University of California
Agriculture and Natural Resources

California Dairy Newsletter

Vol. 8, Issue 4 October 2016

In this Issue…

Newsletter Editors:

Jennifer Heguy
UCCE Dairy Advisor
Merced/Stanislaus/San Joaquin
jmheguy@ucdavis.edu
209-525-6800

Noelia Silva-del-Rio
Dairy Production Medicine Specialist, VMTRC
nsilvadelrio@ucdavis.edu
559-688-1731

What's the Story about Methane Emissions?

Deanne Meyer, Livestock Waste Management Specialist, UC Davis

Short-lived climate pollutants (SLCP) is a new four letter acronym to add to our vocabulary. You've no doubt heard or read much about this. Remember, in 2006 the California Global Warming Solutions Act (signed by then Governor Schwarzenhegger) designated the Air Resources Board (ARB) as the agency charged with monitoring and regulating sources of emissions of greenhouse gases (GHG). The objective of the act is to reduce our GHG emissions to the level of 1990 by 2020. The recent legislation (SB 1383) requires ARB to approve and implement a comprehensive strategy to reduce emissions of SLCP. The legislation also required ARB to consult with CDFA to adopt regulations to reduce methane emissions from livestock manure management operations and dairy manure management operations. The new target is to adopt regulations to reduce methane emissions from livestock manure management operations and dairy manure management operations, by up to 40% below the dairy sector's and livestock sector's 2013 levels by 2030.

According to the legislation, ARB will "Work with stakeholders to identify and address technical, market, regulatory, and other challenges and barriers to the development of dairy methane emissions reduction projects. The group of stakeholders shall include a broad range of stakeholders involved in the development of dairy methane reduction projects, including, but not limited to, project developers, dairy and livestock industry representatives, state and local permitting agencies, energy agency representatives, compost producers with experience composting dairy manure, environmental and conservation stakeholders, public health experts, and others with demonstrated expertise relevant to the success of dairy methane emissions reduction efforts."

What does all this mean to California dairy operators? Change is in the air. However, change is not here today. If the emails and calls I've dealt with are any indication ---buyer beware! If someone is trying to sell you something to comply with this legislation, realize the details for implementation ARE NOT AVAILABLE YET. If you don't know how ARB will implement all of this, how can someone sell you something that makes you compliant? It's not exactly possible, today.

The other key thing to remember is that knowledge of dairy management needs to be conveyed through the public process as ARB identifies its implementation strategy. No doubt, trade associations will be actively involved. It's also important for individual producers to be actively involved in ARB's public input process. Air Resource Board staff have heard that current manure management practices are done for a reason and that changes in practices may have complex impacts on other facets of a dairy operation (fly and odor control, dust

management, animal health and welfare, etc.). That said, staff are charged with creating a plan to reduce manure methane emissions.

The UCCE Dairy Team is available to answer questions and provide input during the public input process, and to conduct research to further our understanding of manure management and methane emissions.

Link to SB 1383: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1383

New Dairy Advisor in Tulare and Kings Counties

Please welcome the new UCCE dairy advisor for Tulare and Kings Counties, Dr. Joao Paulo Martins, also known as JP. JP was born and raised in Rio de Janeiro, Brazil. Although he was from a big city, his parents owned a 20-cow dairy farm in the Brazilian dairy state of Minas Gerais. During his youth, he spent most of his weekends, holidays and vacations working on the farm; these early experiences with cattle motivated him to attend veterinary school in Brazil. Dr. Martins earned a DVM degree from Federal Fluminense University (UFF), Niterói, RJ, Brazil, and spent a year as a private veterinarian in Brazil. Then, he came to the United States to work as a research assistant and laboratory manager in the Department of Animal Science at Michigan State University (MSU).

JP also earned a M.S. and a Ph.D. in Animal Science, both with a concentration in dairy cattle reproduction physiology, from Michigan State University. The objective of his research during graduate school was to increase the fertility of high producing dairy cows through the use of synchronization of ovulation programs.

During his professional and academic carrier, JP carried out work related to herd health, reproductive management, cattle breeding, synchronization of ovulation, *in vitro* fertilization, and superovulation in commercial (beef and dairy) farms in Brazil and the United States. He also served as an expert in multiple uses of ultrasonography (ovarian morphology, pregnancy diagnoses, fetal sexing, and oocyte pick-up), developed experimental designs and managed research data collection for experiments with small and large numbers of animals, and troubleshot reproductive problems in dairy farms. During the 10-year period that JP was in Michigan, he assisted Michigan dairy producers and the MSU Extension Dairy Team.

