OMAFRA 2022 Hazelnut Research Updates

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For Stakeholders

- Knowledge and technology transfer on hazelnut agronomics including pruning, fertility, irrigation, pruning, harvest
- Applied research
- For simplicity, first point of contact with OMAFRA

Within OMAFRA

- Industry advocate WRT new policy, research priorities, funding

OMAFRA Research Updates

1. Kernel assessment
2. Artificial pollination
3. Ontario-based fertility recommendations

Kernel Assessment

Why assess hazelnut kernels?

- Hazelnuts come in different shapes, sizes, and flavours
- Processors require consistent shape and size of nuts for cracking and roasting
- Confectionary markets in particular can have very specific requirements for quality and flavour
- A quantitative assessment can help determine which varieties to plant

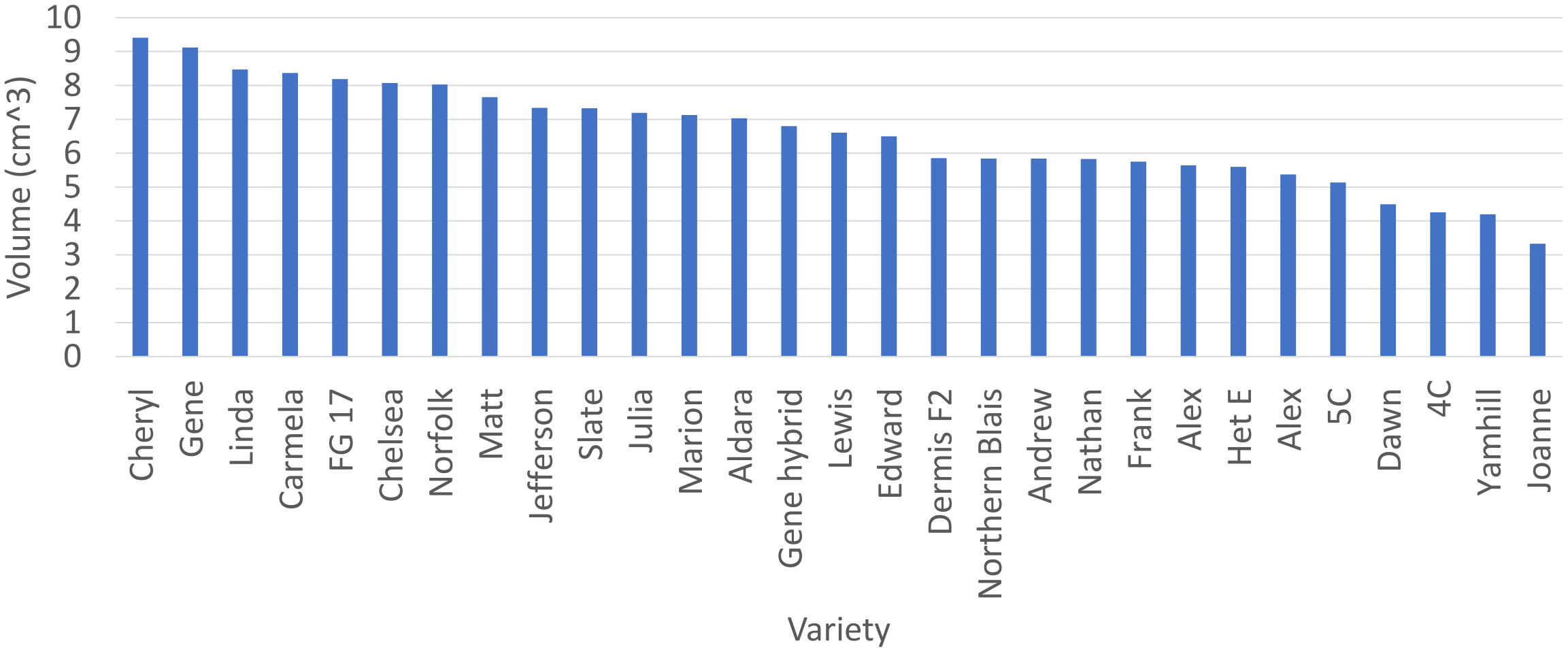
Pilot Study Methodology

- Collected samples of 100-150 nuts from growers
  - 27 unique varieties assessed
  - Most Ontario-bred, Yamhill & Jefferson included for comparison
- Will share preliminary results for the following variables:
  - In-shell dimensions
  - Kernel size
  - Roundness (sphericity)
  - Kernel %

