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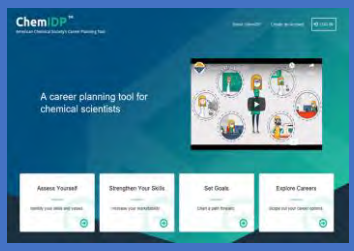

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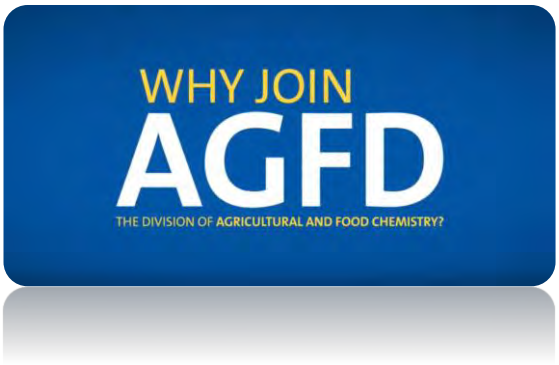

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How Wildfire Smoke

Impacts the Quality of Wine

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How Wildfire Smoke Impacts the Quality of Wine

ELIZABETH TOMASINO
Associate Professor of Enology,
Oregon State University

GAVIN SACKS
Professor and Associate Chair in Food Science, Cornell University

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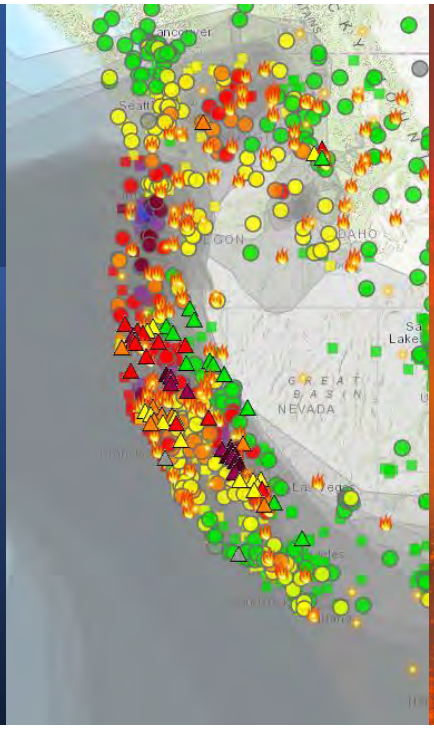
Incidences of wildfires are increasing



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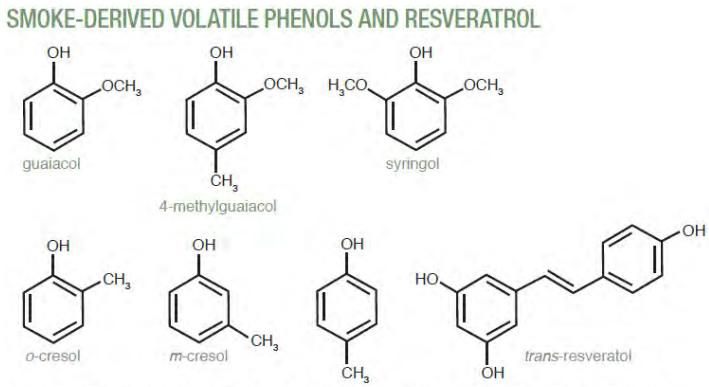

Chemical structures of characteristic smoky aroma volatiles found in smoke from wood fire (guaiacol, 4-methylguaiacol, syringol, *o*-cresol, *m*-cresol, and *p*-cresol), and the naturally occurring grapevine metabolite *trans*-resveratrol.

