

2022-2023 NEW JERSEY STATE TEACHER OF THE YEAR Christine Girtain



Twitter @CCgirt



#PowerOfEducators

#NJTeacherOfTheYear





College & Career



BS in Biology

Comprehensive Science Certification

TCNJ
1994



England

TR

TRS
Indians

28 years

Bio, ES, ASR

Basketball Coach,
Students for Africa Club,
Recycling Club

Grad School

MA Earth Science
Instruction & Curr

KEAN
2005



Fist to Five

What group do you represent?



Industry

University

High School

Middle School

Elementary

None above

Fist to Five

How many times
have you attended
the Educators
Round Table?



5 or more

4

3

2

1

Never

Get students comfortable with data

Add your responses to the flipchart paper:

1. How many cups of preferred morning drinks have you had today?
2. How many years have you been in education?
3. What is your relationship between the number of years in education and morning drinks today ?
4. How comfortable are you with teaching data analysis?
5. What do your students do most with data?

Creative Commons Thanks to: <https://dataspire.org>

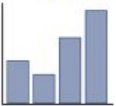
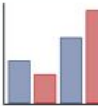
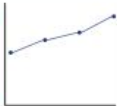
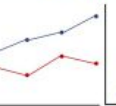
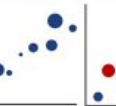
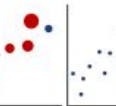


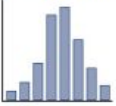
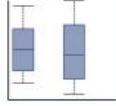
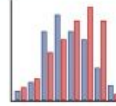
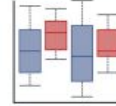

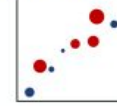

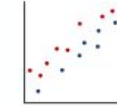

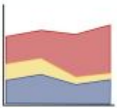


Data Literacy

Ability to **collect**, organize, **visualize**, analyze, **interpret**, & share data for yourself & other people to use and understand.

Questions, Words, & Graph Types Matrix



Type of Question	Describing Words	Common Visualization Types to Choose from for <u>High School Students</u>
<p>Comparisons</p>	<p>before/after, categories, compare, contrast, over time, peaks, rank, trend, types, valleys, related, correlated</p>	<p>Among Items</p>  <p>Bar Chart</p> <p>Between Variables</p>  <p>Bar Chart</p>  <p>Line Chart</p>  <p>Line Chart</p>  <p>Bubble Chart</p>  <p>Bubble Chart</p>  <p>Scatter Chart</p>  <p>Scatter Chart</p>
<p>Distributions</p>	<p>cluster, distributed, from/to, plotted, points, spread, spread over, relative to, transfer, range of</p>	<p>Within Variable(s)</p>  <p>Histogram</p>  <p>Box plot</p>  <p>Histogram</p>  <p>Box plot</p> <p>Between Variables</p>  <p>Bubble Chart</p>  <p>Bubble Chart</p>  <p>Scatter Chart</p>  <p>Scatter Chart</p>
<p>Compositions</p>	<p>components, divided up, group, makes up, of the whole, parts, percentages, pieces, portion, proportion, subsections, total</p>	<p>Static in Time or Space</p>  <p>Pie Chart</p> <p>Changing Over Time or Space</p>  <p>Stacked Area Chart</p> <div data-bbox="1476 874 1875 1000" style="background-color: #fff9c4; padding: 10px; text-align: center;"> <p>https://dataspire.org/graph-type-matrix-resources</p> </div>



