

CDFA Alternative Manure Management Program (AMMP)  
 New Management Practices Proposals  
 Recommendations for Public Comment

Proposals to suggest new management practices for potential inclusion under the AMMP were accepted between July 6, 2020 and September 4, 2020. Comments are due by 5:00 p.m. PT March 1, 2021 via email to [cdfa.oefi\\_ammp\\_tech@cdfa.ca.gov](mailto:cdfa.oefi_ammp_tech@cdfa.ca.gov).

	<b>Proposed Practice and Submitting Individual or Entity</b>	<b>Recommendation</b>	<b>Additional Considerations and Explanation</b>
1.	Storage acidification (BioCover A/S) <ul style="list-style-type: none"> <li>• Use of sulfuric acid to control pH value of manure slurry.</li> </ul>	Not recommended for inclusion under the AMMP.	<ul style="list-style-type: none"> <li>• Concerns on the practice include:               <ul style="list-style-type: none"> <li>○ Viability and scalability to California dairies given the large amount of concentrated acid that may be needed for California style dairies and manure storage (practice developed in Denmark for smaller dairies with solid/slurry style manure storage in tanks, and accessibility of equipment or service contracts needed for acid handling and application.</li> <li>○ Unknown environmental impacts related to storage and disposal of acid or acidified material, and land application of acidified manure or wastewater.</li> <li>○ Potential risks to worker health and safety with exposure to and handling of potentially large volumes of concentrated sulfuric acid.</li> </ul> </li> <li>• The acid is a consumable item with recurring expense.</li> </ul>
2.	Biomineral fertilizer (Plant Nutrition Technologies Inc.)	Not recommended for inclusion under the AMMP.	<ul style="list-style-type: none"> <li>• GHG reduction by carbon sequestration through land application of fertilizer is beyond the scope of the AMMP project</li> </ul>

	<ul style="list-style-type: none"> <li>Application of recycled, nutrient rich soil fertilizer to improve farmland health and carbon sequestration.</li> </ul>		<p>boundary and GHG reduction calculations, which focus primarily on methane reduction.</p> <ul style="list-style-type: none"> <li>The submitted proposal indicated that the technology is in pilot stage and not commercially available.</li> <li>The proposal lacked an estimation of GHG reductions.</li> </ul>
3.	<p>Flocculation Enhanced High-Rate Solid-Liquid Separation (Figure 8 Environmental)</p> <ul style="list-style-type: none"> <li>Use of polymer flocculation to increase separation and removal of fine manure solids beyond ability of mechanical separation.</li> </ul>	<p>Recommended for inclusion under the program with additional data requested as part of grant application.</p> <p>Practice must be proposed in conjunction with solid separation. Applicants would be required to include information on the following as attachments:</p> <ol style="list-style-type: none"> <li>Type of flocculant/polymer proposed must have already been through a public process (for example, CEQA) for potential environmental impact to various media, including soil quality, water quality, air emissions, etc.</li> <li>Efficacy of volatile solid removal for GHG reductions must be quantitatively well-documented.</li> <li>Since flocculants can be used differently from original proposal, for instance, intermittently used, project must include how ongoing permanent GHG reductions will be achieved for the life of the project.</li> <li>Ongoing cost considerations past the project term and commitment</li> </ol>	<ul style="list-style-type: none"> <li>Flocculant/polymer is a consumable item with recurring expense. If not continued, the project would not achieve GHG emission reductions beyond a typical solid separation which is already eligible under the AMMP and is a lower cost system. Therefore, additional requirements are proposed to ensure long-term operation of this practice.</li> </ul>

