



Livestock Mortality Composting Workshop

Tuesday, November 22, 2022
CSU, Chico - University Farm

Event Report

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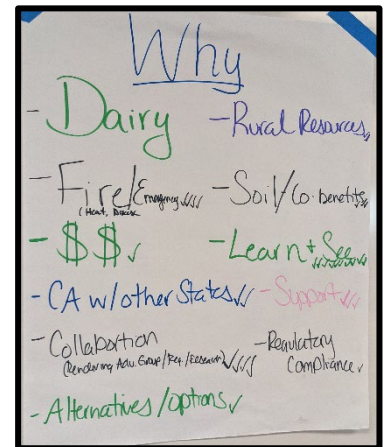
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The Livestock Mortality Composting Stakeholder Workshop was an opportunity for researchers at Chico State and UC Cooperative Extension to share progress on their research, demonstrate the compost process, and for all stakeholders to engage in a discussion about how to move the process forward to legislation. The event was supported by California State University Chico Agricultural Research Institute, Western SARE, Livestock Memorial Research Foundation, Chico State, Rustici Endowment and UC Cooperative Extension.

A collaborative effort between CSU, Chico and UC Cooperative Extension in cooperation with CalRecycle, California Department of Food and Agriculture (CDFA), and Butte and Siskiyou County Environmental Health Departments was formed to investigate the utility of composting animal tissue in 2018.

Disposal options for livestock mortality in California include: 1) transport to rendering plant, 2) disposal in a permitted landfill or 3) on-site burial. Options for disposal vary by county. There are currently only three rendering facilities in the entire state of California that take whole carcasses, resulting in large gaps of the state with no service. There is a need to provide another livestock disposal option for ranchers and small slaughterhouses to dispose of whole carcasses or offal/butcher waste. The California Department of Food and Agriculture (CDFA) has created guidelines for livestock disposal during emergency situations, however a different option is needed for on-farm mortalities where rendering is not an option or unaffordable.

Over the past four years the research team has investigated composting animal tissue in two locations (i.e., Tulelake and Chico, CA) with special permission from CalRecycle and CDFA, specifically looking at: 1) compost process for whole carcasses and offal, 2) temperature and moisture levels, 3) concentration of heavy metals and nutrients in cured product, and 5) pathogen reduction protocols. The results of these studies were presented at this Livestock Mortality Composting Workshop and there was moderated discussion that focused on future direction and next steps.



The event drew 41 guests from diverse a section of stakeholders including: California Department of Food and Agriculture, Chico State, CalRecycle, UC Cooperative Extension, local county government, UC Davis School of Veterinary Medicine, California Cattlemen's Association and California Cattlemen's Foundation.



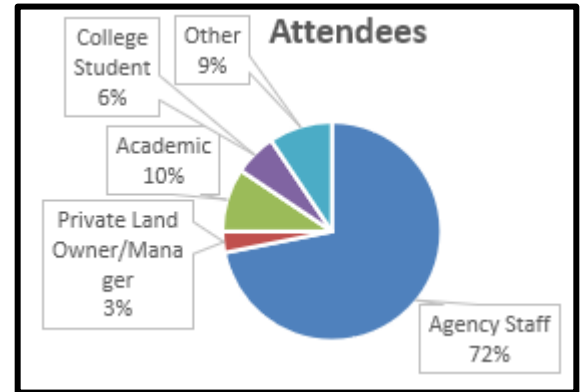
Summary from discussion shared with group: The afternoon session was focused on navigating the complexity of livestock mortality composting and what the process could look like in California. The session was moderated by Dr. Dave Daley who facilitated conversation between attendees. Workshop guests were asked to express their potential concerns to help encourage this project to carry on and becoming more feasible for producers in California. The following points were identified as future directions:

- **Future Research Needs:**
 - Decomposition and management of bones left over from previous compost cycles (Chico State priority in 2023)
 - Investigation of non- and livestock mortality compost, nutrient management impact on ground water
 - Seed emergence test (request by CalRecycle)
 - Risk analysis of compost vs. alternatives (e.g., leaving animals above ground to decompose)
 - Continue work in areas where rendering is not available
**see additional thoughts in the survey results below*
- **Next steps:**
 - Hold workshop in spring 2023 and invite to the discussion:
 - State Water Board
 - Regional Water Quality Boards
 - State Air Resources Board
 - County Air Quality Management Districts
 - Work with CDFA & CalRecycle to address concerns with Best Management Practices document
 - Find an out-of-state expert that can speak to California's concerns
 - Work with stakeholders and CalRecycle to change Section 17855.2 (Title 14)
**see additional thoughts in the survey results below*

Event Evaluation Summary

There were 88% (n=32) of eligible attendees completed the post event survey. Results from workshop include:

- 100% of attendees gained new knowledge at the workshop
- 100% of attendees had the opportunity to connect with new people at the workshop
- 94 % of attendees improved awareness of livestock mortality composting from workshop
- Nearly 60% of attendees gained new skills from the workshop
- 72% modified opinions and/or attitude based on workshop
- Collectively, the survey responds predict to share information from this workshop with an additional 1671 stakeholders – making total workshop reach over 1,700!



