University of Connecticut *Aronia* research update



2019 MAA Meeting

March 15th, 2019

Dr. Mark Brand, Professor of Horticulture

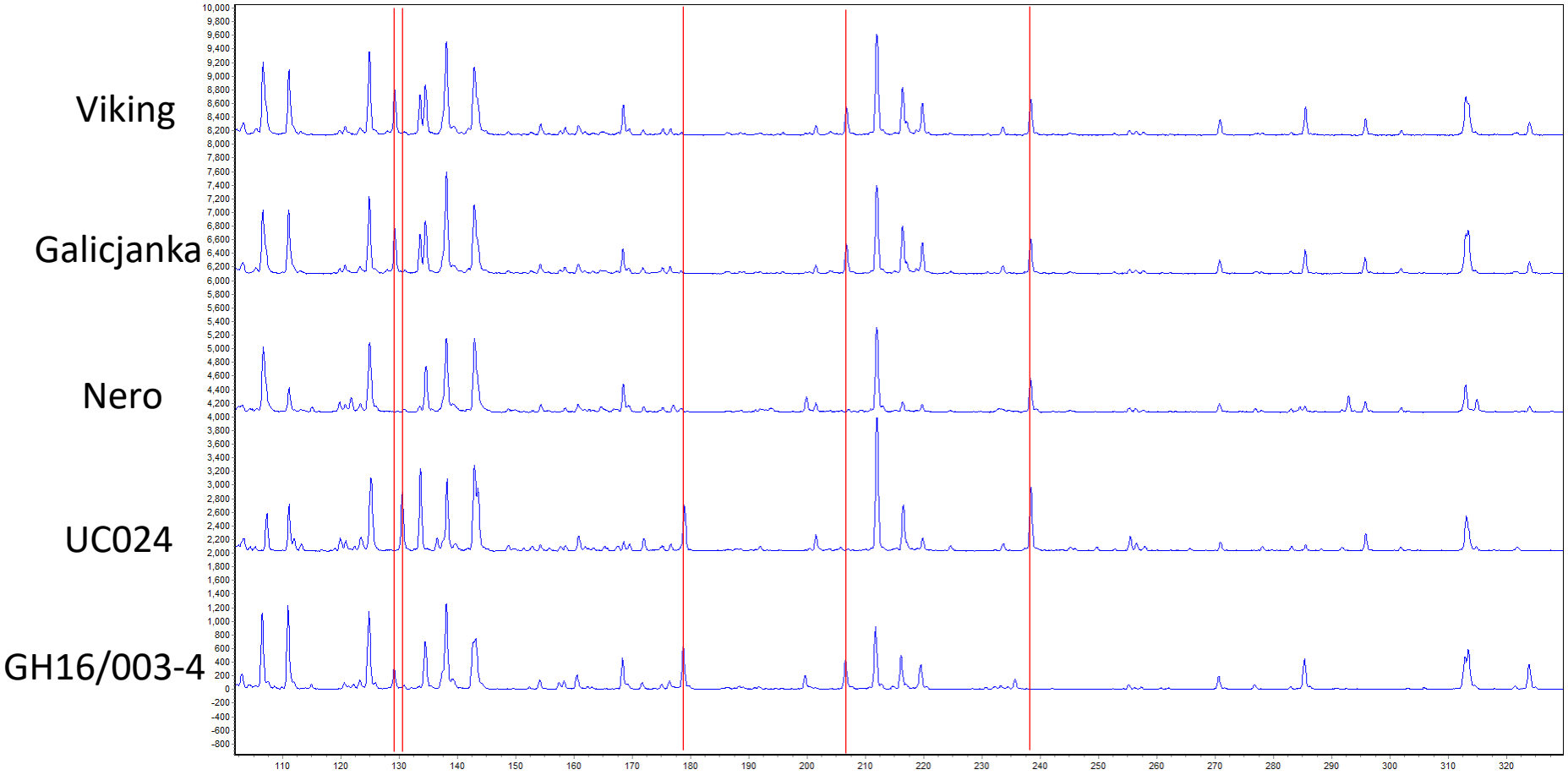
Jonathan Mahoney, PhD candidate – Brand Lab

@jmahoney515

Objective 1. Develop a database of AFLP (DNA) marker and morphological profiles for cultivars of *Aronia mitschurinii*



