

THE STATE OF COLORADO

20 18

LIQUID ARTS

FIELD TO FOAM FORUM



BUILDING A RESEARCH NETWORK FOR COLORADO BREWERS AND DISTILLERS

HOSTED BY

COLORADO STATE UNIVERSITY

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COLLEGE OF AGRICULTURAL SCIENCES | DEPARTMENT OF FOOD SCIENCE AND HUMAN NUTRITION
DEPARTMENT OF AGRICULTURAL RESOURCE ECONOMICS | VICE PRESIDENT FOR RESEARCH

SUSTAINABILITY

Breakout Session Summary

Highlights

- What markets exist for byproducts of the Liquid Arts industry, such as spent grain and yeast?
- Standards for measuring sustainability specific to the brewing industry should be developed.
- How can brewers and distillers become more sustainable and efficient in their operations?
- What sustainability options exist and which have the highest rate of return on investment?

Priorities and research questions for the foundation of a public/private partnership

Discussion transcript

The session began with the moderators contextualizing the issue of sustainability. Sustainability can take many forms, such as environmental or labor sustainability, and participants were encouraged to think outside of the box. The challenge at the heart of the issue is that an action improving sustainability in one area will often be offset by a reaction decreasing sustainability in another area.

After collecting the notecards, participants started discussing how to improve their sustainability with respect to water consumption and as consumers or growers of agricultural products. Participants acknowledged brewing is a water intensive industry and were interested in tracking their own water use and sharing best practices to both meet sustainability objectives and improve process efficiency. Some participants suggested looking for ways to recycle water used in the brewing process and improve the quality of wastewater leaving the brewery. With respect to agricultural products, participants identified the need to become more sustainable by pointing out the industry's contribution to last year's largest recorded algal bloom in the Gulf of Mexico. Ways to improve sustainability brought up by participants include proper nutrient application based on soil test results, breeding grain varieties that need less fertilizer and water, paying attention to soil health, and supporting local suppliers by creating incentives to source locally.

Liquid Arts producers were interested in discovering options to utilize spent grains and other byproducts. It was pointed out that spent grain can be used as feed, but if not prepared properly (e.g. dried and separated from hop matter) it can be harmful to animals. Farmers are also unsure of how to utilize spent grain. Similar to grain, breweries are looking for options on how to utilize spent yeast. The most direct use would be for farmers to use spent yeast as nitrogen fertilizer. Unfortunately, not much information is available to brewers or farmers on how to

prepare the yeast or apply it to the field. Participants believed that if guidelines could be developed on how to prepare and use byproducts for agriculture, there is real potential to add value to spent products from the Liquid Arts. A spent grain co-op depot was launched in North Carolina to ensure the safety and quality of the grain being used as feed by farmers. This could serve as a model for what can be done in Colorado.

Manufacturing participants were also interested in how to become more sustainable and efficient in their operation. Thermal recapture was identified as an area where, due to substantial technological improvement and available information, many breweries can improve without prohibitive costs. CO2 capture was also mentioned as becoming more efficient, however, regulations concerning CO2 have become more complicated. With regard to packaging, the possibility of multiple use bottles was raised. Participants asked whether this would be feasible if local brewers organized together to pool their resources and distribute the costs. Challenges include collection, sorting, cleaning, ensuring bottle integrity, and the lack of a standard bottle. Distillers pointed out that it is illegal for them to reuse bottles. Other areas within brewery operations that participants felt could be made more sustainable through innovation was yeast management and beer waste (each gallon of beer lost equates to four gallons of water).

The question of how to assess sustainability was a priority among session participants. They indicated a need for the development of guidelines based on the size of the operation as well as on which sustainability options will have the highest rate of return on investment. Also needed is a central location for resources related to efficiency and sustainability to be developed and made accessible to the Liquid Arts industry. A common sentiment held by participants is that, while they personally care about sustainability, there is a lack of meaningful incentives to invest. This could at least be partially addressed by showing a cost benefit analysis of sustainable options coupled with a certification

program similar to LEED that ranks breweries based on the sustainability of their operations. CSU could potentially provide the space to educate industry members interested in sustainable options as well as make related research accessible.



Dotocracy results: 28 session participants, 108 votes

Overview of topic priority

Topic	Rank	
	Academic	Industry
Brewing operations	2 (tie)	1
Agriculture	1 (tie)	2
Water	2 (tie)	3 (tie)
Spent grain, yeast and other byproducts	1 (tie)	4
Social	4	5
Sustainability assessment	3	3 (tie)

Detailed topic breakdown

Brewing operations

- Small/ start-ups
- CO₂ capture and regulations
- Thermal recapture
- Packaging reuse and innovations
- Optimize yeast management
- Reduce beer waste
- Count me in: Jason Ford, Eric Larkin, Brandon Boldt, Dave Bark, Cy Bevenger, Matt Arthur, Leia Barnwell, Carol Cochran, Julius Grisetete

	Academic	Industry	Total
Breakout session votes	5	24	29
Percent	5%	22%	27%
Plenary session votes	1	4	34

Agriculture

- Nutrient use
- Breeding
- Climate friendly (soil health)
- Locality
- Count me in: Bill Bauerle, Eric Larkin, Christie Peebles, John McKay

	Academic	Industry	Total
Breakout session votes	6	19	25
Percent	6%	18%	23%
Plenary session votes	1	2	28

Water

- Agricultural use (watershed management)
- Recycling, process efficiency, waste management, and measurement
- Seasonal variation in quality
- Sharing best practices
- Count me in: Bill Bauerle, Cy Bevenger, Dave Bark, Carol Cochran

	Academic	Industry	Total
Breakout session votes	5	16	21
Percent	5%	15%	119%
Plenary session votes	1	3	25

Spent grain, yeast and other byproducts

- Alternative uses/sidestreams
- Optimize value
- Regulations
- Co-op
- Count me in: Dan McCue, Brandon Boldt, Ruthie Watson, Julius Grisette

	Academic	Industry	Total
Breakout session votes	6	8	14
Percent	6%	7%	13%
Plenary session votes	1	5	20

Social

- Diversity
- Fair compensation
- Fair trade
- Retention
- Count me in: Meagan Miller

	Academic	Industry	Total
Breakout session votes	0	2	2
Percent	0%	2%	2%
Plenary session votes	1	2	5

Sustainability assessment

- Saving money, high ROI
- Systems level
- Benchmarking and certification
- Selling sustainability
- Resource development
- Incentivization
- Count me in: Cy Bevenger, Jason Ford, Loren Matthews, Eric Larkin, Brandon Boldt, Carol Cochran

	Academic	Industry	Total
Breakout session votes	2	15	17
Percent	2%	14%	16%
Plenary session votes	1	4	22



Breakout session participants and contact information

Name	Affiliation	Email
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