- Most useful, enlightening, or educational component of the workshop for attendees:
 - Discussion and Networking: specifically, regulatory process and current roadblocks. (n=19)
 - Visiting the composting site at Chico State University Farm (n=7)
 - Case study presentations with technical information and testing data (n=6)
 - Overall interest in the topic (n=6)
- **Biggest concern regarding on-farm composting?**
 - General regulatory/statutory complexity (7)
 - It will never happen due to too many agencies involved. The red tapes. The regulatory process, red tape to get through will be exhausting for all. (3)
 - Changing regulation and approvals through the Water Board & Air Board
 - Government agencies impeding a best practice
 - Silly regulations preventing farmers and ranchers from progressing towards best practices.
 - CCR section 17055.2
 - On Farm Practicality (7)
 - Cost and hassle, possibly making it prohibitive at small scale (2)
 - Regulations allowing small, safe composting but providing more oversight when the operation gets to a certain size
 - Adequate training and education for producers on proper composting and maintenance. Regulatory constraints.
 - Regulations to farmers and ranchers, changing on farm requirements and local rules
 - Wide adoption of BMPs; large scale operations
 - Identifying minimum BMPs that minimize risk
 - Composting Process (5)
 - Contaminants that don't break down in the compost process that could become a threat to human health.

- The biggest concern is how to properly keep animals that are not "fit" to be composted from the compost pile
 - People having run-off concerns creating pushback
 - I would like to better understand the BSE risk
 - Air and groundwater pollution by improperly processed compost
 - What happens if it's not done "by the book"? What is worst case risk and how can it be mitigated
 - Without regulatory approval can I teach people how to do it right without putting their operation at risk.
 - Compost End Use (2)
 - Soil health, commercial use vs personal use
 - General Thoughts
 - More concerned with the lack of on-farm composting than procedures themselves.
 - I believe any on-farm composting would be better than a bone pile.
 - I have no concerns
 - Focusing efforts on bringing all concerned groups to the meeting
- **What other types of information, resources, research, and trainings could we provide regarding on farm livestock mortality composting?**
 - **Research and more data (8)**
 - Research applying the compost to plant material for both animal/human consumption- to determine data for prion (BSE) uptake fears.
 - More information on prion reduction/inactivation
 - Research: wool and hide, on rangeland impact, compost where animals die on site
 - Information on Pentobarbital from animal euthanasia.
 - BMPs readily available (2)
 - Alternatives of material that can be used as layers in compost piles, (expired feed/grain)
 - Good types of bacteria that the compost has.
 - Workshop on compost pile making
 - Cost analysis for process
 - A survey of current disposal methods statewide
 - Risk assessment in regard to pathogens like BSE, anthrax, etc. Would a simplified process work? How to make even more accessible on-farm
 - Brief of health and regulatory concerns as handled in other states. Suggest smaller work group to coordinate going forward, but still more "big" meetings later.
 - Information on how other states are able to implement carcass composting - statutes/codes that allow them to do that. (3)
 - Analysis of the possible local agency requirements.
 - **Collaborators (7)**
 - Engage with air district (3)

- Water Board (2)
 - Reaching out to groups who were not at this meeting/workshop
 - Agency leadership engagement
- **Regulatory Process (2)**
 - Once barriers to legal carcass composting are removed what other barriers remain and what can be done to reduce them
 - Outline regulatory compliance process for a given scenario
- **Other thoughts and comments?**
 - Thank you for doing this! Great Workshop! (9)
 - Very informative about both processes and problems. (5)
 - Looking forward to more collaboration work in the future. (3)
 - Excellent work, I believe science is the way we can make the changes we need.
 - Sandwiches are great!
 - Well done, this was a lot more interesting than I expected!
 - From previous compost trainings and information- your methods and materials are overkill to good compost formation. Less time and effort will yield satisfactory results.
 - I think this is definitely a worthwhile goal and look forward to helping through the process.
 - Compare and contrast the composting performed at different location, different feed stocks
 - Separation of cows and the value of their production stream- meaning partially composted cows! Bearing in mind that if we take a lot more time to compost, in some order to break down the bones, the compost will lose a lot of carbon and nitrogen, and will probably be more expensive to produce.
 - Seems like the pathogens the water board would be concerned about are no different than manure composting.