AFLP Amplified Fragment Length Polymorphism



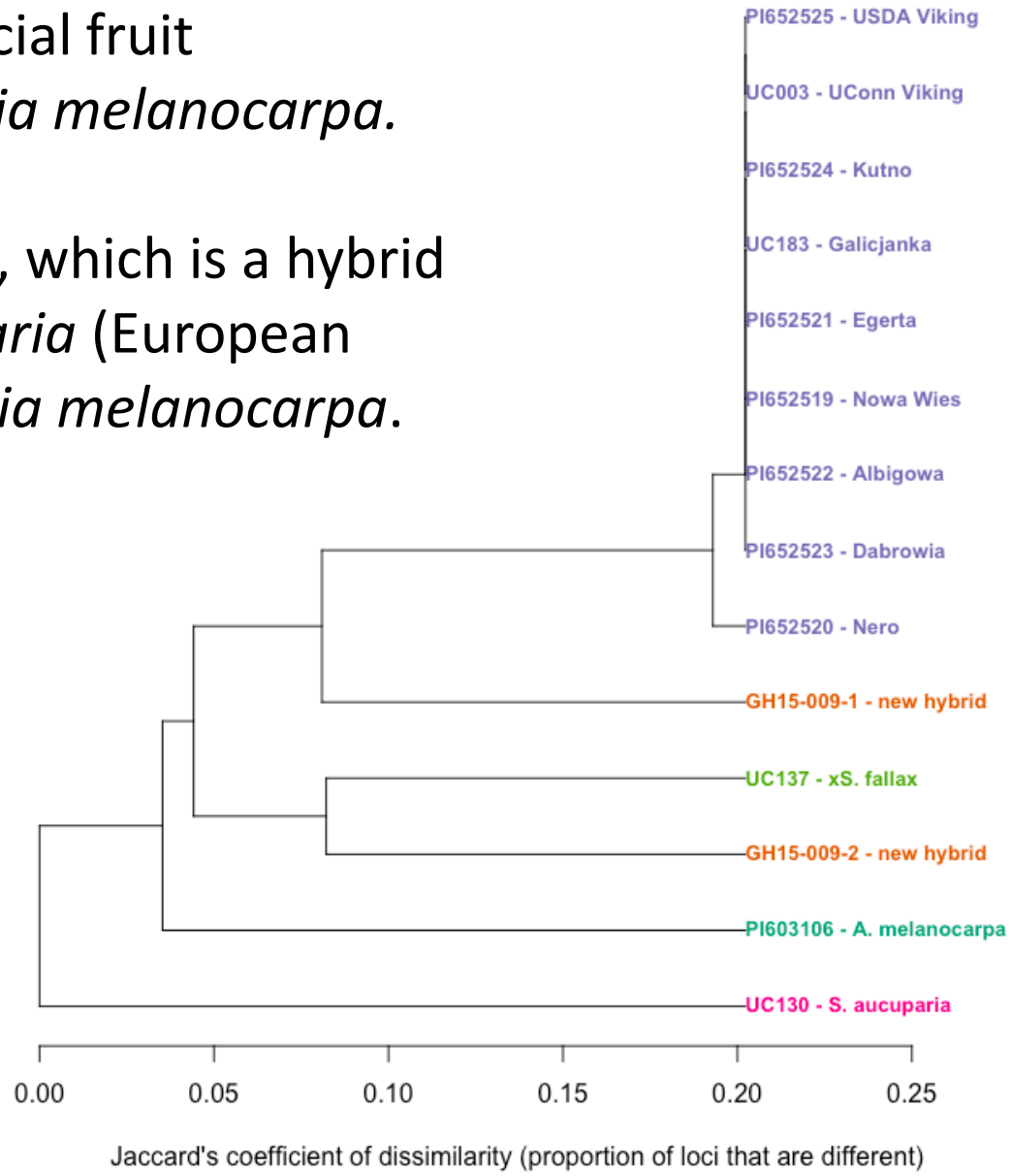
Accession	a1	a2	a3	a4	a5	a6	a7	a8	a9	a10	a11	a12	a13	a400
Viking	1	1	1	1	1	1	0	1	1	1	1	1	1	0
Galicjanka	1	1	1	1	1	1	0	1	1	1	1	1	1	0
Nero	1	0	1	1	0	1	1	1	1	1	0	1	1	1
UC024	1	1	0	1	0	1	1	1	1	1	1	1	0	1
GH16/003-4	1	1	1	1	0	1	1	1	1	1	1	1	1	0

Aronia cultivar identity

Aronia used in commercial fruit production is NOT *Aronia melanocarpa.*

It is *Aronia mitschurinii*, which is a hybrid between *Sorbus aucuparia* (European mountainash) and *Aronia melanocarpa*.

