C-AGG
Coalition on Agricultural Greenhouse Gases

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California Air Resources Board
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C-AGG Comments on ARB May 7, 2015 Concept Paper: Short-Lived Climate Pollutant Reduction Strategy

C-AGG Background:
The Coalition on Agricultural Greenhouse Gases (C-AGG) is a multi-stakeholder coalition of agricultural producers, scientists, methodology experts and developers, carbon investors, environmental ngo's, and project developers that promotes the development and adoption of science-based policies, programs, methodologies, protocols and tools for greenhouse gas (GHG) emissions reductions and carbon sequestration from the agricultural sector. C-AGG supports capacity-building and concrete approaches to incentivize voluntary GHG emissions reductions opportunities for agricultural producers that enhance productivity and income generation opportunities while benefiting society.

General Comments:
C-AGG commends ARB and the State of California for its continued leadership in combating global climate change and in showing how cost-effective technologies and strategies to reduce GHG and Short-Lived Climate Pollutant (SLCP) emissions can be achieved. We particularly agree that application of California's experiences to reduce SLCPs globally would help prevent millions of premature deaths; boost agricultural productivity; limit disruption of historic rainfall patterns; slow the melting of glaciers, snowpack, and sea ice; and provide trillions of dollars in economic benefit each year. California's position as a role model for other countries and jurisdictions can indeed accelerate international progress in the fight against climate change.

Because the powerful climate forcers in the SLCP category – methane, tropospheric ozone (O_3), black carbon (soot), and fluorinated gases (F-gases) – are believed to be responsible for about 40 percent or more of global warming impacts experienced to date, and because cutting SLCPs can often be effectively achieved in a short period of time, with existing technologies and infrastructure, and can deliver significant climate and ancillary benefits, we support ARB's efforts to do so.

We are particularly pleased to see that Senate Bill 605 (Lara, Chapter 523, Statues of 2014), which requires ARB to develop a comprehensive approach to address SLCP in CA, includes the following

important measures (among other things): development of an SLCP inventory; identification of research needs to address data gaps; identification of existing and potential new control measures to reduce emissions; and the prioritization of developing new measures for SLCPs that offer co-benefits by improving water quality or other critical impacts. The latter in particular is an overlapping issue for the agricultural sector, and integrated approaches to addressing and prioritizing the many environmental and other mitigation and regulatory issues impacting the agricultural sector in particular, in a coordinated or simultaneous fashion that acknowledges and addresses potential trade-offs, are most welcomed.

Without dismissing the many important impacts of SLCP – including health impacts – C-AGG will focus comments on implications for reducing SLCP from the agricultural sector.

We thank ARB for the opportunity to submit comments on the May 7, 2015 Concept Paper on a SLCP strategy, and look forward to continued engagement with ARB and other CA agencies as a comprehensive SLCP Strategy is further developed pursuant to Senate Bill 605.

Strategy Scope. C-AGG applauds ARB's aim to identify and develop systems-level solutions to SLCP and an arsenal of tools to develop these solutions. There are no silver bullets to reduce SLCP emissions, GHG emissions, or mitigate global climate change, and varied approaches, policies and programs are needed to achieve as many emissions reductions from as many sectors as possible, at a meaningful scale. Flexible, incentivized, voluntary approaches accompanied by decision support systems, educational and outreach materials, and other critical resource information for the agricultural sector in particular will offer the greatest potential for success by appealing to varied management systems, economics, technological solutions, and on-the-ground realities.

Given the advanced state of the science of global climate change and GHG pollutants since the 100-year Global Warming Potential (GWP) values were established 3 decades ago, we support ARB's evaluation of inventories based on 20-year GWP (as well as 100-year GWP), despite much of the world still relying solely on 100-year GWP values. The policy implications alone of the updated science of GWP are critical to effectively address climate change in meaningful timescales, though we do understand the logistical and structural issues associated with changing broader inventories to account for a 20-year GWP.

Integrated SLCP emissions reduction strategies that strengthen the competitiveness and resiliency of agriculture and reduce crop losses are critical to retaining a vibrant agricultural economy in CA and elsewhere. Soil amendments such as biochar that offer biomass waste reduction opportunities and multiple soil and crop productivity impacts and reduced inputs and leaching are powerful examples of integrated strategies that can address multiple critical resource needs while creating beneficial impacts to SLCP, other GHG, and water quality and quantity. We urge ARB to promote the demonstration of appropriate, sustainable, economically viable biochar production and utilization systems at scale, and to ensure the proper characterization of any biochar material prior to its use, in order to match the biochar to specific soil and crop constraints and other desired impacts. Biochar is not one material, but is rather a spectrum of materials with a particular physical and chemical profile, and beneficial responses are best

achieved from biochar utilization when the attributes of a particular system are matched to that of the biochar material.[1]

Acknowledgement of the need to overcome existing challenges to implementation of integrated SLCP solutions, including potential new funding mechanisms and incentive structures can go a long way towards incentivizing known agricultural solutions to SLCP emissions, overcoming known barriers to implementation, and ensuring competitiveness of the CA agricultural sector in the global economy.