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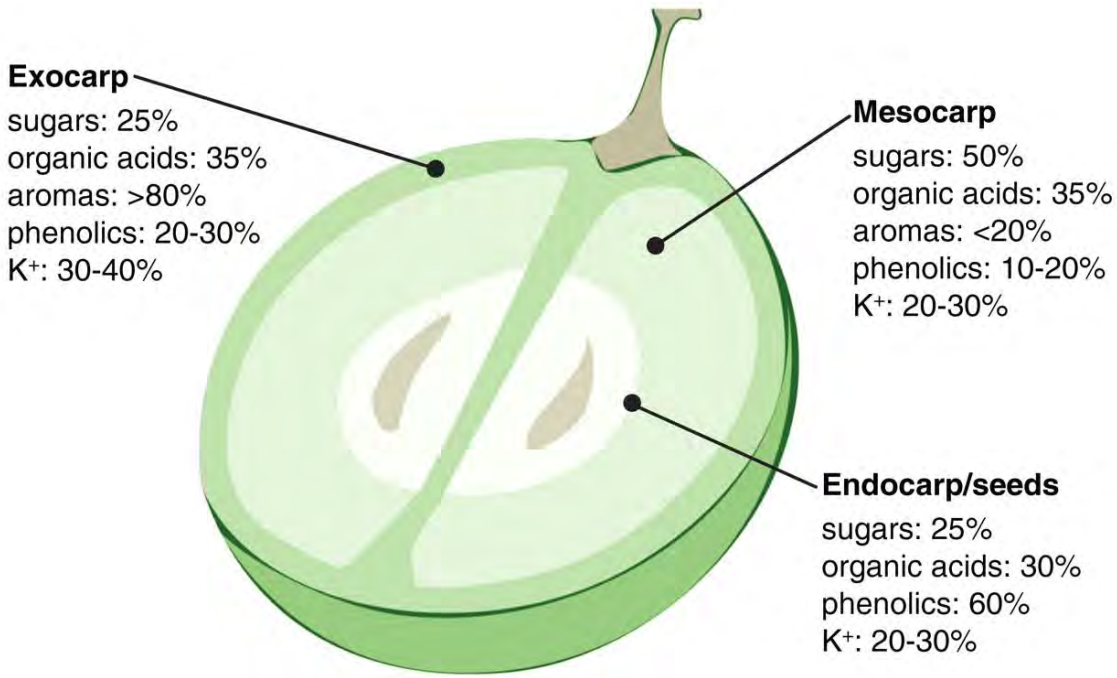

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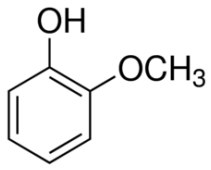
Free smoke compounds



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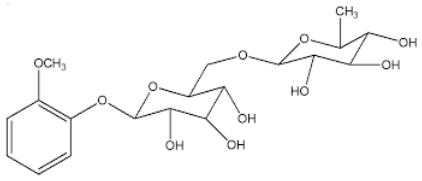
Bound smoke compounds



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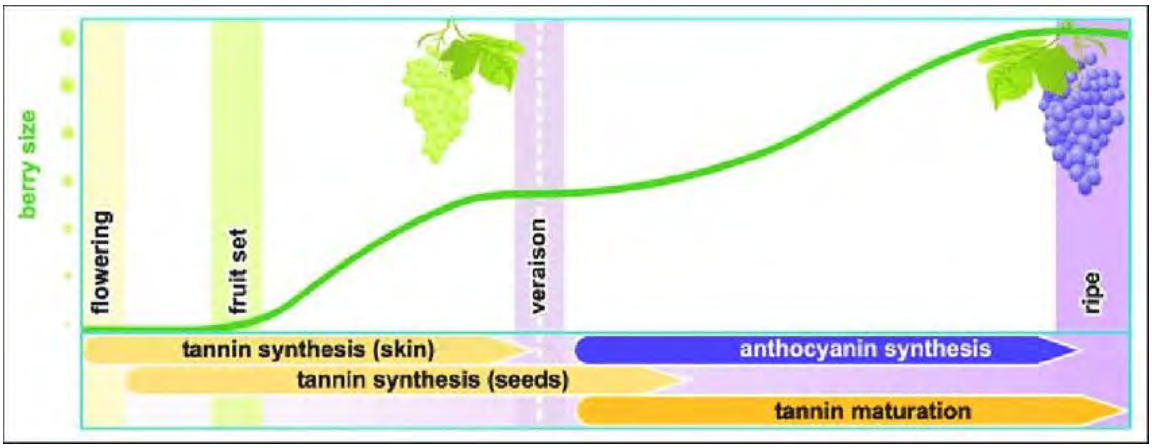
Total smoke compounds

