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Via Electronic Mail and Hand Deliver

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Re: Group Comments on Short Lived Climate Pollutant Reduction Strategy

The Air Resources Board's (ARB) Short Lived Climate Pollutant Reduction Strategy Concept Paper (hereafter "Concept Paper") discusses potential strategies for inclusion in the Short Lived Climate Pollutant Reduction Strategy. As California dairies have significant climate impacts,[1] the Board should ensure that dairies do their fair share to reduce emissions. The undersigned groups, representing hundreds of thousands of consumers and thousands of farmers in California, offer the following comments regarding the emissions and other impacts of confinement dairy systems as well as the multiple co-benefits of increasing pasture-based dairy.

Anaerobic Digesters Present Nutrient Loading, Air Pollution, and Economic Consequences.

Anaerobic digesters, promoted in the Concept Paper as a solution to manure methane emissions, are a stopgap that does not provide the co-benefits commonly cited by proponents. Reducing manure-related methane emissions—roughly 30% of California's total methane emissions[2]--is critical. However, the anaerobic digestion process does not reduce nutrient loads of manure (nitrogen and phosphorus). Thus, digesters do not mitigate the environmental challenges associated with storing large quantities of manure or applying it to fields.[3] Manure runoff contaminates surface and groundwater, threatening aquatic life, and nitrate contamination has been identified as a significant problem in California. Biogas combustion in digesters also generates emissions that threaten air quality, such as nitrogen oxides (NOx),[4] which contribute to the formation of ground-level ozone and fine particle pollution.[5] Biogas production is often cited as a co-benefit, but has not proven to be an economical means of generating energy. The equipment required to generate electricity from biogas on-site is not always cost effective, and annual operation and maintenance costs are high.[6] Economists estimate that digesters are not financially feasible for herds under 200 cows,[7] and even large operations often rely on grants and subsidies in order to make the project economically feasible.[8]

At the Public Workshop on May 27, 2015, dairy industry representatives sought public subsidies, including funding from the Greenhouse Gas Reduction Fund, for anaerobic digesters. To the extent the Board relies on incentive funding, such incentives should be instead directed towards dairy producers who operate pasture-based systems and confinement operators transitioning to pasture-based systems because of the multiple co-benefits discussed below. As anaerobic digesters do not provide co-benefits, but instead contribute criteria pollutant emissions in nonattainment air basins like the San Joaquin Valley, they should thus not receive incentive funding. The Legislature specifically directed the Board to "[p]rioritize the development of new measures for short-lived climate pollutants that offer co-benefits by improving water quality or reducing other air pollutants that impact community health and benefit disadvantaged communities."[9] Prioritizing incentives for pasture-based systems meets this legislative directive.

Pasture-Based Dairies Provide Significant Environmental and Economic Benefits.

The Concept Paper should consider the many environmental and economic benefits of pasture-based dairying as an alternative to highly polluting, methane intensive factory farms. We believe that ARB should develop strategies and incentives to promote the expansion of pasture based dairies given recent reports suggesting that grass-fed ruminant livestock production may produce fewer emissions or in some cases may even provide carbon sequestration and other environmental co-benefits. Estimates of the potential for carbon sequestration vary due to different management practices of farmers. Recent studies estimate the global carbon sequestration capacity of properly managed grasslands from 0.7 to 1.51 Gt CO_2 per year.[10] One reported potential sequestration of 88 to 210 Gt CO_2 worldwide over a 25 to 30 year period.[11] Grasslands can also act as a methane sink when managed properly, with estimated uptake of 0.05 to .12 tons CO_2 equivalent per hectare per year.[12] Lower stocking density and reduced intake of alfalfa, corn- and soybean-based feeds also significantly reduce total emissions compared to confinement systems.[13] Reduced use of Total Mixed Rations subsequently reduces GHG emissions associated with production, processing, and transport of feed, which accounts for 45% of industrial animal emissions.[14] It also reduces the application of manure or synthetic fertilizer for feed crop production, providing further methane reduction and mitigation of nitrate contamination.

Pasture-based systems also reduce methane emissions by eliminating anaerobic manure decomposition in waste lagoons.[15] Increased usage of liquid waste lagoon systems at U.S. dairies led to a 115% increase in emissions from 1990 to 2012.[16] Some dairies have scraping systems for managing manure, which use equipment to scrape manure to the end of the barn and store the manure in a solid stack.[17] When stored in dry conditions, manure emits little methane because methane is produced when manure is stored in water. However, large dairies using scraping systems frequently combine manure from barns and liquid waste from the milking parlor in the same storage pit, creating a slurry.[18] In addition, according to EPA, dry manure management systems are impractical for large operations and "require a fundamental shift in the entire production scheme" compared to liquid systems.[19] Further, dry manure management systems can still lead to surface and groundwater pollution,[20] particularly for operations generating excessive amounts of manure.

Pasture-based systems produce milk with less water. Given California's historic drought and likely future climate disruption-related drought, the co-benefit of water conservation by pasture-based dairies should be considered when evaluating various methane control strategies. The total water consumed by confinement dairies varies significantly, but a single lactating cow drinks 30-40 gallons per day.[21] Feeding confinement dairy cattle Total Mixed Rations also involves high water consumption for production and processing of feed ingredients[22] from 18.5 gal/lb for corn silage to 480 gal/lb for soybeans.[23] Alfalfa, a key feed ingredient for California's dairies uses 16 per cent of the state's irrigated water.[24] Researchers in the Netherlands estimated that industrial milk production in the U.S. consumes 30.5 gallons of surface and groundwater per pound of milk produced,[25] and other estimates are as high as 90 gal/lb.[26] Further, most models estimating total water consumption at dairies do not incorporate water usage associated with manure management in feedlot systems. Manure flushing and storage systems in pasture-based systems are either not necessary or drastically reduced in size, thus the associated water consumption is avoided or substantially lessened.