Really only ‘Viking’ and ‘Nero’ that are distinct.



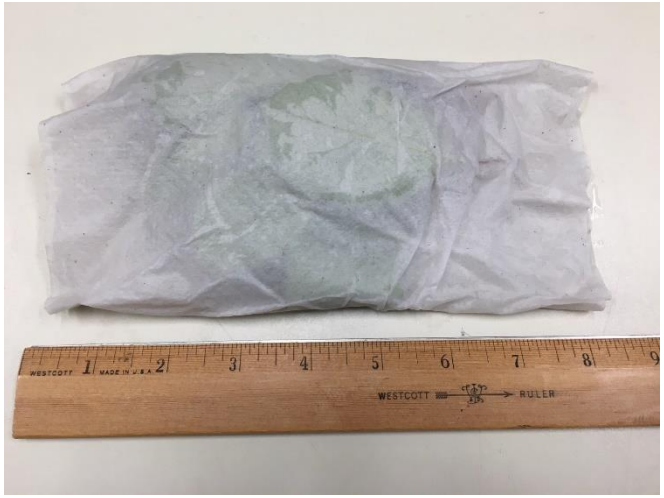
Objective 2. Determine the genetic identity of *Aronia* cultivars being used by farmers.

- Obtain shoot tip tissue from cooperating growers for AFLP DNA analysis
- Determine genetic identity of cultivars in use by growers
- Reconcile with what growers understood they are growing
- Correlate genetics with fruit analysis conducted at UWisconsin and UNebraska