19



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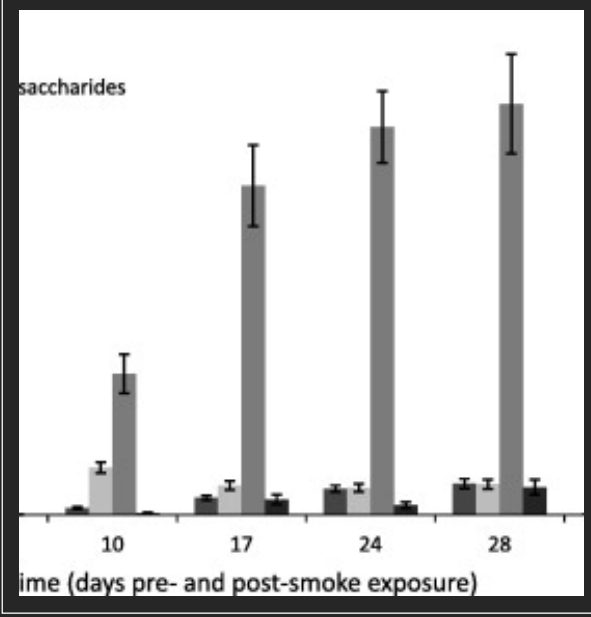

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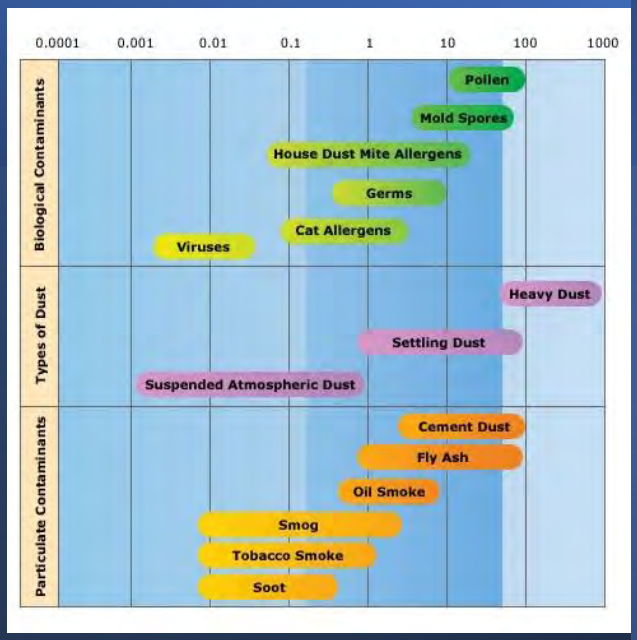
Cabernet Sauvignon


Grüner Veltliner


Pinot Noir


Riesling

22


0.0001
0.001
0.01
0.1
1
10
100
1000
Biological Contaminants
Pollen
Mold Spores
House Dust Mite Allergens
Germs
Cat Allergens
Viruses
Types of Dust
Heavy Dust
Settling Dust
Suspended Atmospheric Dust
Particulate Contaminants
Cement Dust
Fly Ash
Oil Smoke
Smog
Tobacco Smoke
Soot