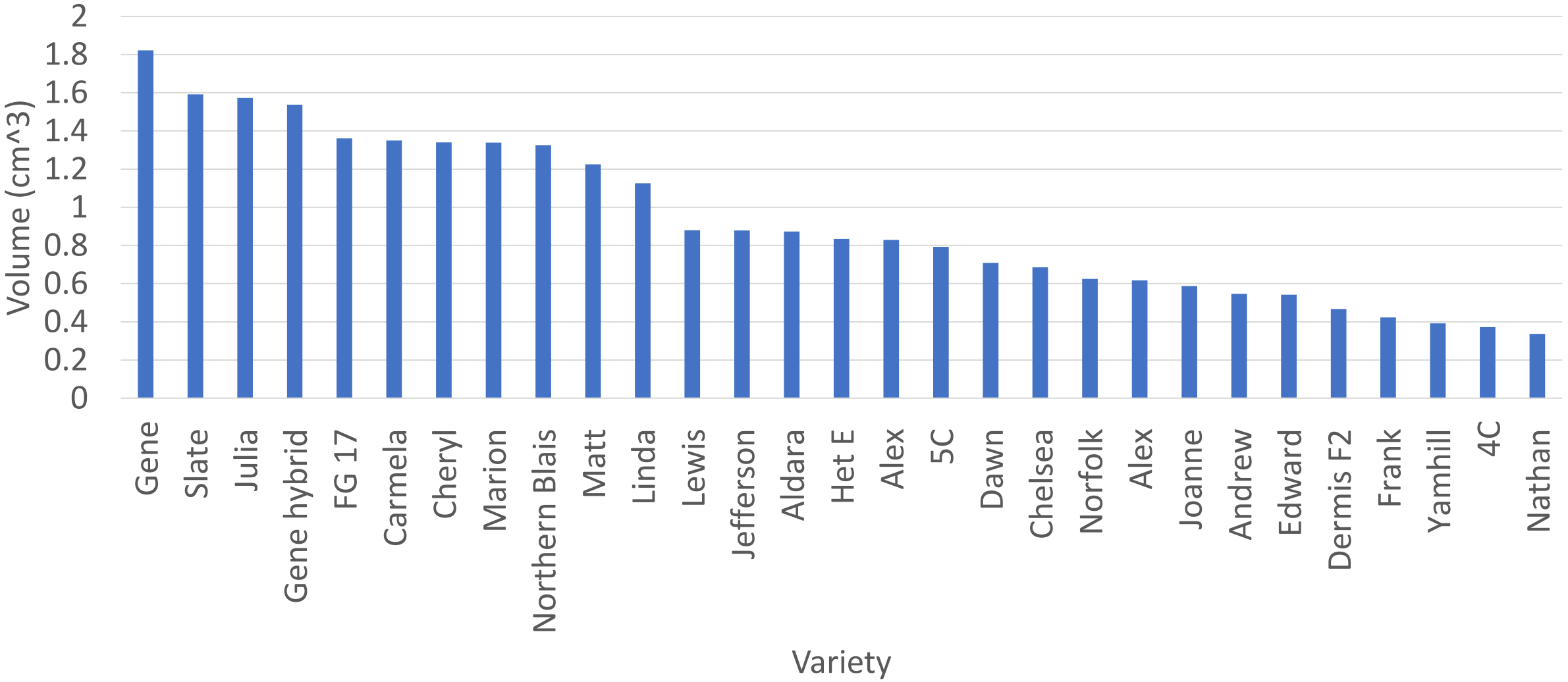
Caveats

- This is a *preliminary* study with small sample sizes and usually samples from just one grower; many of the following graphs are generated from just 10 measured nuts per variety
- More data is needed before information can be used to make recommendations