Active shoot tips collected following completion of flowering

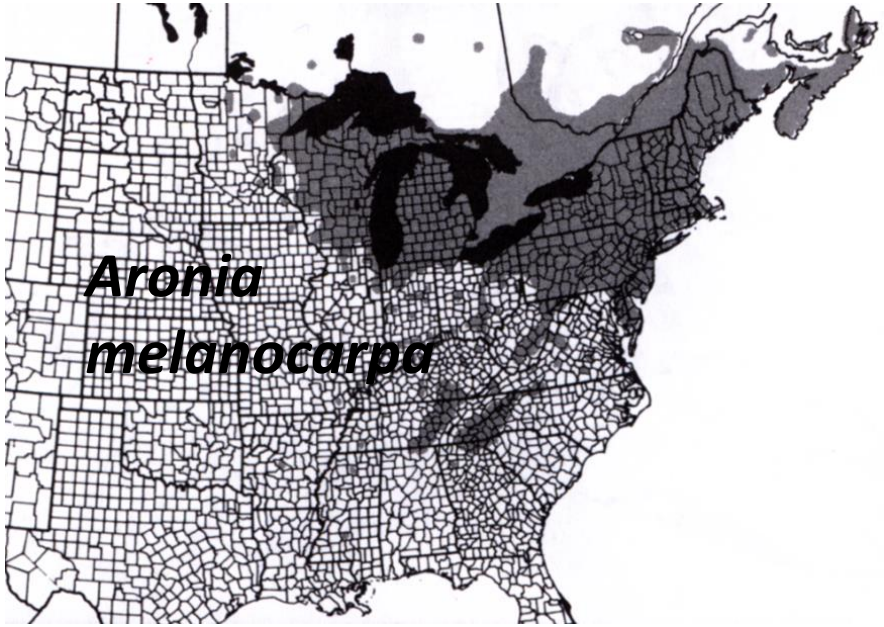






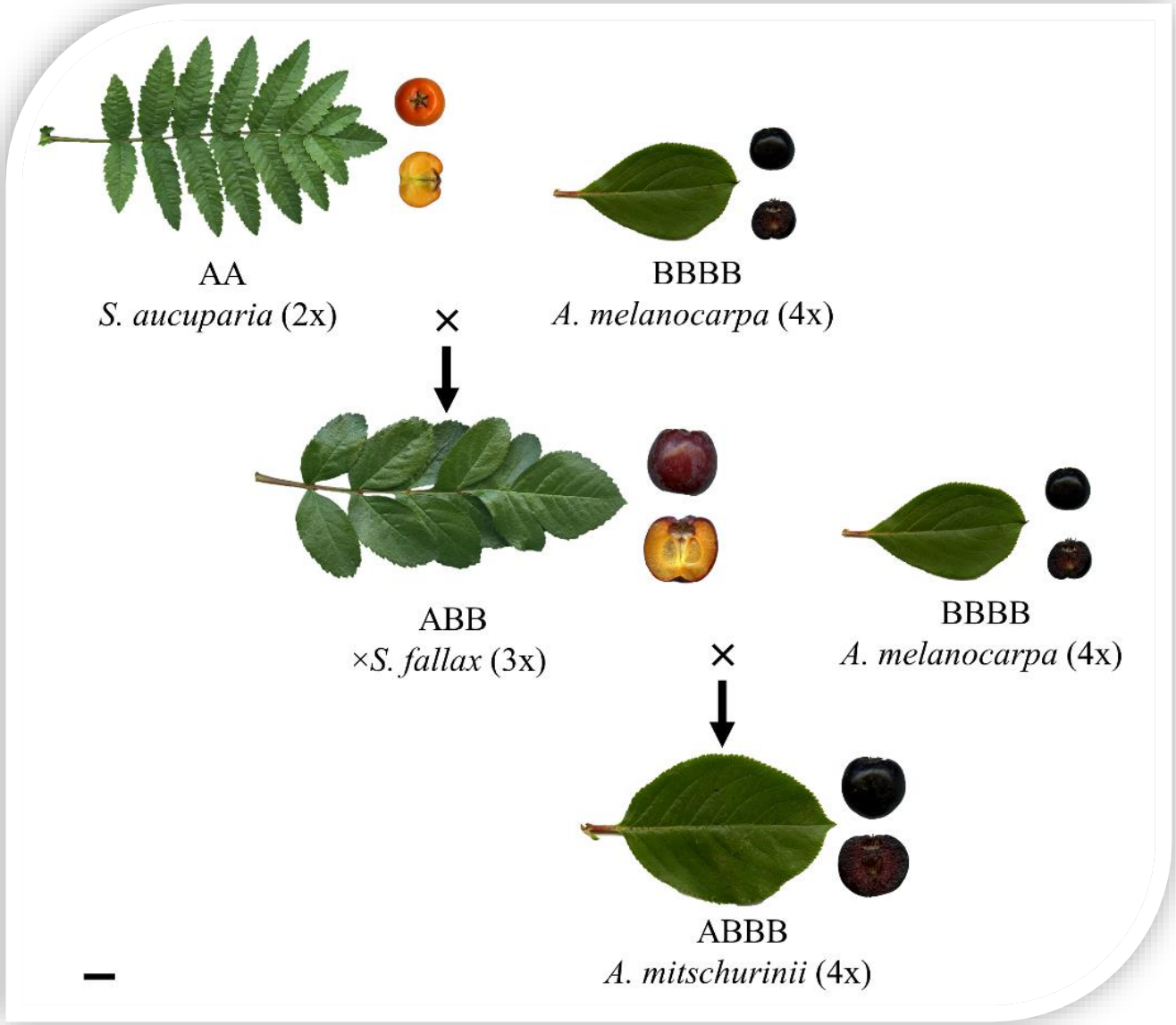


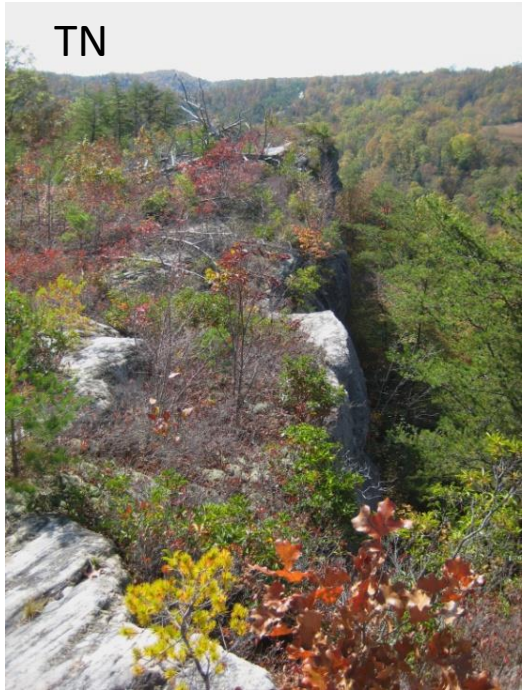
Objective 3. Evaluate new forms of *Aronia mitschurinii* developed using novel wild *Aronia melanocarpa* genotypes to provide greater genetic diversity to the crop.