“I’m thrilled to be working in a research/extension position in such a great dairy area. I’m looking forward to working with producers, consultants, and allied industry to develop meaningful trainings and tools, as well as readily applied knowledge for dairy producers. My goal will be to develop a research and outreach program that will contribute to the competitiveness and profitability of California dairies.

I’m based out of the University of California Cooperative Extension office in Tulare, but cover both Tulare and Kings Counties. Please feel free to contact me with questions, suggestions and program input. I look forward to speaking with you!”

JP Martins
4437-B S. Laspina Street, Tulare, CA 93274
559-684-3313; jpmartins@ucanr.edu

Silage Structure Options: Not One Size Fits All

Jennifer Heguy, UCCE Dairy Advisor, Deanne Meyer, Livestock Waste Management Specialist, Noelia Silva-del-Rio, Dairy Production Medicine Specialist

Current California Silage Storage Practices. In 2013, a survey on Corn Silage Management Practices was mailed to dairies in the San Joaquin Valley. A total of 160 producers replied to the survey. Select responses are summarized below.

Type of Silage Structures. Silage is primarily stored in wedge (34%) and drive-over piles (32%) with far fewer structures consisting of bunkers (7%) or bags (6%). Twenty-one percent of dairies used a combination of structures to store silage, most often a bag with a previously mentioned structure type. In terms of future storage trends, roughly a third of surveyed producers expressed interest in moving towards drive-over piles, and the overwhelming consensus was that bunker silos are a thing of the past (84% would not use bunkers in the future).

Width and Depth of the Face Removed. Daily, the entire width of the face was removed in 54% of dairies, but only half of these dairies removed at least 12 inches of depth. Of those dairies removing half of the face daily (15%), less than half removed the recommended 12 inches of depth. These numbers indicate that current practice is not to size silage structures according to feed-out needs. Sizing of structures appears to be a function of physical space available to store silage. In the same survey, 56% of dairies expressed interest in increasing their silage storage area.

Thinking about Changing Silage Structure Type? A few key questions should be evaluated, as each of these may impact silage quality and spoilage.

1. How many animals are you currently feeding, and will this number be increasing or decreasing?
2. Do you currently move across the entire silage face daily, with a depth of at least 12 inches?
    a. What does surface spoilage look like (top and sides)?
3. What is your current maximum height, and can your front-end loader/defacer reach the top?

Changing structure type or physical layout will likely impact exposed surface area and modify the opportunity for spoilage. In a 2011 study, exposed silage face surface area was evaluated. In general, drive-over piles were larger than wedge piles which were larger than bunkers. Bagged silage was not evaluated, but would lend to the smallest surface area of the storage options. Carefully evaluate existing face stability and feed-out depths before modifying storage structure design. If you currently do not move across the face daily, or you notice that lack of depth removal is causing a decrease in feed quality, moving from a smaller working face to something larger likely will not improve your feeding situation.

Strengths and Weaknesses of Types of Silage Structures. Each of the different structure types has strengths and weaknesses, and not all are discussed here. Drive-over piles have potential for decreased height and increased packing density on the sides, but as mentioned above, have large exposed faces that may be difficult to move across in a timely manner and require large amounts of plastic. Wedge piles are intermediate in exposed face, require less plastic than drive-overs, but safety concerns both while building and feeding from the pile should be considered. Bunkers make for the least flexible storage option with a fixed width and height, a likely reason bunker popularity has declined. Bags are easy to feed from and boast the smallest exposed surface

area, but large amounts of plastic and a potentially large land footprint, combined with the need to carefully monitor the plastic for damage (low packing density allows air to readily infiltrate the silage mass when rips/holes occur) should be considered.

Take-Home Thoughts
What works for your neighbor, might not be the best fit for your feeding needs. There is no one structure that works best for every operation. Any discussion to change silage structures (and thus, feed-out activity) should be discussed with your nutritionist and other members of your silage team.

Authors want to extend a special thanks to all participant dairies that took the time to complete the survey.

Reference: Heguy, J.M., D. Meyer, and N. Silva-del-Rio. 2015. A survey of silage management practices on California dairies. Journal of Dairy Science. doi: http://dx.doi.org/10.3168/jds.2015-10058.

Assessing Milk Yield in the Fresh Cow Pen for Early Detection of Health Disorders

Noelia Silva-del-Río, Dairy Production Medicine Specialist, Arnau Espadamal & Pau Pallarés, Veterinary Medicine Teaching & Research Center

Daily milk yield data have been shown to aid in early detection of ketosis, left DA, and digestive disorders on fresh cows. However, in a recent UCCE study, we observed that only 3 out of 45 dairies in California incorporated this technology on their operations. One of the challenges associated with using daily milk weights data to identify cows with health disorders is to ensure the correct identification of cows at milking. Healthy cows could show a drop in milk yield as a result of missing data during milking, or sick cows might not be identified if the software estimates yields of missing records. Two of the 3 dairies using milk meters only used this data to identify drops in production from multiparous fresh cows but not from primiparous cows. Postpartum milk yield generally increases more slowly for primiparous cows; thus, changes in milk yield are not as obvious.