Making Data from Tables into Tidy Data

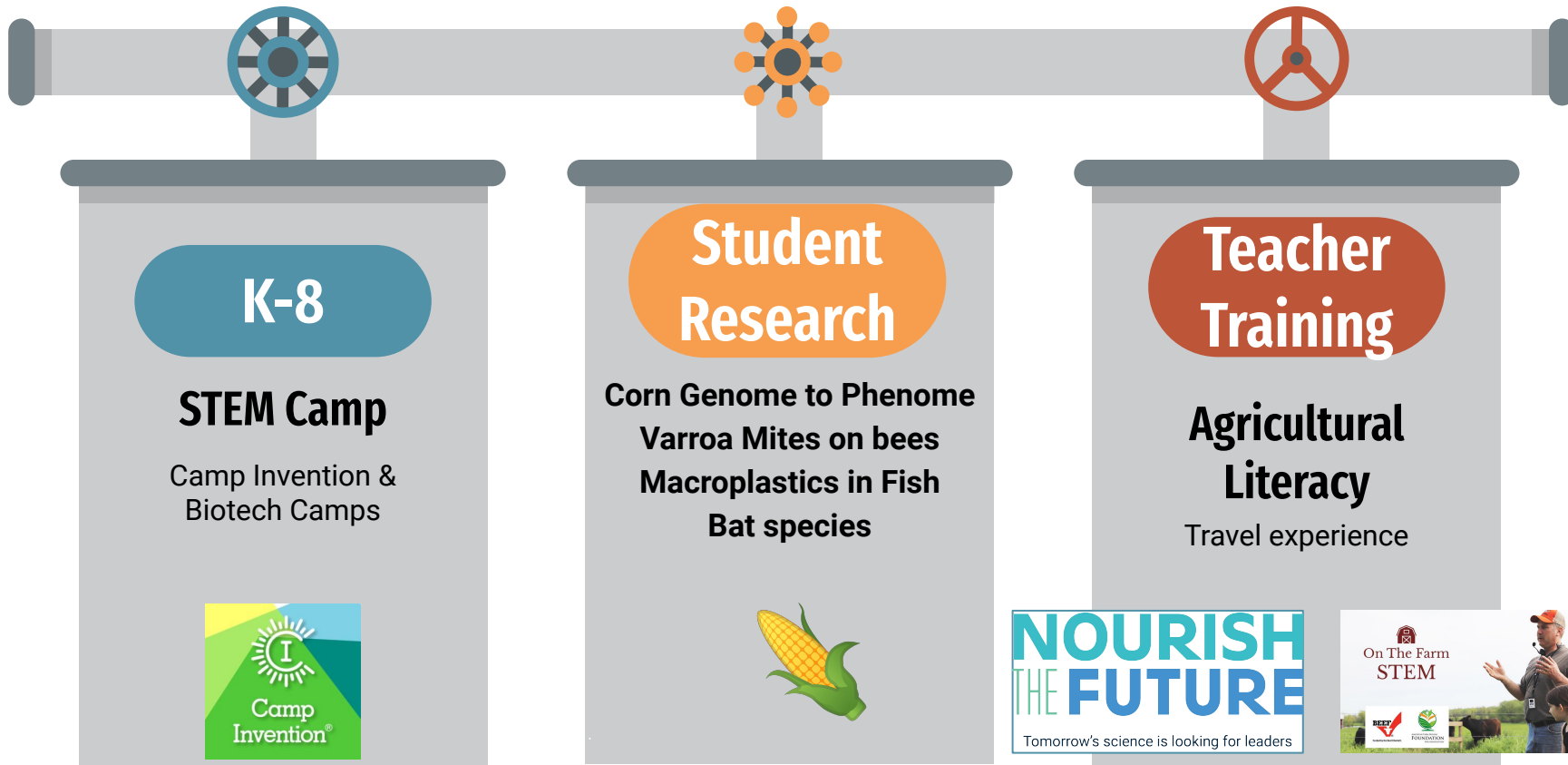
Day	Plant A height (cm)	Plant B height (cm)
1	2.1	1.7
2	2.3	2.1
3	2.5	2.9
4	2.7	3.5
5	2.9	4.2

<https://userguide.dataclassroom.com/docs/converting-data-to-tidy-format>

Tidy Data

Day	Plant	height (cm)
1	A	2.1
2	A	2.3
3	A	2.5
4	A	2.7
5	A	2.9
1	B	1.7
2	B	2.1
3	B	2.9
4	B	3.5
5	B	4.2