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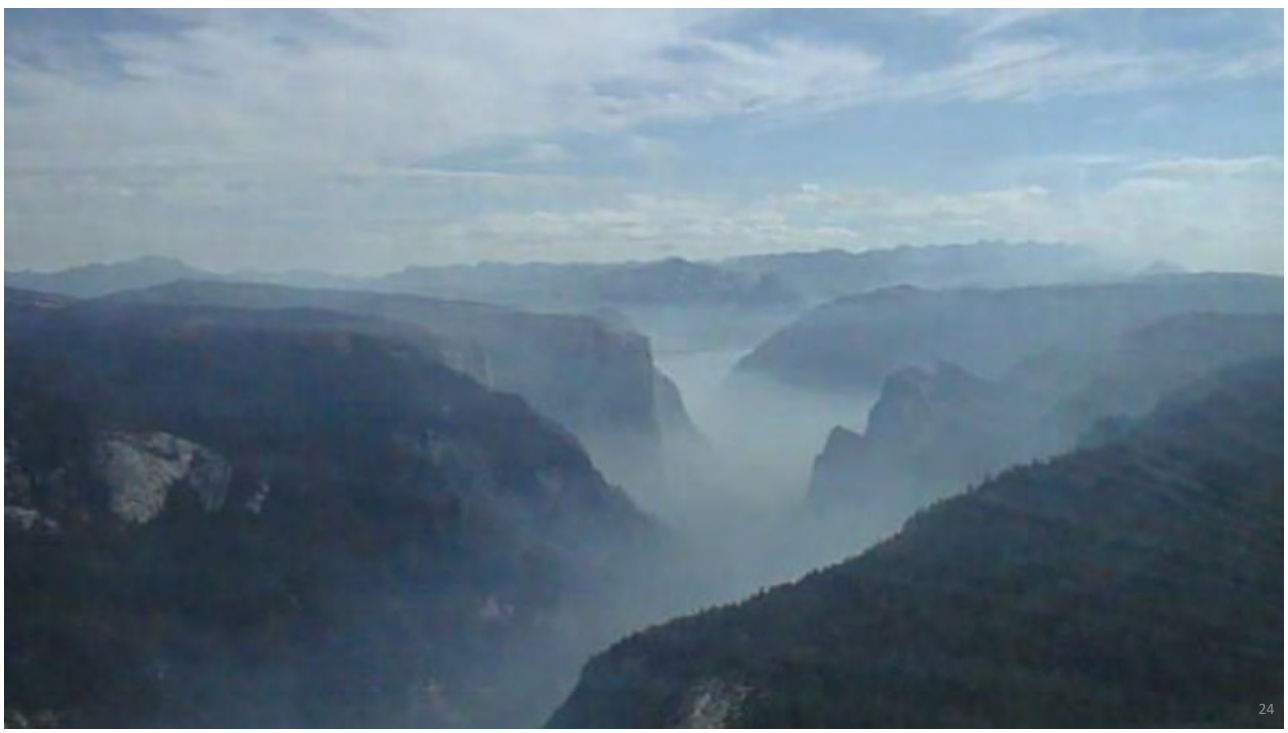

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Audience Survey Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT

What is the main difference between red and white winemaking?

- Different grapes are used
- Grape skins are removed at different times
- Final alcohol content
- Grapes are bigger
- Nothing

** If your answer differs greatly from the choices above tell us in the chat!*

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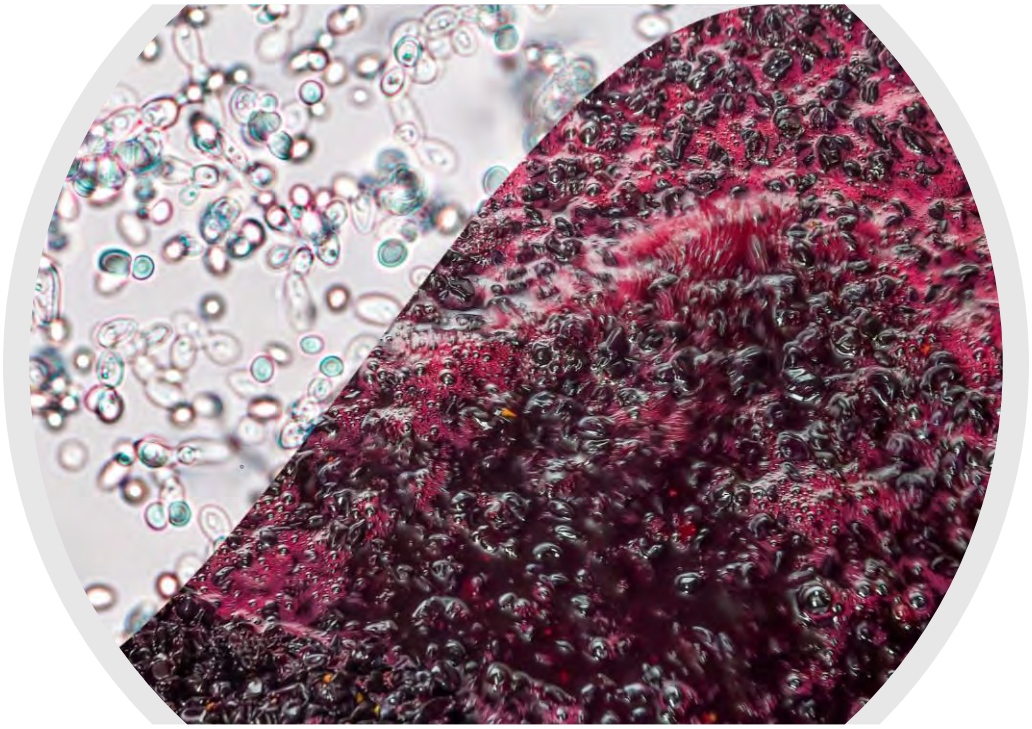