If your dairy is not fitted with milk meters, there are alternative ways to collect valuable information on milk yield, such as evaluating udder fill or assessing milk flow during milking. Udder fill can be evaluated before milking by palpating the udder right above the base of the teats to assess the pressure in the gland cistern. It should be noted that when heifers have udder edema it could be difficult to assess udder fill. In our study 40% of the dairies reported to visually asses udder fill during fresh cow checks; but, none of the fresh cow evaluators touched the udder. Moreover, 33% of dairies evaluating udder fill performed fresh cow checks within 2 h after milking. Thus, even though palpating udders after milking might be useful to detect clinical mastitis, it does not provide milk production information that may be useful for early detection of other health problems. In our study, only 11% of the dairies collected information on milk flow during fresh cow milking. Fresh cow programs in California would likely gain value if milkers were trained on how to evaluate udder fill, and flagged suspicious cows to fresh cow evaluators.

Early detection of health disorders might improve if fresh cow evaluators and milkers are trained on how to evaluate udder fill and milk flow to estimate milk yield. Also, fresh cow evaluators should incorporate information on udder fill and milk flow before making treatment decision; i.e. cows with mild fever and showing adequate milk yield might not need treatment.

UCCE RESEARCH ROUNDUP

Sorghum Sampling Underway!

A big thank you to those farms working with us on the year one objectives of the sorghum project. We're out on farms taking samples of chopped sorghum as it's being unloaded and generating lots of data to wade through over the winter. As expected, there isn't a whole lot of consistency with California sorghum – we're learning or seeing something new from one farm to the next. With cooperators spanning from Stanislaus to Tulare Counties, we've sampled milo, forage, and BMR-forage hybrids being put up in bags, wedge piles, and drive-over piles.

One issue we've run into this summer is the sugar-cane aphid (SCA). Sugar-cane aphid has been an economic pest in grain sorghum in the Southern U.S. from Texas to Florida since 2013. In August of 2016, growers in the San Joaquin Valley were reporting high populations of aphids in sorghum that were difficult to control with broad spectrum insecticides, and SCA was confirmed as a new species of aphid in California. In the chopped samples we've sampled, the forage is "sticky" from aphid honeydew with a visible black residue from the sooty mold that grows on the honeydew deposited on leaves. In the fields we've sampled with the aphid, grain fill has been minimal to non-existent at harvest. Premature senescence and drying of leaves affected with the aphid and sooty mold is common.

With harvests scheduled through October, we expect preliminary results on the harvest parameters in the spring, and feed-out data later in 2017. We'll also have results from the plot work (water and nutrient use, yields, etc.) currently being conducted throughout the state. Be on the lookout for UCCE sorghum field days and meetings in late spring, 2017.

In the meantime, if you have any questions, or want to know how your farm can participate in the study, please contact Jennifer Heguy at jmheguy@ucdavis.edu.

GHG Emissions – Filling in the Knowledge Gaps

How many times have you wondered what percent of manure ends up in the lagoon(s) or in piles? This thought may not have crossed your mind, however, one needs to answer this question in order to address the greenhouse gases (GHG) reduction targets identified in the SB 1383 legislation (discussed on page 1). UC Cooperative Extension Dairy Advisors (Jennifer Heguy, Betsy Karle & JP Martins) are teaming up with Specialists (Peter Robinson and Deanne Meyer) to characterize physical and chemical properties of manure in our dairy systems to improve GHG emission estimates. The project was approved over a year ago by the Air Resources Board and the funding has now arrived. This is a timely project and will follow the flow of volatile solids from the animals through the waste treatment systems on multiple dairies. We're very excited to combine over 50 years of California dairy research experience to address this critical need for information. Preliminary work has begun and the field campaign will start in late winter, early spring. If you're interested in having us evaluate your facility for a potential component of this research, don't hesitate to contact Deanne Meyer at dmeyer@ucdavis.edu. It's a given, we'll be dialing for cooperators sooner than later. Thanks in advance to those who will team up with us in this unique opportunity.

University of California Cooperative Extension

California Dairy Newsletter

Merced, Stanislaus & San Joaquin Counties

October 2016

Jennifer Heguy, Dairy Advisor
Merced, Stanislaus & San Joaquin Counties