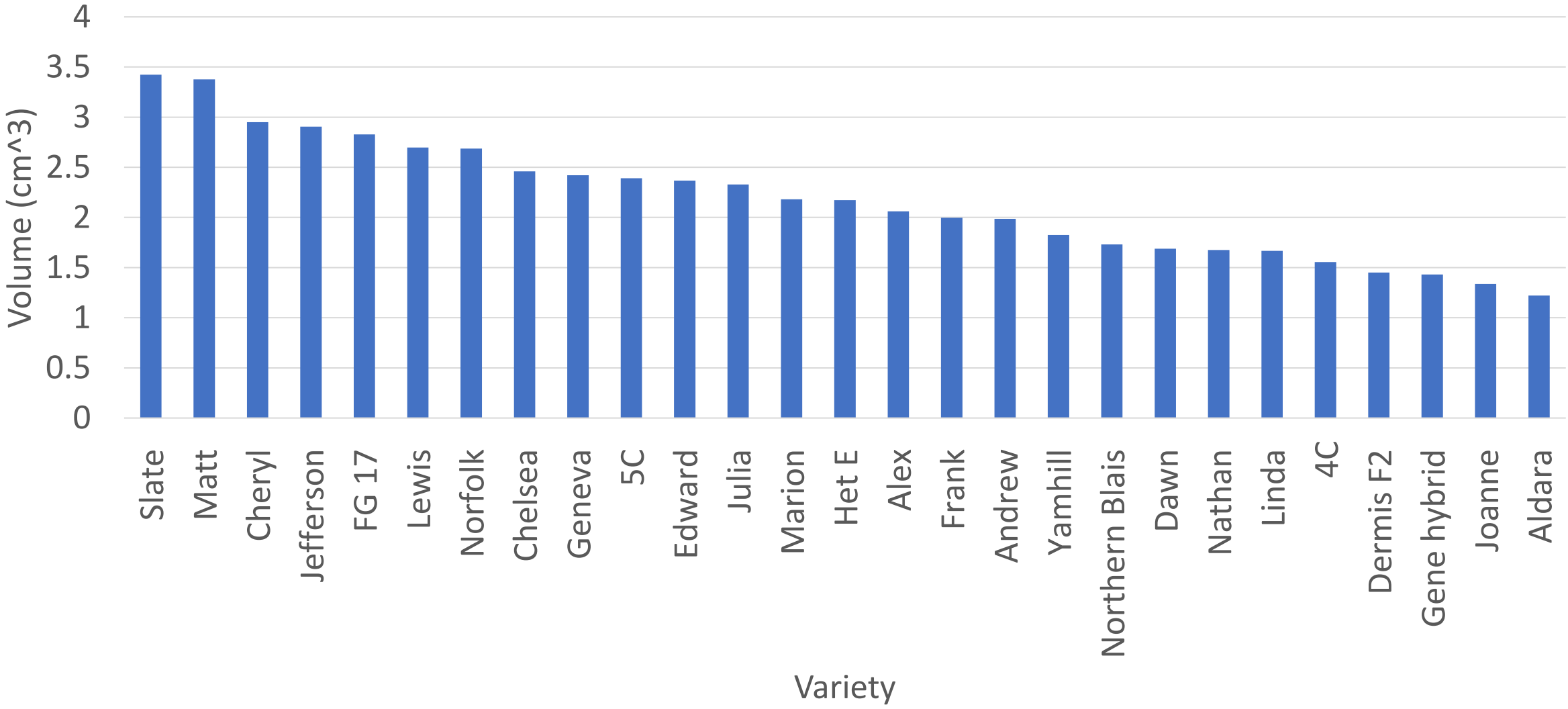
In-shell size (cm^3)