STEM Pipeline



K-8

STEM Camp

Camp Invention &
Biotech Camps



**Student
Research**

Corn Genome to Phenome
Varroa Mites on bees
Macroplastics in Fish
Bat species



**Teacher
Training**

**Agricultural
Literacy**

Travel experience

**NOURISH
THE FUTURE**

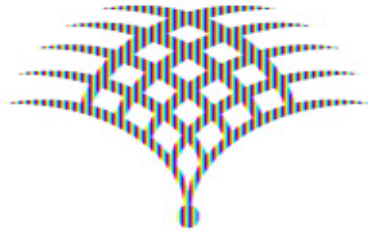
Tomorrow's science is looking for leaders





NOURISH THE FUTURE

Tomorrow's science is looking for leaders



DONALD DANFORTH
PLANT SCIENCE CENTER
DISCOVERY | COMMUNITY | IMPACT

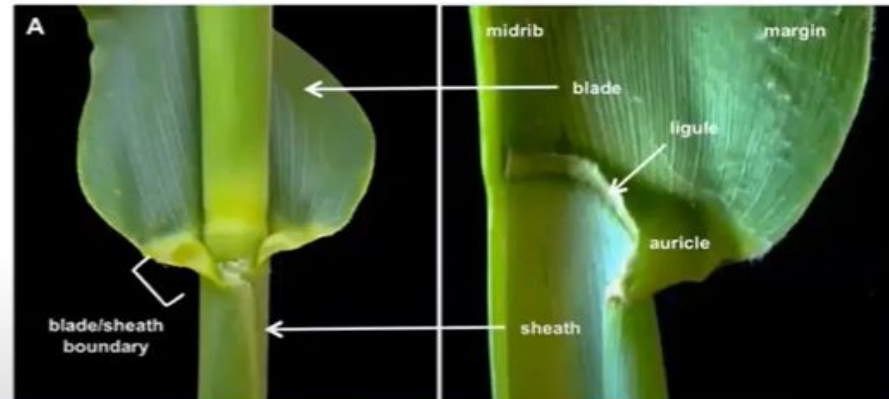


The Structure of a Corn Leaf

- Basal portion = Sheath
- Distal Portion = Blade
- Boundary Region= Ligular Region
 - A pair of wedge-shaped, lighter green auricles & the ligule