Incentivizing a shift to pasture-based dairy production brings economic benefits to producers and taxpayers. For years dairy farmers have embraced grazing to avoid the rising costs of inputs.[27] Compared to confinement systems, pasture dairies avoid the costs of producing and transporting feed as well-managed pasture provides a long-term source of feed whose expense can be spread out over time. There is also less capital investment needed, such as for facilities and equipment, and far less handling and management of manure.[28] In many instances, pasture can be maintained without herbicides or commercial fertilizers,[29] and cows maintained on pasture tend to be healthier than their intensively confined counterparts, which can translate to lower drug and veterinary costs.[30] The economic benefits are not limited to avoided costs. High quality pasture-raised dairy can command a premium in the marketplace, and consumers are increasingly choosing pasture based or grass-fed options for their higher nutrient profiles and animal welfare practices. According to SPINS market data, leading brands with certified organic and grass-fed product labels grew by 80 percent between 2012-2014. Animal products with claims of "pasture-raised," better animal welfare practices and grass-fed grew by 24, 23 and 55 percent respectively from 2012-2013.[31]

Additionally, the environmental benefits from pasture-based dairy production represent economic co-benefits. Pollution of surface water, nitrate groundwater contamination, significant methane emissions, and high water consumption are all components of the "true" cost of confinement dairy production. These externalized costs are absorbed by the taxpayer in the form of unwelcome social and environmental consequences or cleanup costs. The public health benefits of pasture-based dairy products also represent an economic co-benefit. A 2013 study found that organic cow's milk contains 62% more omega-3 fatty acids and 25% less omega-6 fatty acids than conventional cow's milk.[32] Despite the many economic benefits of pasture dairies, "[C]onfinement dairying is the only system many producers know. In spite of high debts and low profit margins resulting from increased mechanization and facilities costs and low milk prices, farmers are reluctant to try a grazing system and learn how to operate it."[33] Economic challenges, solutions, and benefits associated with California pasture-based dairy production should be thoroughly investigated and considered by the Board during the development of this Strategy.

Arguments against increasing pasture-based dairy often focus on the issue of available land. However, the transition will occur over the long term, and if it coincides with a reduction in confinement dairy operations, research has shown that the additional land requirement would be offset if croplands currently devoted to growing feed ingredients could be converted to grassland over time.[34] Conversion of wild and other sensitive lands to pasture will therefore not occur. In addition, well managed grasslands can foster species diversity. Ongoing research into innovative methods for raising livestock have shown that proper grazing can regenerate grasslands[35] and rangeland with managed livestock can serve as biodiversity repositories.[36] This is particularly important in the Central Valley where grasslands are home to 75 species considered threatened or endangered.[37]

Conclusion

The Air Resources Board has made an important first step towards reducing methane emissions from dairies under the Strategy required by Senate Bill 605. Given the significance of those emissions, and the multiple co-benefits associated with pasture-based systems, Board staff should thoroughly investigate these options and include them in the final Strategy for adoption by the Board. Thank you for your work to date and we look forward to working with you and other Board staff to ensure significant methane reductions from California dairies.

Sincerely,

Carter Dillard, Animal Legal Defense Fund
Kelly Damewood, California Certified Organic Farmers (CCOF)
Rebecca Spector, Center for Food Safety
Brent Newell, Center on Race, Poverty and the Environment
Patty Lovera, Food and Water Watch
Kari Hamerschlag, Friends of the Earth
Ben Lilliston, Institute for Agriculture and Trade Policy
Jessica Culpepper, Public Justice
Kendra Kimbirauskas, Socially Responsible Agriculture Project
Jo Ann Baumgartner, Wild Farm Alliance

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[1] Short Lived Climate Pollutant Reduction Strategy, Concept Paper at 21 (hereafter "Concept Paper").
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[6] NRCS. 2007. Page 6.
[7] Lazarus WF et al. 2011. Carbon Prices Required to Make Digesters Profitable on U.S. Dairy Farms of Different Sizes. University of Minnesota Department of Applied Economics. Revised February 2011. Page 33.
[8] Shelford T & Gooch C. 2012. Page 65.
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[15] Steinfeld, Henning, Pierre Gerber, Tom Wassenaar, Vincent Castel, Mauricio Rosales, Cees de Haan. (2006). *Livestock's Long Shadow: environmental issues and options*. Rome: FAO, 97.
[16] Gerber et al. (2013), 27.
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[18] *Id.*
[19] US Environmental Protection Agency. *Livestock Manure Management*, (September 1999).

[20] *Id.*

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[29] *See, e.g.*, Animal Welfare Approved, *A Breath Fresh Air: The truth about pasture-based livestock production and environmental sustainability* 14.

[30] *E.g.*, U.S. Centers for Disease Control and Prevention, *Antibiotic Resistance Threats in the United States* 36 (2013) (noting strong scientific evidence that antibiotic use in food-producing animals can harm public health); http://extension.psu.edu/animals/dairy/nutrition/forages/pasture/articles-on-pasture-and-grazing/pasture-based-systems-for-dairy-cows-in-the-united-states

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