Aronia breeding




TN








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COLLEGE OF AGRICULTURE, HEALTH AND NATURAL RESOURCES

Aronia diversity!

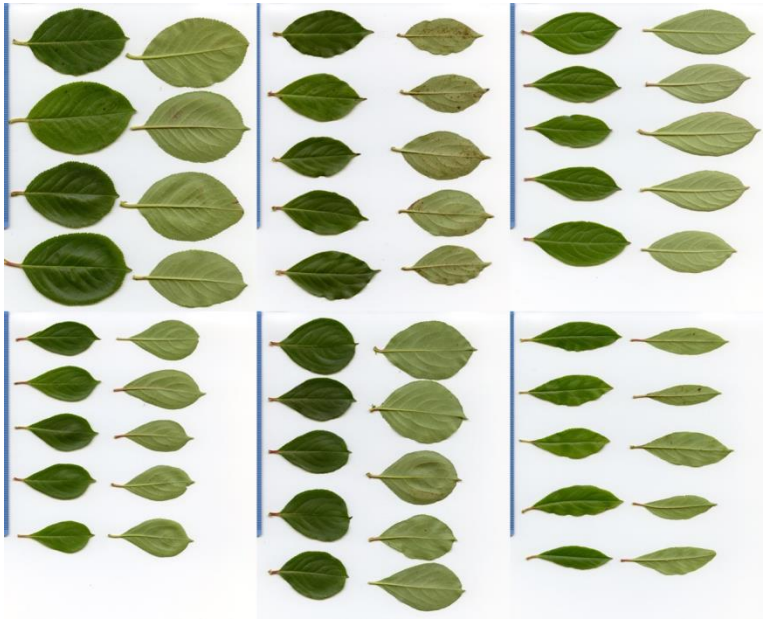
North Central Regional Plant Introduction Station
Conserving and Providing Plant Genetic Resources for Agricultural Success
Since 1948

USDA ARS United States Department Of Agriculture Agricultural Research Service

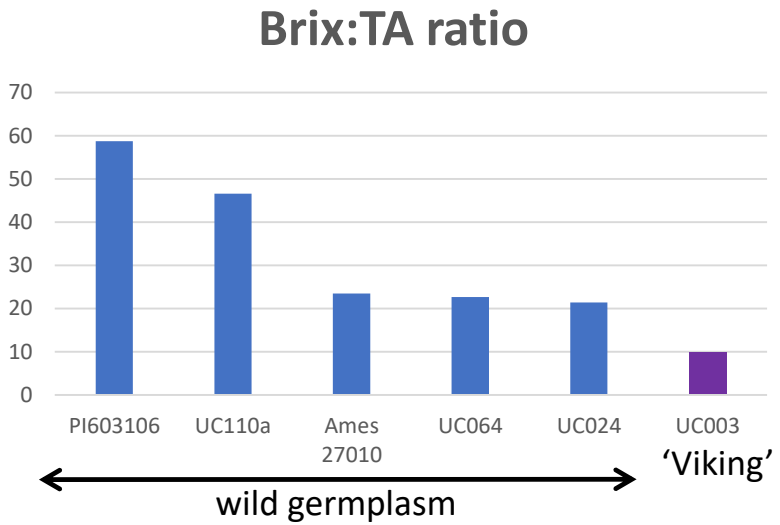


Wild aronia diversity!