In parallel with implementing a SLCP strategy, CARB should continue to support programmatic investments in cost-effective, scientifically robust technologies and approaches to quantify and verify GHG emissions and emissions reductions from agricultural sector offset projects in CA in order to ensure that project developers and agricultural producers will participate in these projects. Less expensive aggregation and verification approaches are needed to make offset projects cost-effective for project developers and agricultural producers. There is a need for continued investments in validated, calibrated models to measure and monitor California's GHG inventory, including baselines for the agricultural sector, and changes in GHG emissions based on changes in agricultural practices.

Methane Emission Reduction Concepts. Ruminants, and in particular, dairy cows (and dairies) are identified as a primary source of methane emissions in CA. CA's inventory points to roughly equal emissions of methane from manure management and enteric fermentation, but further investigation of the accuracy of this relative breakdown is advised in order to ensure that solutions are equitably targeted at actual emissions sources. It has been pointed out by researchers in this area that CA's inventory likely underestimates the contribution of methane from enteric emissions.

C-AGG also urges ARB to consider the excellent resource materials available on GHG and the US dairy industry developed by the Innovation Center for US Dairy, and available on their website as indicated below:

- *Considerations and Resources on Feed and Animal Management: Cow of the Future™ Report to Improve Business Value and Reduce Greenhouse Gas Emissions*
- *Cow of the Future Research Priorities for Mitigating Enteric Methane Emissions from Dairy (Knapp et al., July 2011).*
- Review Article in the **Journal of Dairy Science** on *Enteric Methane in Dairy Cattle Production: Quantifying the Opportunities and Impacts of Reducing Emissions* (Knapp et al., June 2014)

Despite petitions to ARB from a stakeholder group to control animal agricultural emissions of methane via regulation, C-AGG strongly urges ARB to maintain the voluntary, incentivized approach to all GHG

[1] International Biochar Initiative (IBI): IBI Biochar Standards, http://www.biochar-international.org/characterizationstandard

and methane emissions reductions from agriculture. ARB's Compliance Offset Protocol Livestock Projects provides methods to quantify and report GHG emission reductions associated with the installation of a biogas control system (BCS) for manure management on dairy cattle and swine farms. The protocol focuses on quantifying the change in methane emissions, but also accounts for effects on carbon dioxide emissions. Installation of BCS technologies consistent with the protocol have been slow in many parts of CA due to regulatory issues that have significantly hampered siting, installing, and/or upgrading methane digesters, and with the recent resolution of some of the most difficult of these issues, dairy producers may possibly benefit from increased support via an SLCP Strategy that promotes the installation of methane digesters on dairy farms. To take away the carbon offset protocol benefit will undermine the economics of installing these systems and may further hamper the adoption of this beneficial technology across CA.

Black Carbon Emission Reduction Concepts. C-AGG supports improved management of woody biomass as a significant opportunity to not only reduce black carbon emissions and generate renewable energy but also to produce biochar, a soil amendment that can sequester carbon in long-term carbon pools, improve fertility and water retention capacity of soils, and address agricultural productivity issues by matching specific biochars to specific soil constraints. Well-planned projects using biochar that has been tested to the standards of the International Biochar Initiative[2] – which are the only globally-developed biochar standards to date, having been developed in an open, inclusive, transparent and documented process – can help demonstrate scalable applications and quantify the many beneficial results in a CA context, specifically for CA specialty crops, tree nut and wine grape orchards, and other high value crops.

Reduction of and utilization of organic materials and wastes through composting, anaerobic digesting, or the production of biochar can have multiple beneficial applications for agricultural outcomes, including economics, soil resilience and productivity, soil moisture retention, and renewable energy co-production for on-farm use and displacement of fossil fuels. It can also contribute GHG, SLCP, and other environmental benefits to the agricultural sector and to society in general while creating economic value from so-called waste streams that often otherwise have associated harmful or negative impacts.

International Opportunities to Expand SLCP Reductions. C-AGG supports ARB's stated intent to explore partnerships, including collaborative pilot programs or other efforts to collectively reduce SLCP emissions via existing and future partnerships. C-AGG's many participants and stakeholders offer excellent partnership opportunities that can help to advance collaboration in North America and elsewhere, including in Brazil where C-AGG's Brazil Team has been developing partnerships and collaborative opportunities to share lessons learned and advance agricultural GHG emissions reductions and increased sustainability approaches. C-AGG commits to help promote shared collaborative opportunities to help expand CA's SLCP reductions via the SLCP strategy.

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[2] The IBI Biochar Standards are the result of an ongoing multi-year development process that is global, transparent, and inclusive, and that involves the input and participation of hundreds of research scientists, entrepreneurs, farmers and other stakeholders in the drafting, review and approval of the document. See link at: http://www.biochar-international.org/sites/default/files/IBI_Biochar_Standards_V2%200_final_2014.pdf

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Summary. C-AGG thanks ARB and its staff for continued dedication and attention to the critical issue of global climate change, and especially to the issue of SLCP emissions, given the harmful impacts of SLCP to the agricultural sector and the ability of the sector to help reduce these emissions with the right tools and technologies. C-AGG supports approaches that enhance the sustainability and the economic success of the agricultural sector and that successfully incentivize the agricultural sector in voluntary GHG and SLCP mitigation activities, particularly given the multiple beneficial environmental and habitat impacts of these activities.

Thank you for the opportunity to comment on the SLCP Concept Paper, and we look forward to commenting also on the SLCP Strategy due to be released this summer.

Sincerely,

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