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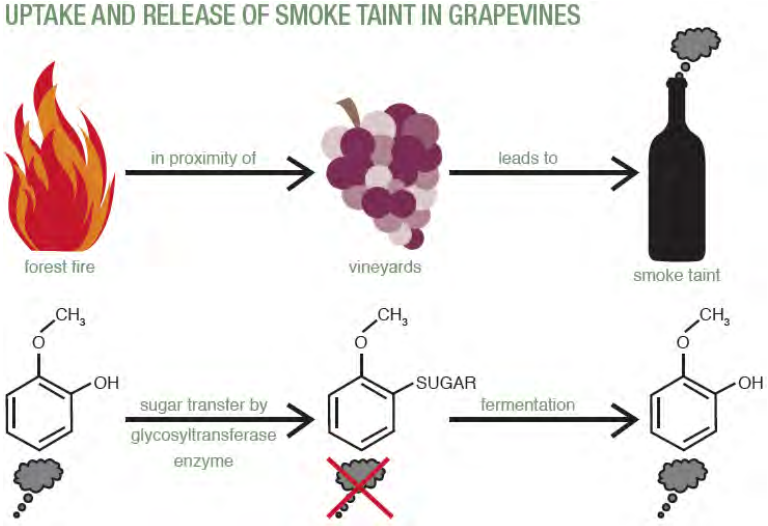
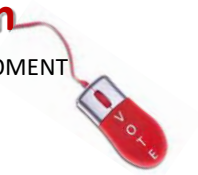
UPTAKE AND RELEASE OF SMOKE TAINT IN GRAPEVINES



The above sequence is responsible for the uptake and release of smoke taint in grapevines. Sugars are added by a process called glycosylation and are cleaved off again during fermentation.

Audience Survey Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT



Which of the below is NOT an aroma compound?

- Limonene
- Ethyl butyrate
- Cresol
- Catechin
- B-ionone

** If your answer differs greatly from the choices above tell us in the chat!*

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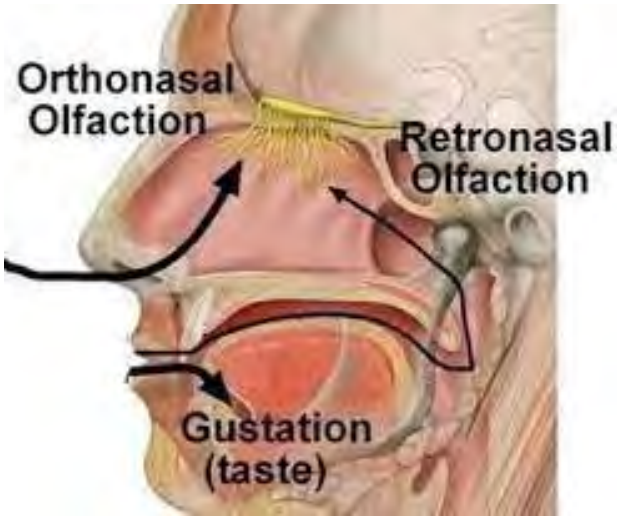