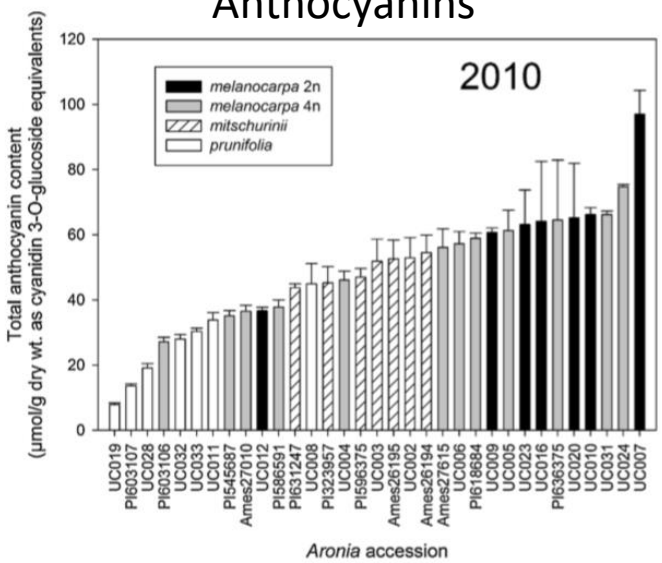
Leaf morphology



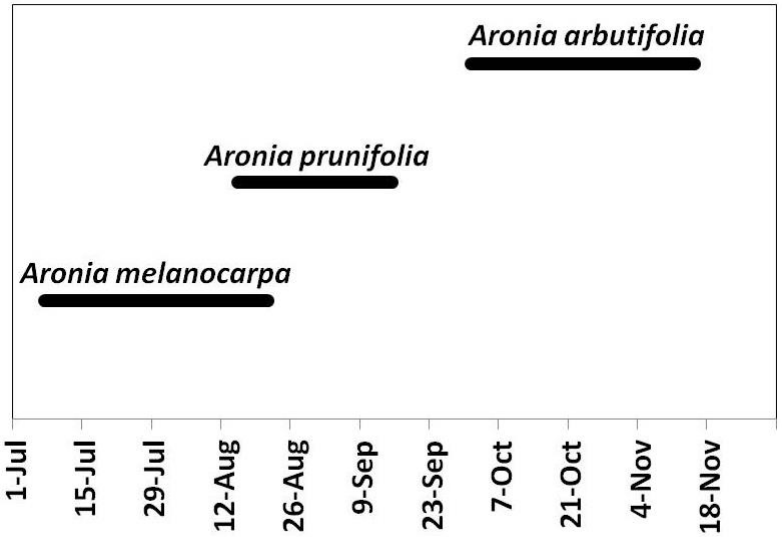
Brix:TA ratio



Anthocyanins

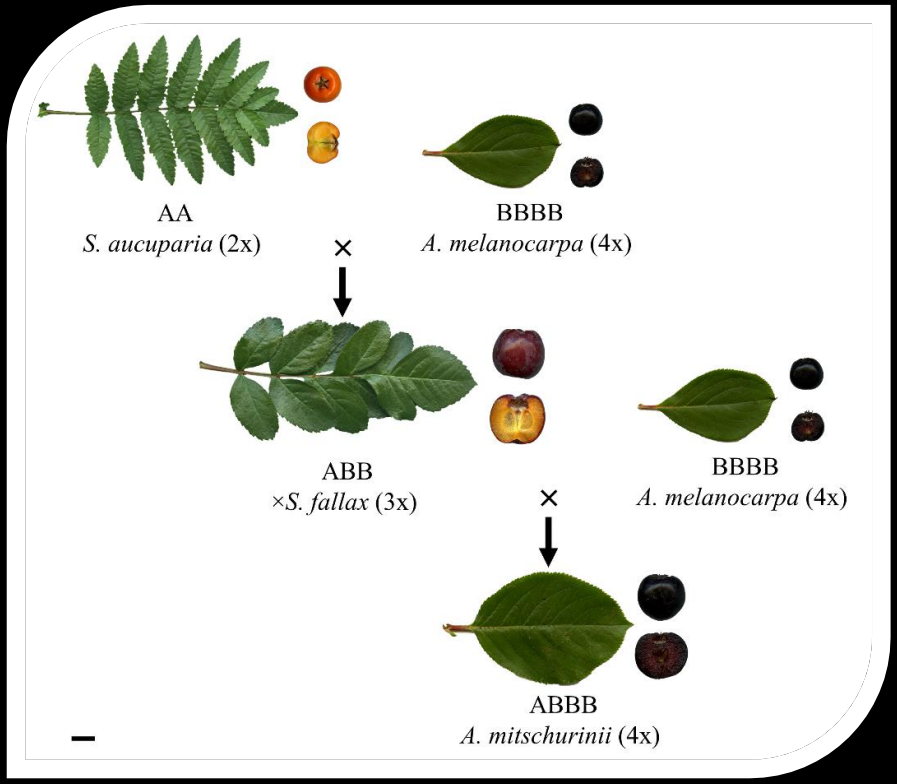


Fruit ripening date



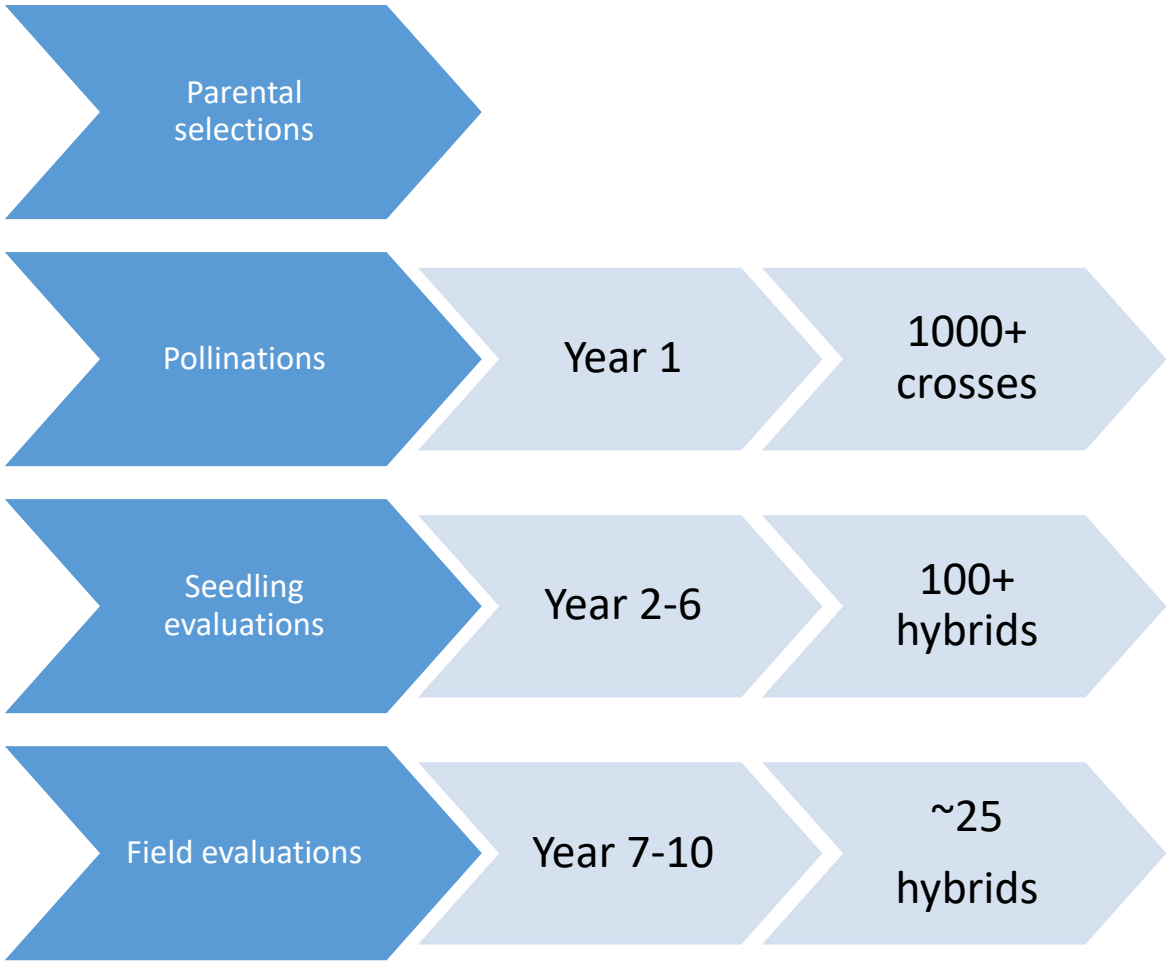
Controlled pollinations:







Aronia breeding process



Aronia breeding

'Viking'



GH16/003-01



GH16/003-03



GH16/003-06





Powdery mildew resistance?!

UConn *Aronia* Research:

Aronia reproduction

HortScience 54(4):1–5. 2019. https://doi.org/10.21273/HORTSCI13772-18

Sexual and Apomictic Seed Reproduction in *Aronia* Species with Different Ploidy Levels

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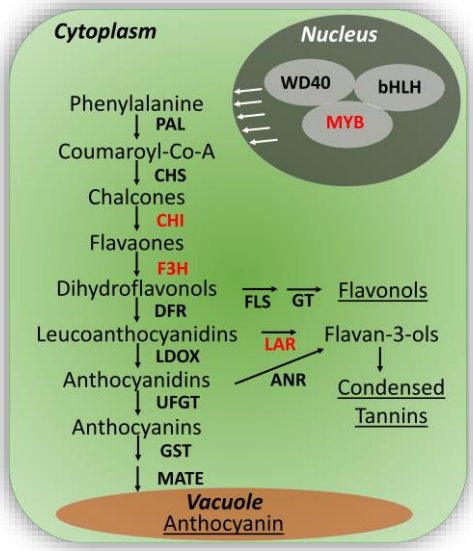
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Aronia grafting