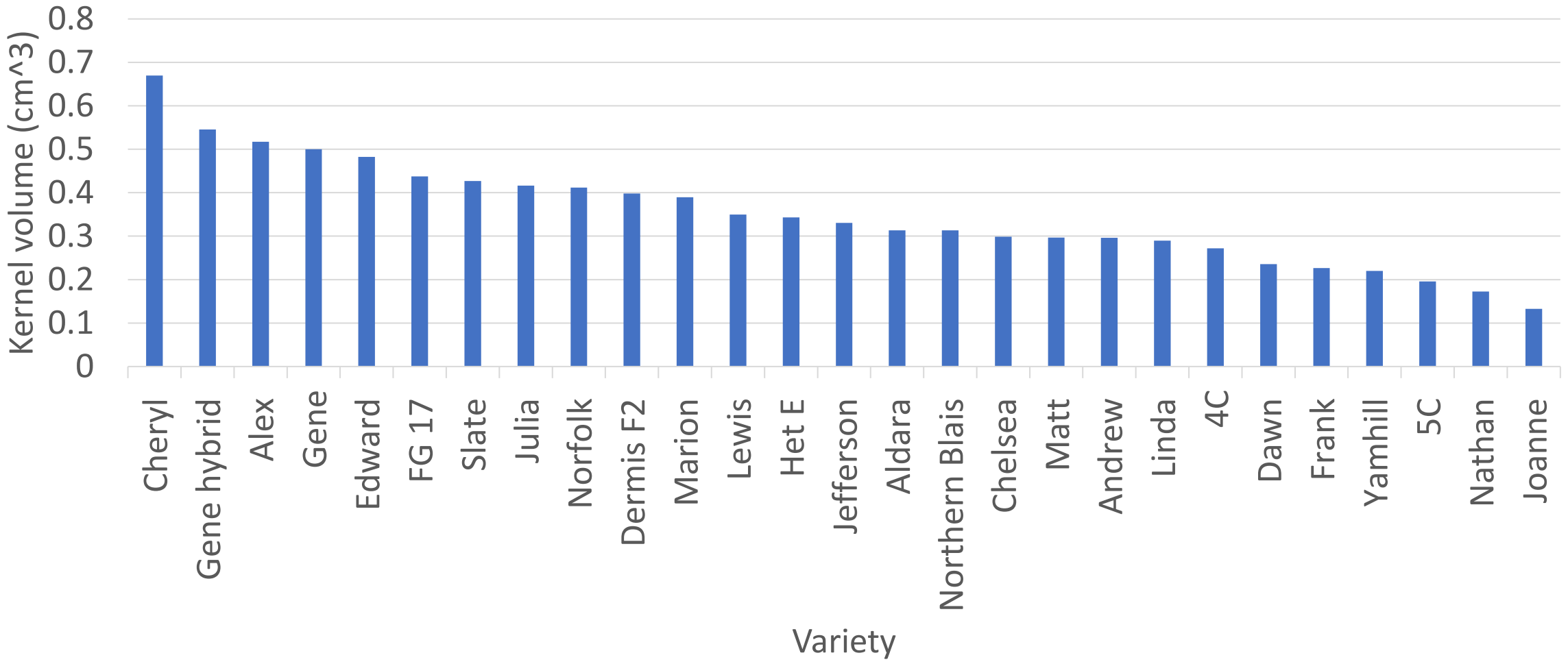
In-shell size consistency



Kernel Size (cm^3)