Moon, et al., 2013



1920



2018



Adam Bray

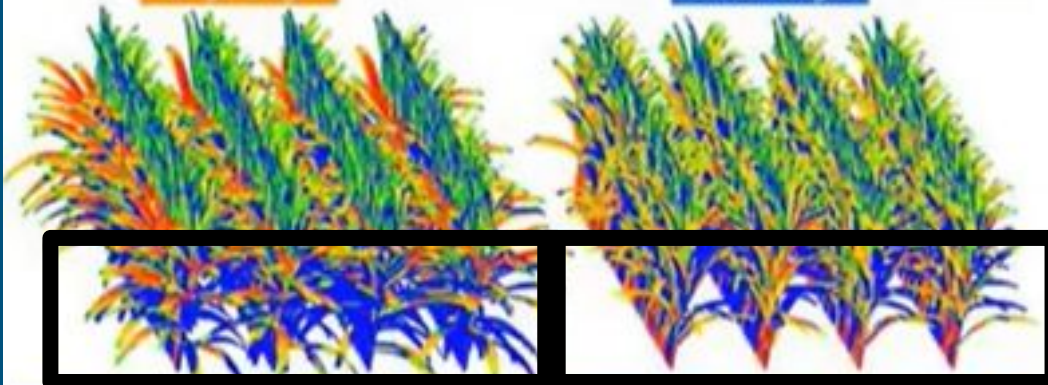
A



large angle



small angle

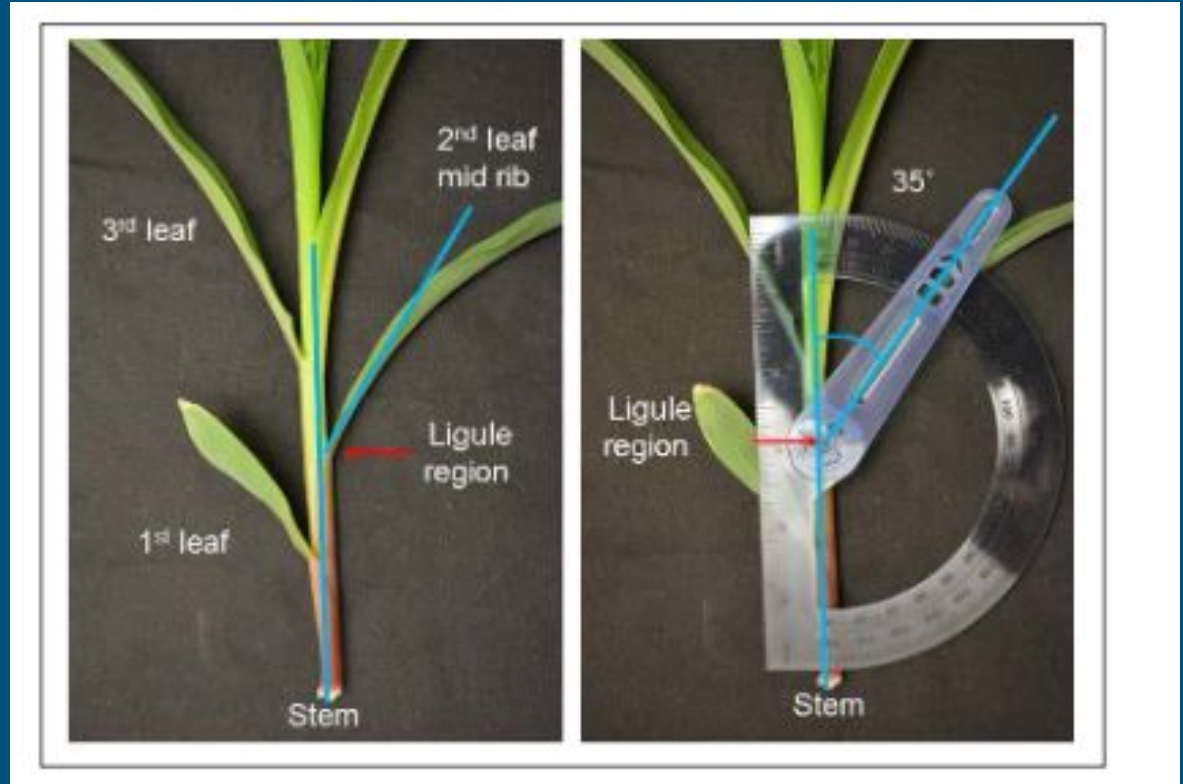


energy absorbed

Light distribution in crop canopies

Leaf Angle Measurements

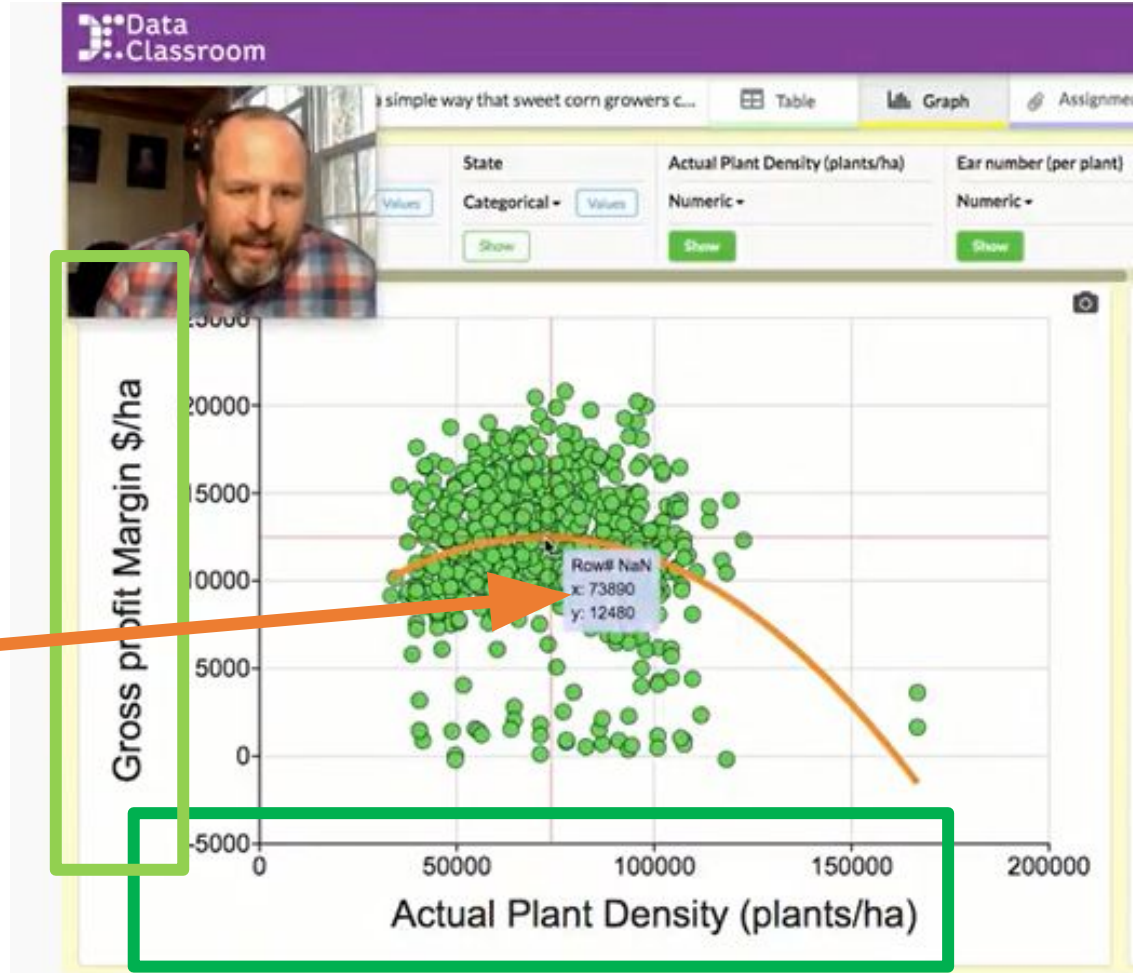
Protractor or Image J



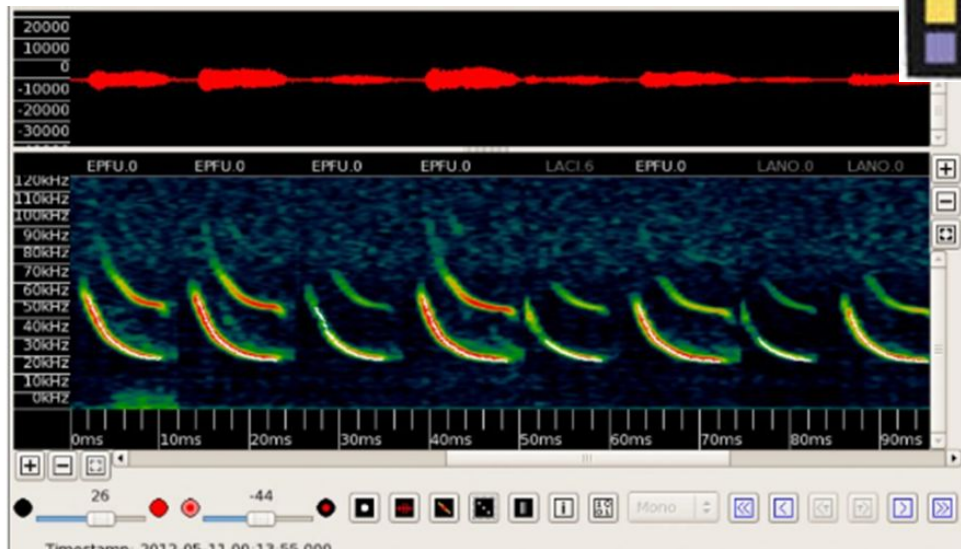
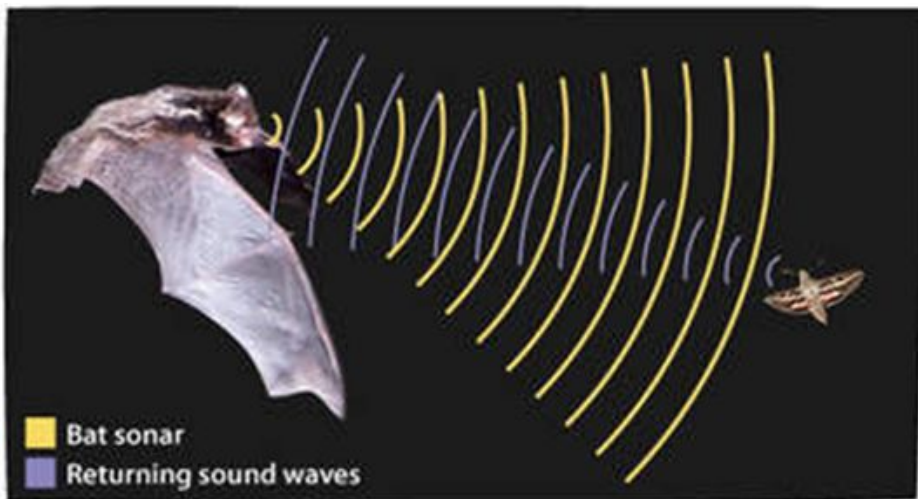
Corn Genome to Phenome Folder

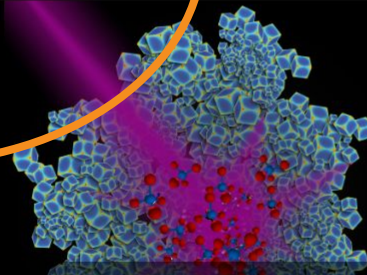


Cash on the Cob DataClassroom



Bat Population at BASF





Beam of ultraviolet light hitting swarm of rhodium nanocubes

Duke University researchers have engineered rhodium nanoparticles (blue) that can harness the energy in ultraviolet light and use it to catalyze the conversion of carbon dioxide to methane, a key building block for many types of fuels.

Credit: [Chad Scales](#)

Resources for Educational Program Development

Find out how the NACK Network can help you develop your nanotechnology or nanotechnology manufacturing course or program. [read more](#)

Recently Updated Curriculum Resources

[E SC 215](#) | [E SC 216](#)

Events – Webinars & Workshops

MicroNanoTechnology Community Survey: Help establish needs and priorities for educational...

Remote Access



[Learn More & Schedule a Remote Access Session](#)

Alumni Resources

Connect with fellow Nano Alumni today!

[Alumni Network](#)



Handbook

Access the 2015 edition of the [Handbook for Processes and Best Practices for Nanotechnology Workforce](#)