		for sustained purchase and use of flocculant/polymer to achieve anticipated GHG reductions must be addressed as part of the Long-Term Operations and Maintenance Plan.	
4.	<p>Low emission slurry spreading (Vogelsang USA)</p> <ul style="list-style-type: none"> <li>Advanced methods (shallow disc injection, trailing shoe, dribble bars) for spreading manure on land.</li> </ul>	Not recommended for inclusion under the AMMP.	<ul style="list-style-type: none"> <li>The practice is beyond the scope of the AMMP project boundary as land application of manure is not included in the AMMP GHG calculations.</li> <li>Primary focus of the practice is on ammonia reduction rather than methane.</li> <li>Practice may be potentially constrained by nutrient application frequency and plant uptake, which are dependent on allowable nutrient application limits set in the dairy's nutrient management and waste discharge plans.</li> </ul>
5.	<p>Static Floating Media Separation as a Tool for Concentrating Liquid Manure Mixtures (AST)</p> <ul style="list-style-type: none"> <li>Use of floating media filters to increase separation and removal of fine manure solids beyond ability of mechanical separation.</li> </ul>	<p>Recommended for inclusion under the program with additional data requested as part of grant application.</p> <p>Practice must be proposed in conjunction with solid separation. Applicants would be required to include information on the following as attachments:</p> <ol style="list-style-type: none"> <li>Type of flocculant/polymer proposed must have already been through a public process (for example, CEQA) for potential environmental impact to various media, including soil quality, water quality, air emissions, etc.</li> </ol>	<ul style="list-style-type: none"> <li>Flocculant/media may be a recurring expense. If not continued, the project would not achieve GHG emission reductions beyond a typical solid separation which is already eligible under the AMMP and is a lower cost system. Therefore, additional requirements are proposed to ensure long-term operation of this practice.</li> </ul>

		<ul style="list-style-type: none"> <li>b. Efficacy of volatile solid removal for GHG reductions must be quantitatively well-documented.</li> <li>c. Since flocculants can be used differently from original proposal, for instance, intermittently used, project must include how ongoing permanent GHG reductions will be achieved for the life of the project.</li> <li>d. Ongoing cost considerations past the project term and commitment for sustained purchase and use of flocculant/polymer to achieve anticipated GHG reductions must be addressed as part of the Long-Term Operations and Maintenance Plan.</li> </ul>	
6.	<p>Improved grazing incentives (CalCAN)</p> <ul style="list-style-type: none"> <li>• Prescribed grazing as a method of animal and forage management done for a variety of outcomes, including improved herd and land management that can result in decreased greenhouse gas emissions.</li> </ul>	Not recommended for inclusion under the AMMP.	<ul style="list-style-type: none"> <li>• GHG reduction by soil carbon sequestration is beyond the scope of the AMMP project boundary and GHG reduction calculations, which focus primarily on methane reduction.</li> <li>• Reduction in enteric emissions claimed but not substantiated by published research.</li> <li>• Where Grazing Management Plan involves increased pasture time for animals, it may fit under the existing “pasture-based management” category within the AMMP.</li> <li>• Prescribed Grazing is already an eligible practice under the Healthy Soils Program.</li> </ul>

7.	<p>Vermifiltration (BioFiltro USA, Inc)</p> <ul style="list-style-type: none"> <li>Waste management practice that relies on use of worms to treat liquid organic wastes.</li> </ul>	<p>Recommended for inclusion only in conjunction with an existing eligible methane reduction practice such as solid separation.</p>	<ul style="list-style-type: none"> <li>Recommendation is based on methane reductions achieved largely through solid separation. The vermifiltration process reduces nitrogen, however, published scientific literature does not demonstrate quantifiable methane reductions through this practice in absence of an additional system such as a solid separator. Nitrogen reduction is an added desirable benefit, which is already eligible as nutrient management technology under the AMMP (<a href="#">2020 AMMP Request for Grant Applications</a>, Project Technology, page 10), with nutrient management and removal evaluated under Environmental Co-Benefits (<a href="#">2020 AMMP Request for Grant Applications</a>, Appendix E: Detailed Scoring Criteria, page 32).</li> </ul>
8.	<p>Nitrogen cracker (JOZ USA)</p> <ul style="list-style-type: none"> <li>Extracts nitrogen (ammonia) by evaporation filtration and processes to mineral form/fertilizer.</li> </ul>	<p>Not recommended for inclusion under the AMMP.</p>	<ul style="list-style-type: none"> <li>Primary focus of the practice is ammonia reduction rather than methane.</li> <li>The mechanism of the technology, energy inputs and information regarding potential pollutants generated as a result of this practice were not included in the proposal and not available in scientific literature.</li> <li>Methane reduction is achieved only through flaring. Methane flaring is not in alignment with the goals of CDFA's Dairy Methane Reduction Programs. Beneficial use of methane rather than flaring is encouraged in the California Short-Lived Climate Pollutant reduction strategy.</li> </ul>