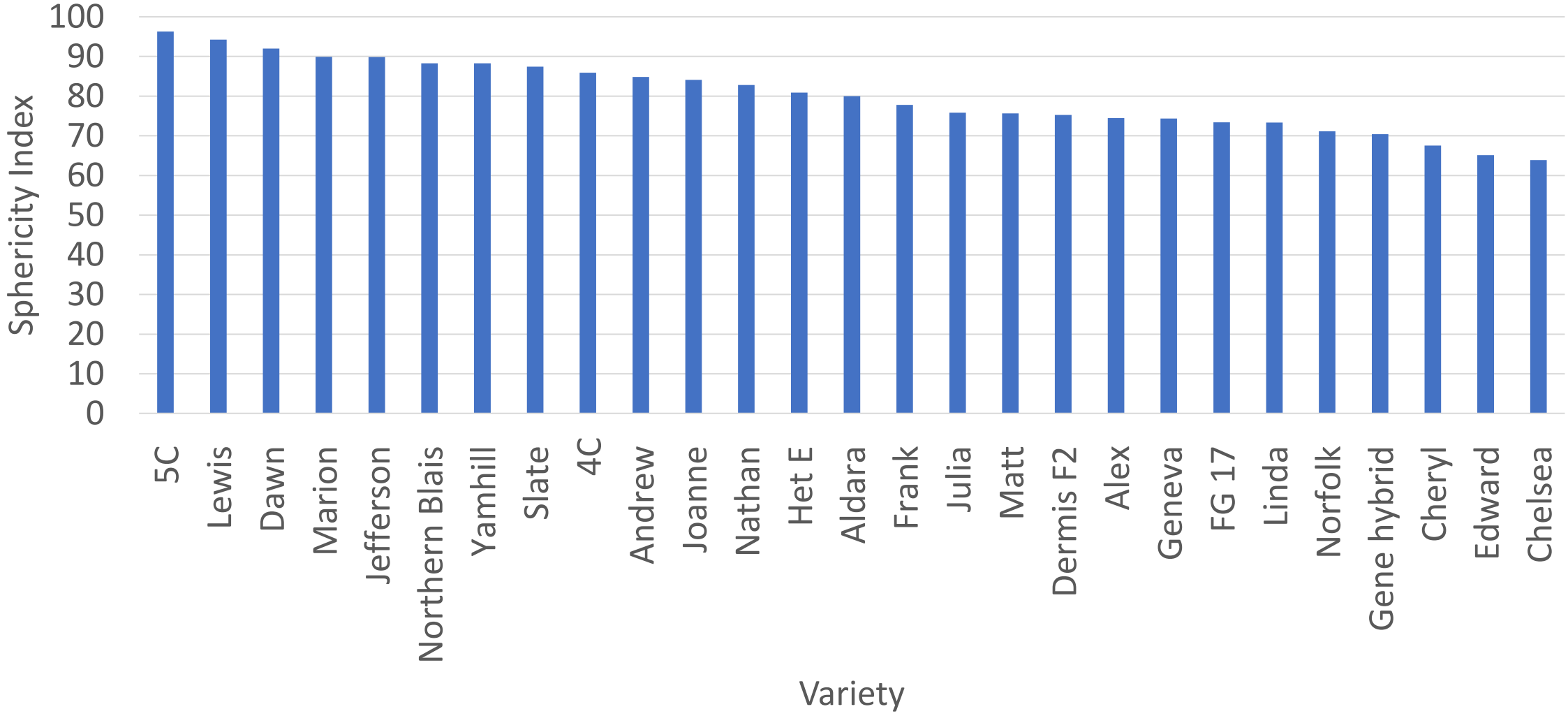


Kernel size consistency



Sphericity

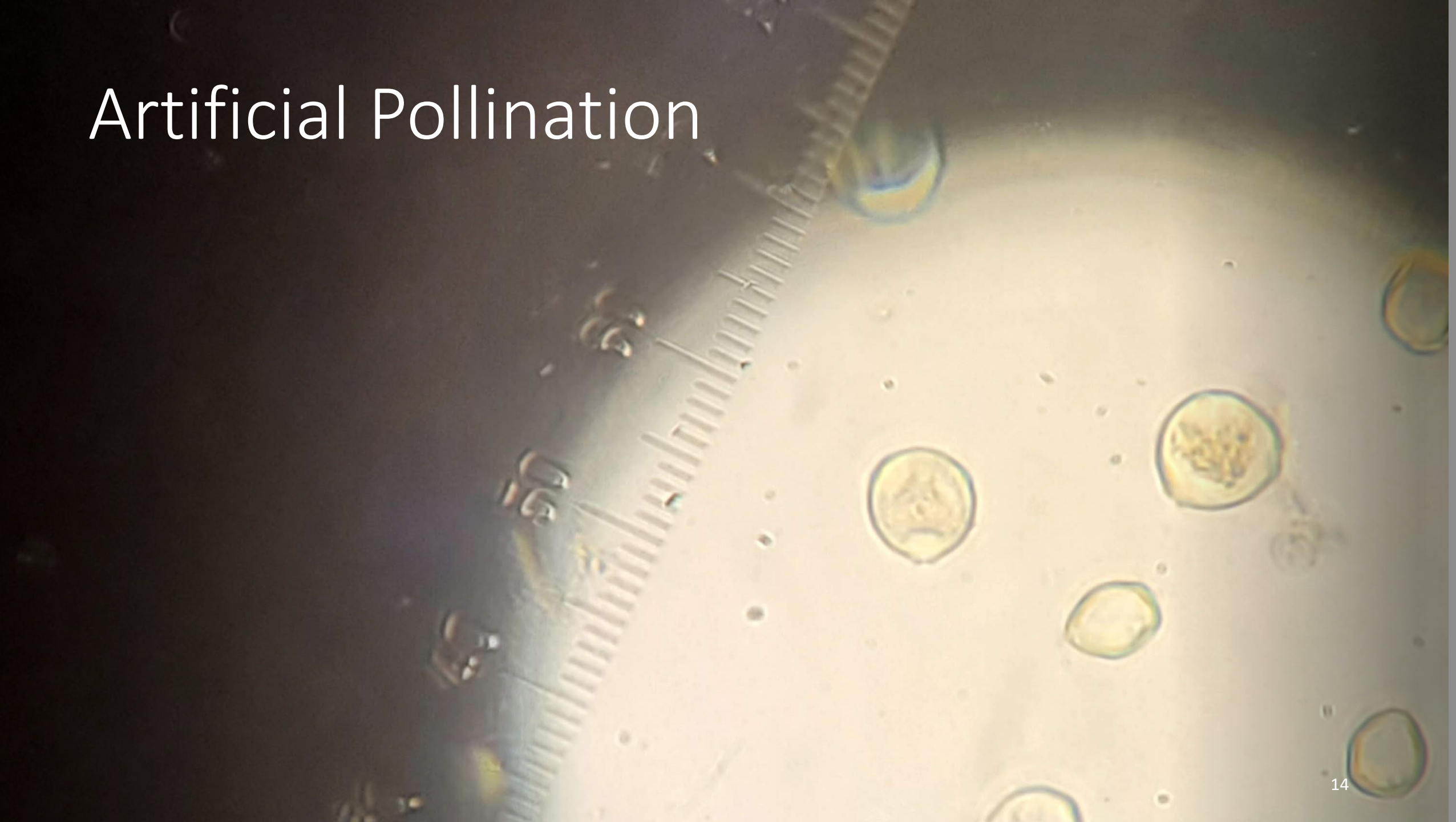

SHAPE


Sphericity Index
100
90
80
70
60
50
40
30
20
10
0
5C
Lewis
Dawn
Marion
Jefferson
Northern Blais
Yamhill
Slate
4C
Andrew
Joanne
Nathan
Het E
Aldara
Frank
Julia
Matt
Dermis F2
Alex
Geneva
FG 17
Linda
Norfolk
Gene hybrid
Cheryl
Edward
Chelsea
Variety

Next Steps

- More data analysis
- Fact sheet with varietal descriptions to be published late spring

Artificial Pollination



Overview

- Many growers interested in potential increased yields artificial/supplemental pollination provide
- Growers apply additional pollen during hazelnut flowering to increase yields

Questions Arise

- How much pollen will result in yield increase?
- What is a good suspension media to use?
- What application method is least damaging to pollen?
- How long can frozen pollen remain viable?

