Practical Tools for Assessing and Improving a Farm's Environmental Footprint: an Example from the United States

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Introduction
FARM Program Goal
Assure consumers & customers that dairy farmers care for their animals, workforce and land in a humane and ethical manner.

FARM Program Mission
To aid dairy farmers and cooperatives/processors in assuring consumers and customers that dairy farmers manage their animals, workforce and land in a responsible manner through science-driven methods and a commitment to continuous improvement.
NATIONAL DAIRY FARM PROGRAM

ANIMAL CARE
ANTIBIOTIC STEWARDSHIP
ENVIRONMENTAL STEWARDSHIP
WORKFORCE DEVELOPMENT
FARM ES Overview

Quantifies a dairy farm’s GHG + energy use footprints and asks about the use of nutrient management plans to enable supply chain transparency and support continuous improvement

Features

• Strong science w/ periodic updates
• Trained, 2nd party evaluators
• Resources for continuous improvement
• Enables supply chain reporting and collaboration
Methods
Evaluation Process

Pre-Visit
• Evaluator schedules farm visit
• Provides ‘getting ready’ guide

Evaluation
• Web or app-based entry

Results
• GHG and energy use intensity; use of NMPs
• Track changes over time
Model

- Model output is lifecycle-based – from cradle to farmgate
- Based on peer-reviewed, published research
- Model explains 98% of the variability in total GHG footprint across farms

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Data Inputs

The data needed to estimate GHG emissions and energy use intensity include:

- Milk Production
- Herd Data
- Rations
- Manure Management
- Energy Use

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Data Outputs

Your Farm Greenhouse Gas Emissions

lb CO2e / lb FPCM produced

Pounds

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<tbody>
<tr>
<td>Feed Production</td>
<td>0.185</td>
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<tr>
<td>On-Site Manure</td>
<td>0.165</td>
<td>0.296</td>
<td>0.131</td>
<td>0.358</td>
<td>0.193</td>
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<td>On-Site Energy Use</td>
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<td>0.072</td>
<td>0.000</td>
<td>0.067</td>
<td>-0.005</td>
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<td>0.061</td>
<td>0.431</td>
<td>0.074</td>
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<tr>
<td>Total (w/o Feed Production)</td>
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<td>0.786</td>
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<td>Total</td>
<td>0.778</td>
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Resources

- **Evaluation Prep Guide** – Resource for farmers to learn about ES and prep for an evaluation
- **User Guide** – The best resource for interpreting the data inputs
- **Data Gathering Sheet** – Facilitate process of collecting information
- **Reference Manual** – focuses on opportunities that help both the environment and the farm’s bottom line (e.g. energy efficiency)

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Results
Farm Benefits

• Improve international management systems
• Identify opportunities to improve efficiency / productivity.
• Simplified tool, while still providing robust results
• Show farm’s commitment to natural resources
Farm Benefits

• Reference Manual offers considerations for improvement

<table>
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<tr>
<th>Emissions Type</th>
<th>Relevant Reference Manual Chapter(s)</th>
<th>Chapter Page</th>
<th>Example Topic Areas Covered</th>
</tr>
</thead>
</table>
| All                | Chapter 2: Moving Forward            | Page 8       | • Selecting a specialist/vendor  
|                    |                                      |              | • Financing options           |
| On-Site Enteric    | Chapter 3: Feed                      | Page 16      | • Ration formulation         |
|                    | Chapter 4: Productivity              | Page 38      | • Feeding                    |
|                    |                                      |              | • Herd health                |
| On-Site Manure     | Chapter 3: Feed                      | Page 16      | • Manure storage and treatment options |
|                    | Chapter 5: Manure                    | Page 58      | • Ration formulation         |
| On-Site Energy Use | Chapter 6: Energy                    | Page 72      | • Energy efficiency options for milking, ventilation and lighting |
Participation

• 1,900+ FARM ES evaluations completed

• 1,808 facilities enrolled in FARM ES

Preliminary data through Q4 2020. Number of farms is an approximation based on # of facilities; grouped by year of first evaluation.
Customer Interests

Companies are setting ‘science-based’ targets to reduce GHG emissions in their supply chain, including on-farm GHG reductions.
Aggregate Reporting
Thank You

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