=stool bed

Rootstocks affect zonal chlorosis (%)



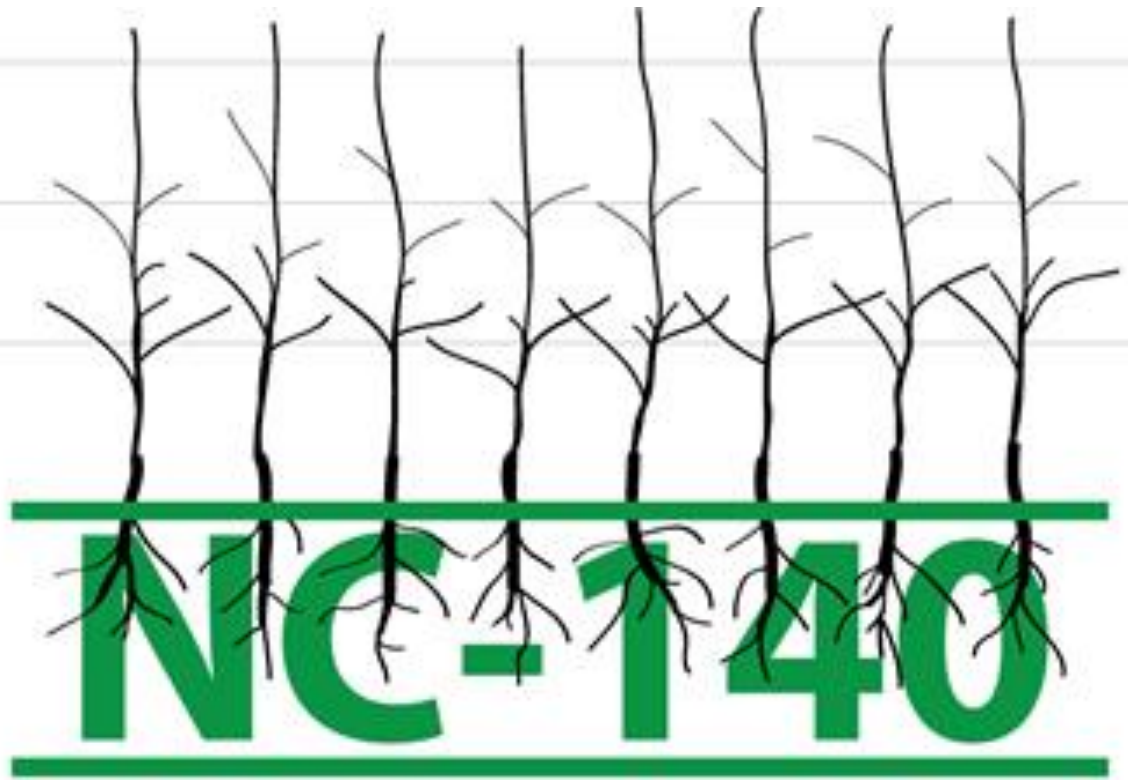
Stock	2012	2013	2014
B.9	14	30	30
B.10	10	26	32
M.26	20	32	38
M.9T337	16	41	34
CG.4814	41	56	50
PiAu 9-90	60	64	68

Tissue culture vs. normal propagation (Average of 10 locations)

Stock	TCA	YE
G.41N	10.1	2.4
G.41TC	9.4	2.3
G.202N	17.6	1.8
G.202TC	10.8	2.1
G.935N	12.2	2.4
G935TC	10.4	2.3

Virus status of scion wood

- Some rootstocks are susceptible to latent viruses
- The scion variety may not show symptoms, but when grafted onto a susceptible rootstock the rootstock dies
- **It is important to use virus-free scion wood on some of the newer rootstocks**



Questions?

Learn more about NC-140 at

<http://www.nc140.org/>