In the News – Featured Stories

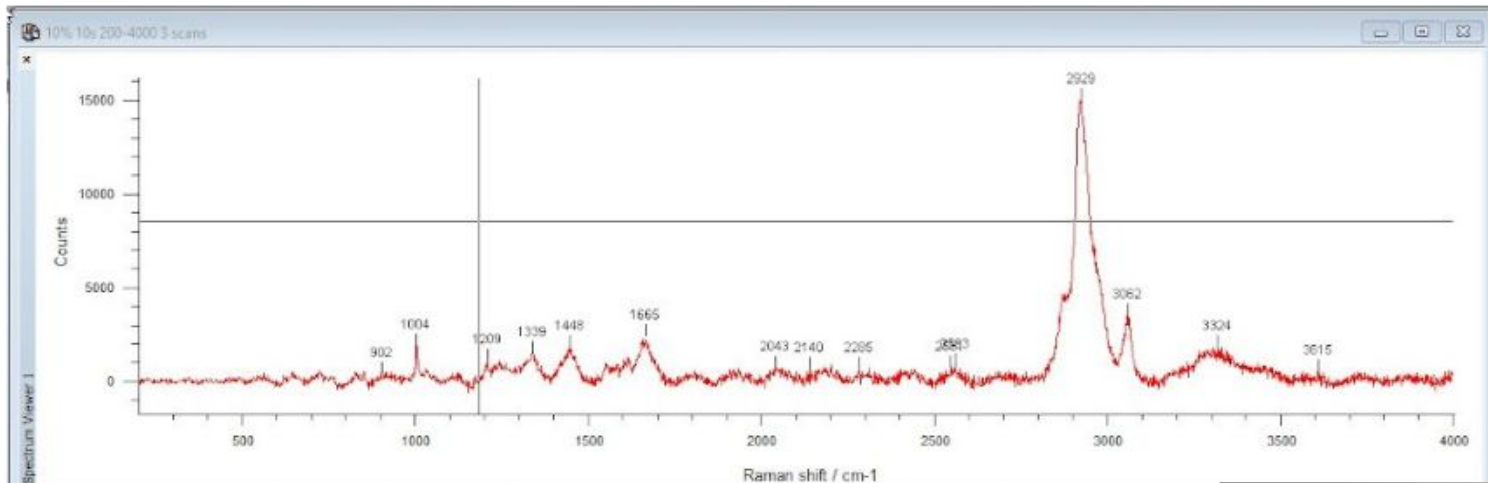
[A Nano-Ready Workforce](#) [Read More](#)

[NSF Funds CNEU to Develop Nanotechnology Workforce](#) [Read More](#)

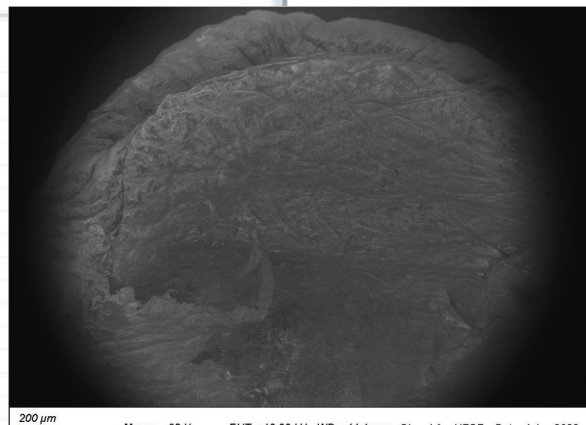
[RAIN Partner, Forsyth Tech, Takes First Place in NSF Competition by Applying Nanotechnology to Innovation](#) [Read More](#)

[Want more News?](#)