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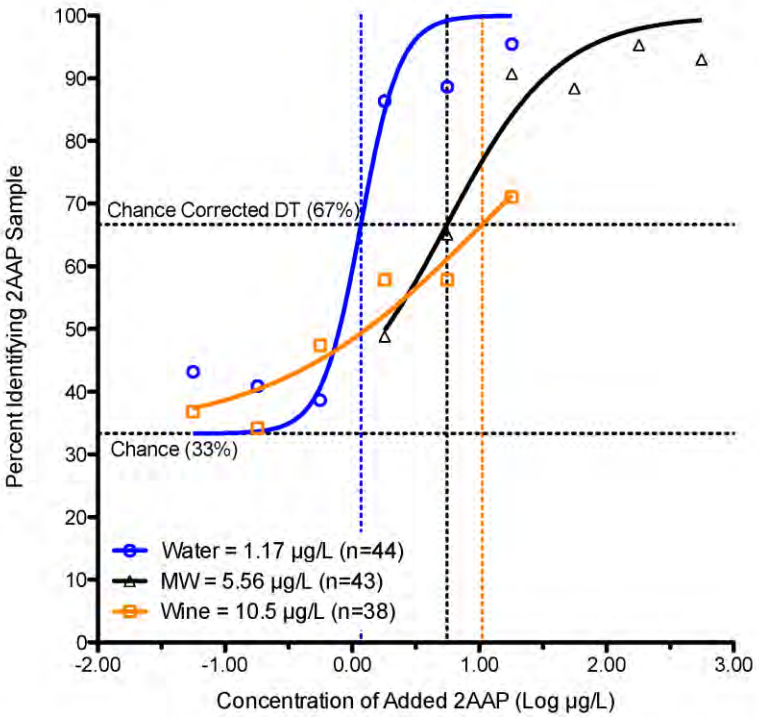
Percent Identifying 2AAP Sample
100
90
80
70
60
50
40
30
20
10
0
Chance Corrected DT (67%)
Chance (33%)
Water = 1.17 µg/L (n=44)
MW = 5.56 µg/L (n=43)
Wine = 10.5 µg/L (n=38)
-2.00
-1.00
0.00
1.00
2.00
3.00
Concentration of Added 2AAP (Log µg/L)

33

34



2020-2022
Identification of unknown compounds related to smoke exposure

35

2020-2021 Smoke Sensory

- **Carry over effects of smoke sensory analysis**
  - Timing & rinses to remove this effect
  - Running now!
- **What percentage of bound compounds are released in the mouth**
  - Done in model solution with both bound & free aroma compounds
  - Spring 2021
- **Compound interactions for smoke perception**
  - Spring/summer 2021

36

Grape Coatings to prevent smoke adsorption

- With Yanyun Zhao, Alec Levin and Mike Penner, OSU

37

Volatile Phenol degrading pathways

Chris Curtin, OSU

38

Micro-oxygenation of smoke compounds

- James Osborne, OSU
- Elizabeth Tomasino, OSU
- Cole Cerrato, OSU

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- Take Aways
- Understand the complexities of grape smoke exposure both from chemistry and sensory standpoint
- We gave prevent/mitigate this issue, it will just take some time
- Wineries will never release low quality products, although wines may be limited on heavy wildfire years

40

Many people to Thank!

- Dr. James Osborne
- Aubrey DuBois, RFA
- Dr. D. Cole Cerrato

- Lindsay Garcia
- Jenna Fryer
- Trung Tran

- Industry Partners!

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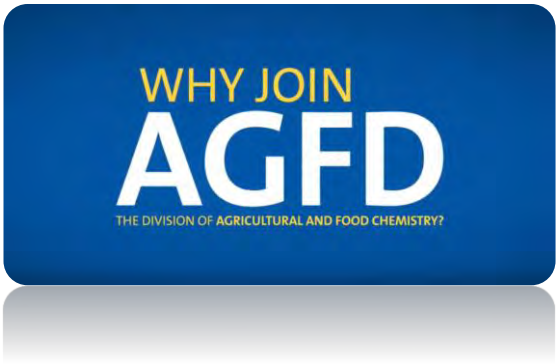

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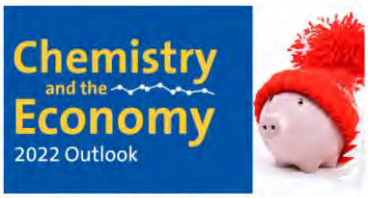

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