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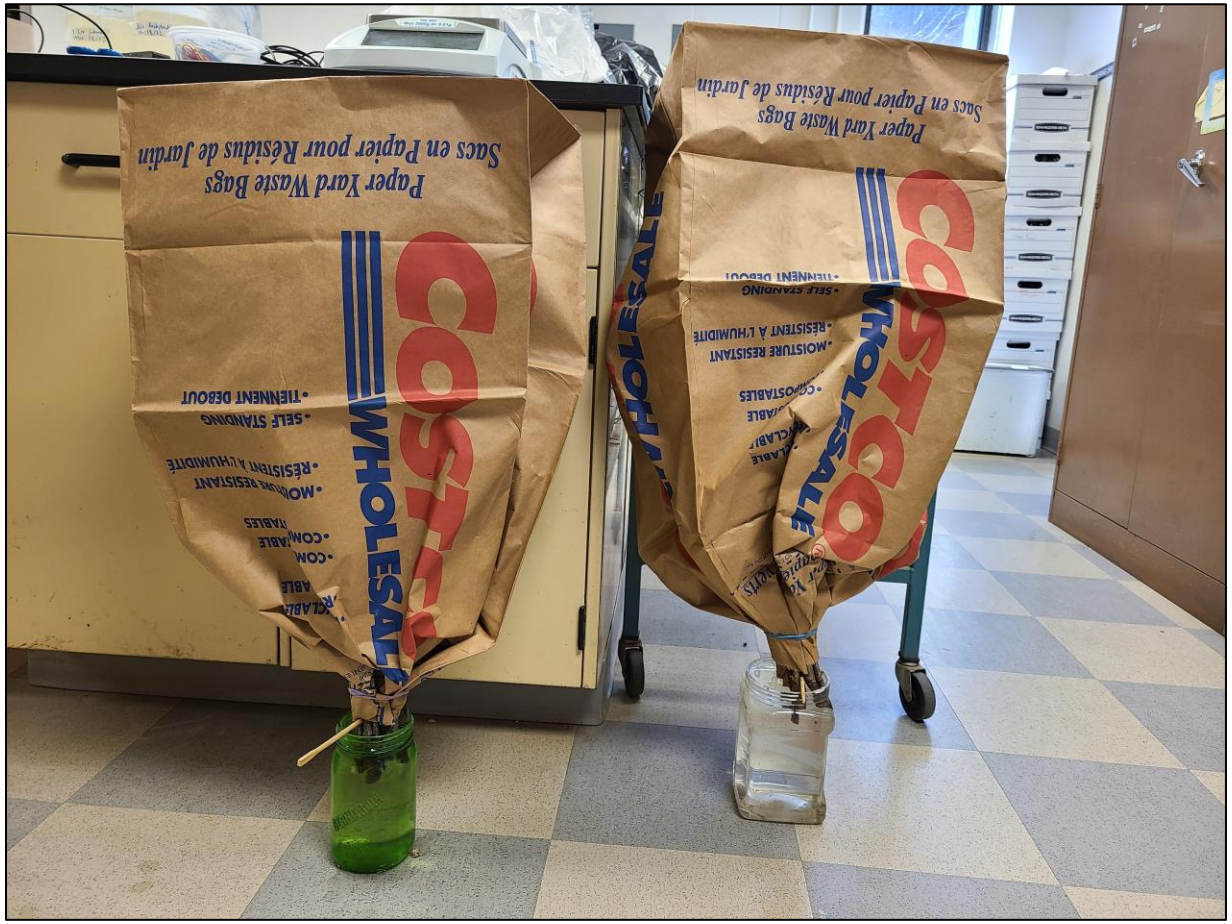
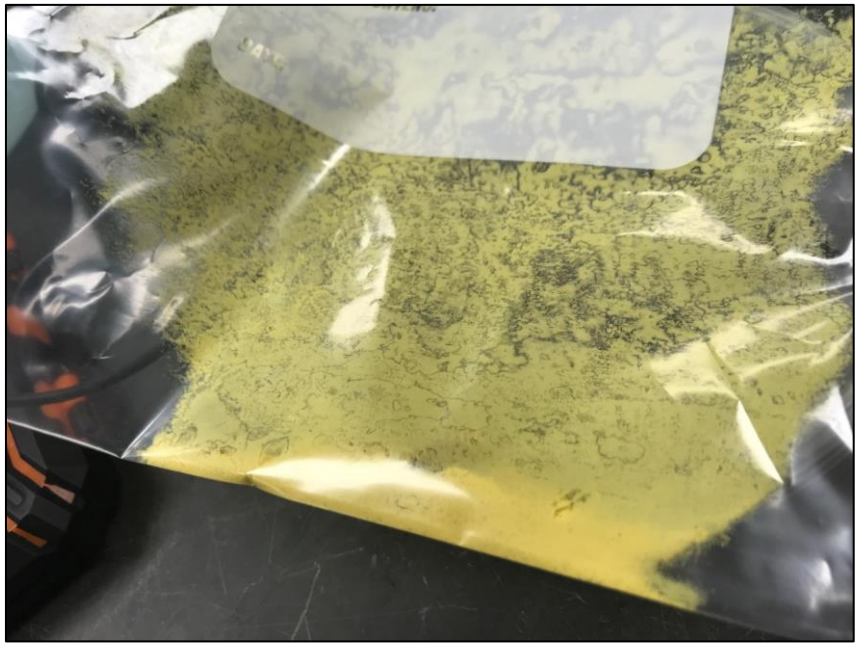
Pollen Collection