Marcroplatic survey of Mahi digestive system



Peak no.	Centre	Height	Width	Area	Absolute inten...	Low edge	High edge
1	902.007	596.301	9.62183	2241.04	438.215	878.846	928.49
2	1003.66	1874.22	8.19907	38622.3	1925.61	966.486	1077.59
3	1209.14	956.909	9.26464	82546	1124.16	1157.66	1279.1
4	1339.31	1205.27	29.2407	109476	1566.3	1288.22	1384.38
5	1448.18	1766.48	36.3834	92256.5	1845.38	1387.98	1504.35
6	1665.44	1637.63	23.3504	211213	2453.02	1613.84	1737.43
7	2042.96	515.69	6.87338	50127.3	780.603	2007.53	2082.34
8	2139.88	625.013	1.5199	6143.74	682.357	2123.6	2153.17
9	2285.01	511.141	2.2493	18191.2	690.479	2252.55	2307.41
10	2550.86	531.672	4.48267	15591.4	778.91	2515.17	2554.18
11	2562.93	478.43	4.418	14225.6	898.741	2557.3	2571.29
12	2928.59	14592.9	47.8326	1.2703e+06	15142.7	2805.25	3029.15
13	3062.42	2815.61	23.1925	169580	3534.91	3030.61	3117.69
14	3323.68	545.998	2.84891	33248.7	1856.64	3318.3	3329.52
15	3614.93	502.834	1.32407	3963.93	572.724	3604.25	3617.71



Continuous-Release Mist Diffusion of Thymol-Based Essential Oils

■ Week 1 ■ Week 2 ■ Week 3 ■ Week 4

Control (Veg Glycerin)

21.7%

24.0%

28.1%

26.2%

Thyme EO

24.9%

57.7%

13.3%

4.1%

Oregano EO

27.4%

45.8%

17.2%

9.6%

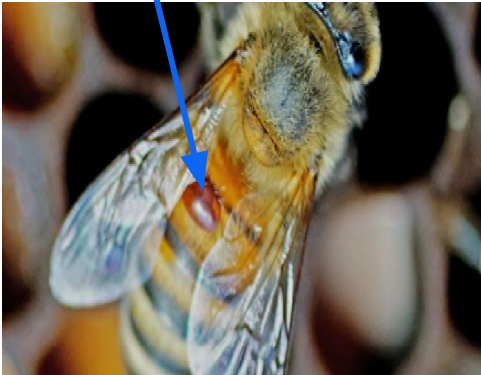
Rosemary EO

23.1%

38.7%

25.9%

12.3%



Resources:

Danforth Center Plant Research

https://www.danforthcenter.org/our-work/education-outreach/k-12-programs/?_sw_csrfToken=PPxjK9Pq93DEVP55xMtwPISgyPMrgKD1

Nourish The Future <https://nourishthefuture.org/>

On The Farm STEM <https://www.onthefarmstem.com/>

DataClassroom <https://about.dataclassroom.com/>

Cash on the Cob Teacher walk through <https://www.youtube.com/watch?v=d2DXBISYpK0>

Cash on the Cob Activity <https://dataclassroom.com/en/dataseteditor/31439/attach/2>

Tidy Data <https://userguide.dataclassroom.com/docs/converting-data-to-tidy-format>

Video of Dr. Reedy explaining visualizations from his paper <https://youtu.be/2MpC0CBA4Vo>

Micro Nano Technology Education Center <https://micronanoeducation.org/>

NACK Network <http://nano4me.org/>

Remotely Accessible Instruments for Nanotechnology (RAIN)

 <http://nano4me.org/remoteaccess>
Food and Agriculture
Center for
Science Education

Kristin Hunter-Thomson



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@dataspireeducators ([Facebook Group](#))

@ru_dataspire ([Twitter](#))

[Sign up to join the mailing list](#)

Looking for more?

- [Data Literacy Series workshops](#) - online, synchronous workshops around student common data misconceptions
- [Sign up to join the mailing list](#) of upcoming workshop and curriculum opportunities

Other Data Literacy Resources

- <https://www.verbspecialgames.com/> - Order your own copy of Charty Party (or any other of the great games they make) with a **15% discount using code: DATASPIRE**
- Book ideas re: various data literacy, science education, & pedagogy topics - <https://dataspire.org/data-and-science-literacy-book-ideas>
- Check out more data teaching resources at: <https://dataspire.org/data-resources>
- NSTA's Science Scope Interdisciplinary Ideas "Data Literacy 101" articles: <https://dataspire.org/data-literacy-101-articles>
- NASA Data Literacy Badges for Teachers & Students - <https://www.nasa.gov/audience/foreducators/best/badging.html>



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