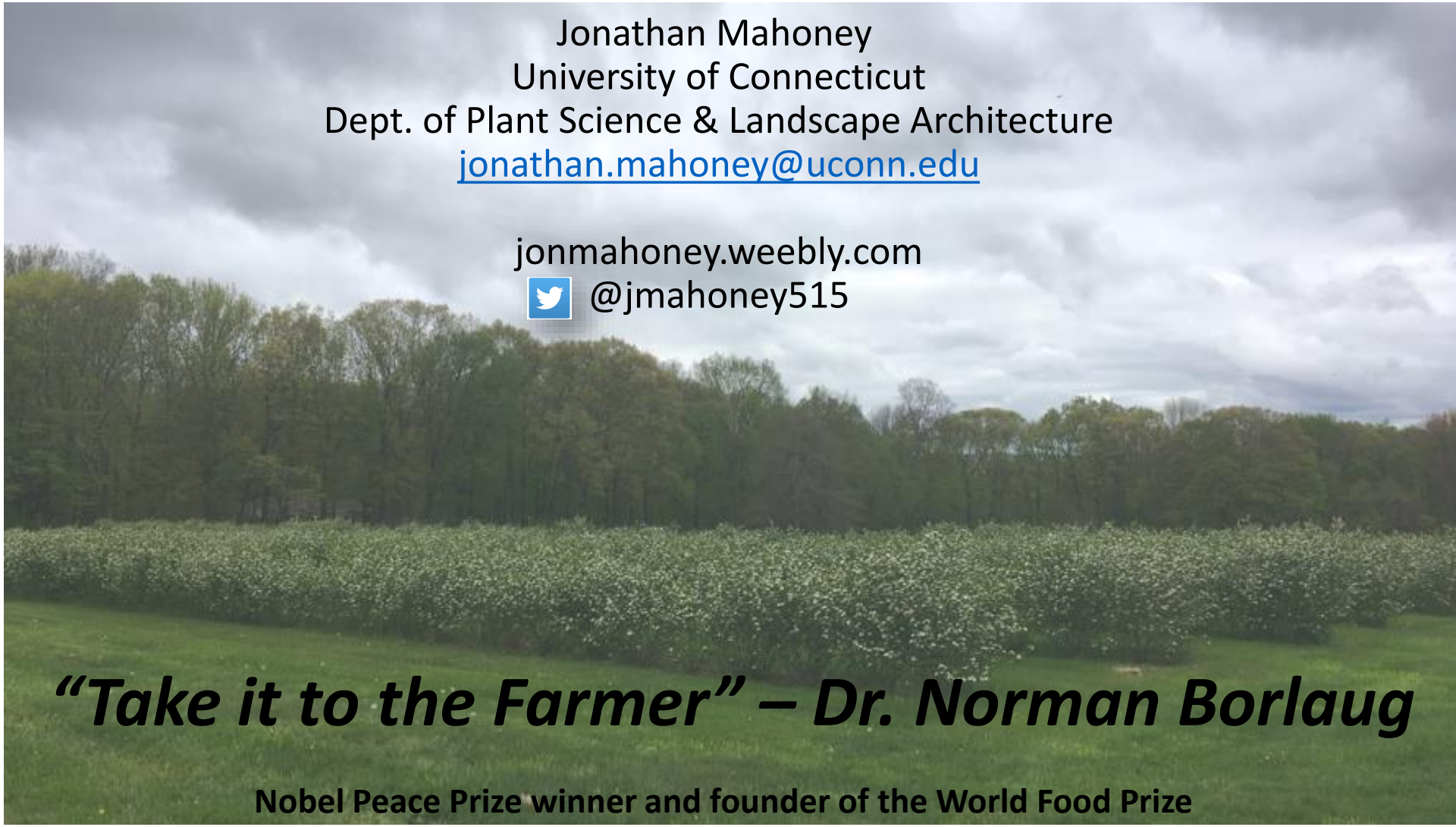


Genes controlling polyphenol biosynthesis





Questions?



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"Take it to the Farmer" – Dr. Norman Borlaug

Nobel Peace Prize winner and founder of the World Food Prize