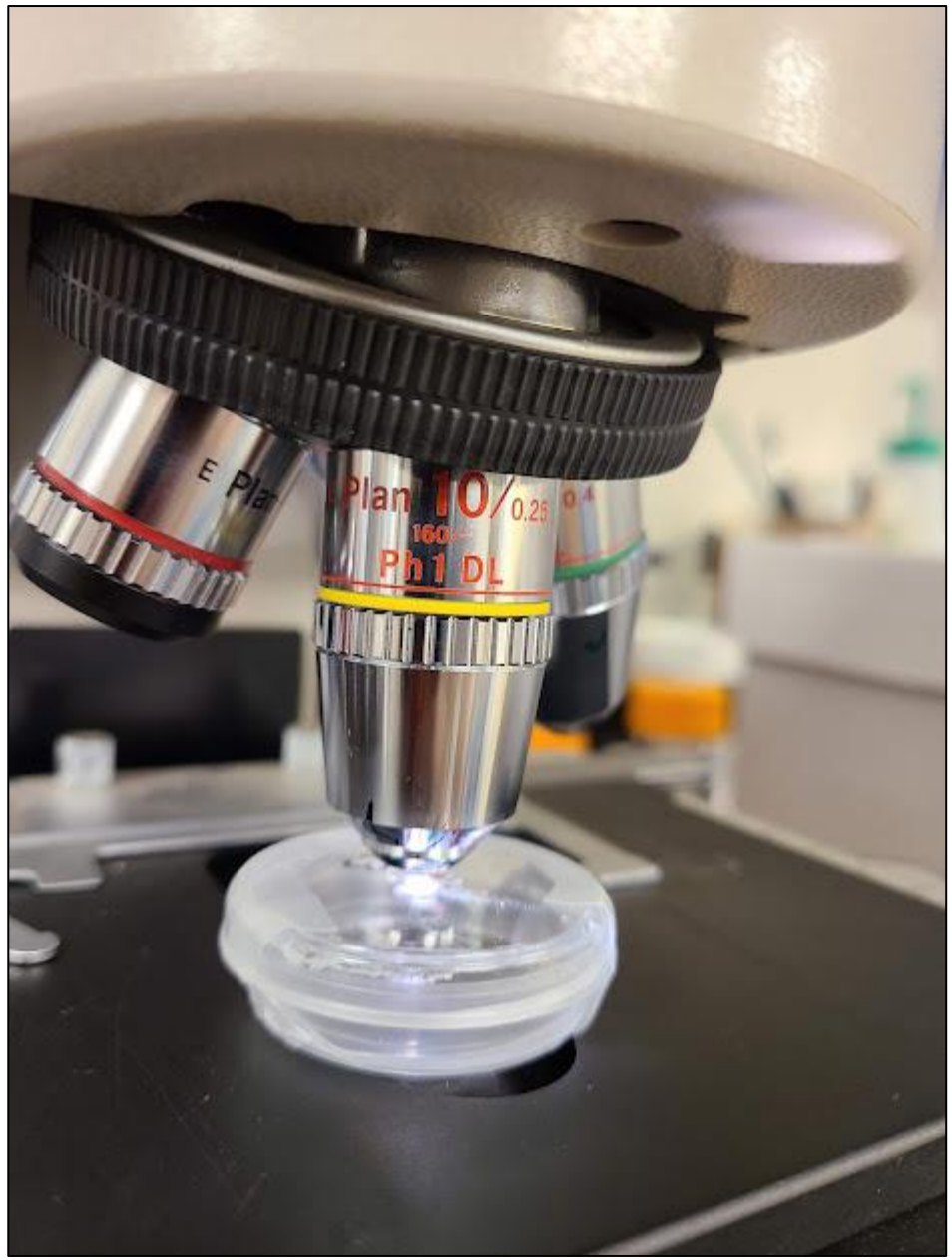


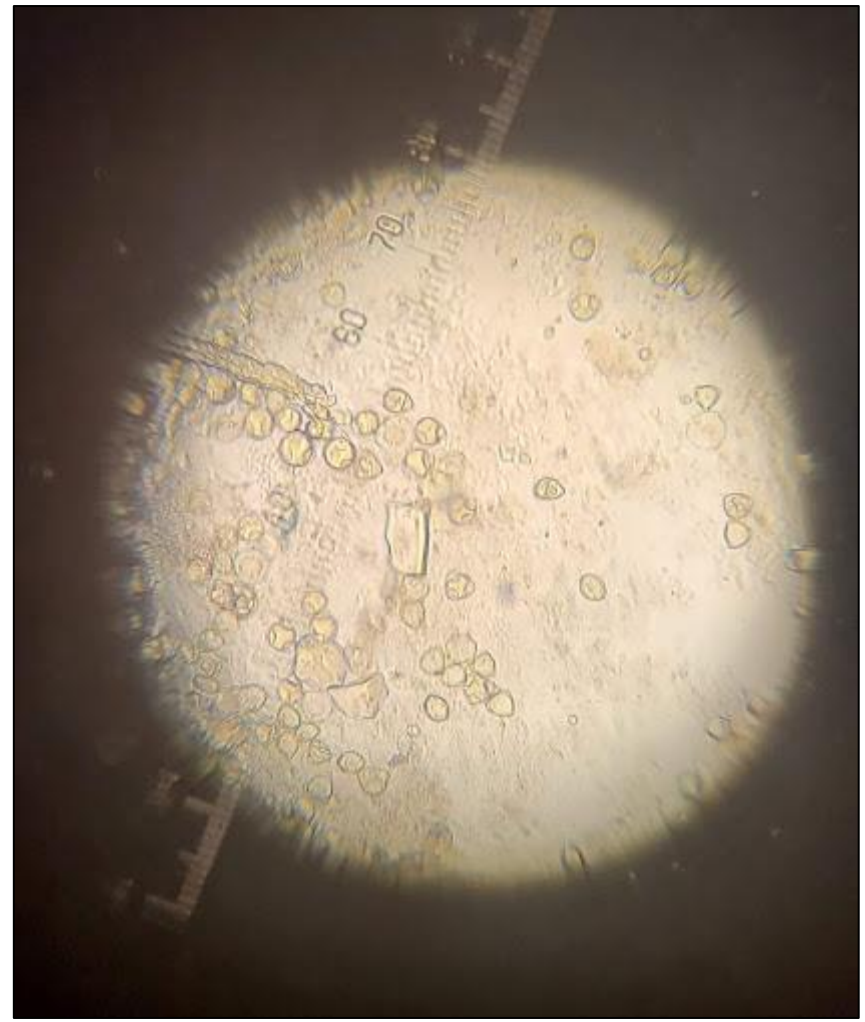
Pollen Collection




50 ml
40 ml ±5%
30
Tap water
DI water
T3
0.02% Tween
0.1% Calcium Chloride


12203


Plan 10/0.25
Ph1 DL



Spray Equipment


J. Liu Wand
Mar. 18/22
JLiu Backpack
Mar. 18/22

Preliminary suspension media result

- Of the 6 different media tested, 15% sucrose (granulated sugar and distilled water) had the highest germination rate with an average of 58%
- Caveats:
  - Pollen used from unknown sources
  - Sample sizes to test germination rates (a few hundred pollen grains counted under microscope) is relatively small
  - The 15% sucrose media is still untested with spray equipment and in field
- **Use at your own discretion**

Ontario-based Fertility Recommendations

Background

- No Ontario-specific fertility recommendations
- Currently utilizing recommendations adopted from Oregon hazelnuts and other Ontario tree fruit crops
- 5-year objective (funding-dependent): to develop hazelnut macronutrient recommendations for Ontario in young/maturing orchards

Current Status

- Grower trial sites selected
- Methodology developed to assess fertility needs for young maturing orchards 4-6 years old
  - Grower survey for site history and management
  - Baseline soil testing
  - Begin NPK trials at various concentrations
- Waiting on funding to move forward

Thank you!

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