



## **15. Management Tools to Support Circular Economy Practical Herd Applications**

### **Title presentation**

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

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### **Abstract**

**Introduction:** Translating the concept of circular economy into the practical and actionable requires farmer-friendly programs and tools. In 2017, the National Milk Producers Federation (NMPF) initiated a new component of the Farmers Assuring Responsible Management (FARM) Program: FARM Environmental Stewardship (ES). The FARM ES program tracks and communicates a farm's environmental achievements. The online tool combined with the program's resources assist farms with pursuing continuous improvement in ways that align with business goals.

**Methods:** FARM Environmental Stewardship estimates farm-level GHG emissions and energy intensity using a scientific, peer-reviewed model. The model is scientifically robust – it explains 98% of the variability in total GHG footprint across farms – while only requiring a limited amount of farm data. The FARM ES evaluation includes key data inputs that highlight circular economy concepts – including ration composition and manure management strategies. The evaluation results are life cycle based, representing all the GHG emissions and energy use associated with the farm's milk production from cradle to farmgate. The emissions footprint is broken down by source: feed production, manure management, enteric fermentation, and energy use.

**Results:** The FARM ES evaluation provides several farm-level benefits. For example, it can lead to improved daily management. Farms must gather documents and records to complete the FARM ES evaluation: nutrient management plans, milk production records, crop production data, and more. Collecting and reviewing these records in one place is a chance to think about on-farm management in a new way. Farms report creating or improving systems to track data as a result of the FARM ES evaluation, which can enable better management over time.

Additionally, the FARM ES Reference Manual offers ideas for management practices, technologies and other considerations that can help reduce on-farm GHG emissions and energy use in ways that make business sense. For example, improving herd health and optimizing ration formulations are key opportunities. The FARM ES Reference Manual offers science-based considerations on ration formulation, forage quality and concentrate management as well as animal health, nutrition and cow comfort to achieve gains in productivity, feed efficiency, and GHG emissions intensity.

Since program inception, the FARM ES evaluation has been implemented on more than 1,500 farms by 38 different cooperatives and processors. With each FARM ES evaluation, farmers, cooperatives



and processors can assess change over time, identify areas of operational improvement, and report progress to their customers.