<p>9.</p>	<p>Fine Solids Flocculation Separation System (Trident Processes LLC)</p> <ul style="list-style-type: none"> <li>• Use of polymer flocculation to increase separation and removal of fine manure solids beyond ability of mechanical separation.</li> </ul>	<p>Recommended for inclusion under the program with additional data requested as part of grant application.</p> <p>Practice must be proposed in conjunction with solid separation. Applicants would be required to include information on the following as attachments:</p> <ol style="list-style-type: none"> <li>a. Type of flocculant/polymer proposed must have already been through a public process (for example, CEQA) for potential environmental impact to various media, including soil quality, water quality, air emissions, etc.</li> <li>b. Efficacy of volatile solid removal for GHG reductions must be quantitatively well-documented.</li> <li>c. Since flocculants can be used differently from original proposal, for instance, intermittently used, project must include how ongoing permanent GHG reductions will be achieved for the life of the project.</li> <li>d. Ongoing cost considerations past the project term and commitment for sustained purchase and use of flocculant/polymer to achieve anticipated GHG reductions must be addressed as part of the Long-Term Operations and Maintenance Plan.</li> </ol>	<ul style="list-style-type: none"> <li>• Flocculant/polymer is a consumable item with recurring expense. If not continued, the project would not achieve GHG emission reductions beyond a typical solid separation which is already eligible under the AMMP and is a lower cost system. Therefore, additional requirements are proposed to ensure long-term operation of this practice.</li> </ul>
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<p>10.</p>	<p>Polymer assisted solid-liquid separation (Livestock Water Recycling)</p> <ul style="list-style-type: none"> <li>• Use of polymer flocculation to increase separation and removal of fine manure solids beyond ability of mechanical separation.</li> </ul>	<p>Recommended for inclusion under the program with additional data requested as part of grant application.</p> <p>Practice must be proposed in conjunction with solid separation. Applicants would be required to include information on the following as attachments:</p> <ol style="list-style-type: none"> <li>a. Type of flocculant/polymer proposed must have already been through a public process (for example, CEQA) for potential environmental impact to various media, including soil quality, water quality, air emissions, etc.</li> <li>b. Efficacy of volatile solid removal for GHG reductions must be quantitatively well-documented.</li> <li>c. Since flocculants can be used differently from original proposal, for instance, intermittently used, project must include how ongoing permanent GHG reductions will be achieved for the life of the project.</li> <li>d. Ongoing cost considerations past the project term and commitment for sustained purchase and use of flocculant/polymer to achieve anticipated GHG reductions must be addressed as part of the Long-Term Operations and Maintenance Plan.</li> </ol>	<ul style="list-style-type: none"> <li>• Flocculant/polymer is a consumable item with recurring expense. If not continued, the project would not achieve GHG emission reductions beyond a typical solid separation which is already eligible under the AMMP and is a lower cost system. Therefore, additional requirements are proposed to ensure long-term operation of this practice.</li> </ul>
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11.	<p>Composting with biochar (UCD, Pacific Biochar, USDA ARS)</p> <ul style="list-style-type: none"> <li>• Co-composting animal manure with biochar prior to land application.</li> </ul>	Not recommended for inclusion under the AMMP.	<ul style="list-style-type: none"> <li>• GHG reduction by soil carbon sequestration and biochar land application is beyond the scope of the AMMP project boundary and GHG reduction calculations, which focus primarily on methane reduction.</li> <li>• Proposal for biochar application to soil has also been submitted for consideration under the Healthy Soils Program and is currently being evaluated.</li> </ul>
12.	<p>Manure drying and pelleting systems for poultry manure (Petaluma Farms)</p> <ul style="list-style-type: none"> <li>• Improved inclusion of options and GHG calculator use for poultry manure management.</li> </ul>	Not recommended for inclusion separately under the AMMP.	<ul style="list-style-type: none"> <li>• Poultry as a livestock category is already eligible under the AMMP. The suggested type of manure treatment and/or storage (drying) may already be eligible under Program. CDFA will examine the existing Benefits Calculator Tool and Quantification Methodology with the California Air Resources Board to identify challenges and ways to ensure that eligible livestock categories are able to access the calculator.</li> </ul>