

Environmental Stewardship

Measuring and Improving

The Jersey breed's efficiency at turning feed into nutrient-dense milk is widely recognized and respected throughout the dairy industry. The Capper-Cady study in 2012 showed that for Jersey and Holsteins to produce the same amount of protein, milkfat, and other solids, the Jersey population needs 32% less water, requires 11% less land, produces less waste and uses substantially less fossil fuels with a 20% reduction in total carbon footprint.

Although, when it comes to sustainability the entire dairy industry has an incredibly positive story to tell.

National Milk Producers

Federation (NMPF)

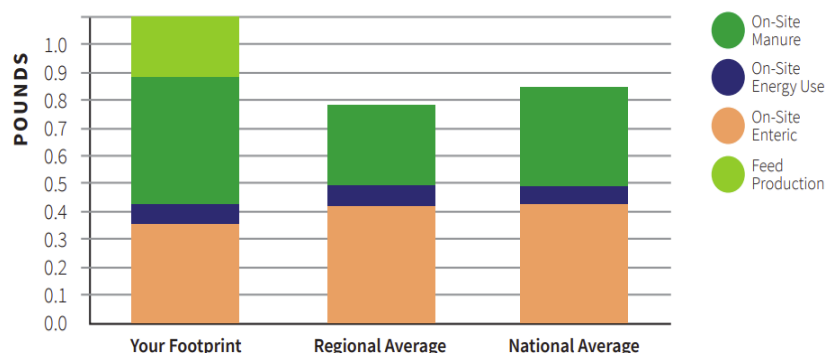
reported that when comparing the current dairy industry to that of 1944, producing a gallon of milk

today, uses 65% less water, 90% less land, and has a 63% smaller footprint. With vast improvements in dairy genetics and management, one cow today produces as much as five cows in 1944.

The NMPF **Farmers Assuring Responsible Management (FARM) Program, Environmental Stewardship (ES)** module offers an opportunity to showcase Jersey sustainability. The FARM ES module provides a comprehensive estimate of the greenhouse gas (GHG) emissions and energy use associated with dairy farming. The tool is based on a life-cycle assessment of fluid milk conducted by the Applied Sustainability

Center at the University of Arkansas, analyzing data from more than 500 dairy farms across the United States. To-date there have been approximately 1,440 ES evaluations on roughly 1,250 farms. A growing number of co-ops and processors are signing on to evaluate all or a portion of their member/supplier farms. The ES program utilizes data from a farm for a consistent 12-month period and was recently updated to Version 2.0. The data categories are broken down five areas.

Figure 1. Your Farm Greenhouse Gas Emissions
lb CO₂e / lb FPCM produced



1. Production.

Milk production, including butterfat and protein, and herd data are reported as totals or averages over the course of a consistent year. The production section takes information from a DHIA report

or other dairy record management system. A dairy's production includes milk and its components, herd size, and beef production. Milk production is standardized to energy corrected milk (ECM) which credits Jerseys for their higher component levels.

2. Energy Use. The energy use section focuses on energy used for dairy activities only. This includes uses such as heating water, milking, cleaning, scraping, ventilating, grinding and mixing. Crop production is excluded; impacts from crop production are already estimated in the FARM ES module using information from the Applied Sustainability Center's Life Cycle

Assessment. FARM ES Version 2.0 will also capture solar and wind energy being generated on the farm.

3. Feed. Rations are reported for lactating cows only. The FARM ES module estimates dry cow and heifer rations based on the Life Cycle Assessment. Ration and feed figures are reported as the average daily intake per head of lactating cows during a consistent year. The percent make-up of ingredients in the ration is reported on a dry matter basis. The feed section also records the time spent in pasture. Pasture time is reported for all dairy animals.

4. Crop. The module estimates the greenhouse gas impact associated with producing crops for dairy feed using

updated Version 2.0 USDA information. The percentage of feed, depending on crop type, that is self-produced is reported. The developers of the FARM ES program continue to refine the Crop production analysis.

5. Manure Management. This section covers the entire dairy operation’s manure management. If multiple systems are used on the farm, the percentage of manure in each system is recorded. Manure that is deposited on pasture during grazing is not recorded, but is considered by the module when reporting the time spent on pasture in the Feed section. New for version 2.0, manure solid-liquid separators have been added as a manure management option to capture the benefit of separately managing solids and liquids.

The Results After the evaluation is complete,

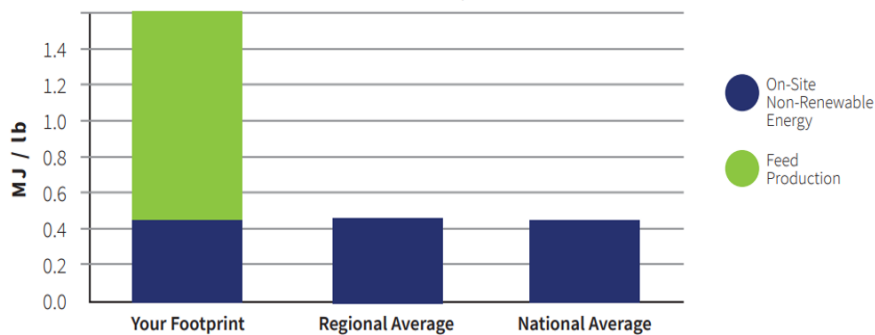
two graphs are generated to show how the dairy compares to the farms in its region and to the national average. Figure 1 shows greenhouse gas emissions per pound of energy corrected milk produced and separates total greenhouse gas emissions between manure, energy use, enteric emissions, and feed production. Version 2.0 of ES breaks down the type of gas emission into methane, nitrous oxide, or carbon dioxide. Farm energy use per pound of ECM milk produced is also graphed (Figure 2), and the results are divided into two areas of production, feed production and on-site energy use. The

evaluation can also help to find inefficiencies in energy use on a dairy operation if the results show a high usage compared to other farms. Compiling the yearly data is

also helpful at spotting areas that can be improved upon in management. The ES evaluation is not pass/fail, but is a mechanism to monitor environmental sustainability and plan for continuous improvement.

Jersey breeders have an opportunity through the FARM Environmental Stewardship evaluation to 1) develop a farm baseline for sustainability and 2) showcase the efficiency of the breed. NAJ members who would like to participate in the Environmental Stewardship program can contact their milk buyer if the buyer is a member of NMPF and the FARM program. NAJ members who are not affiliated with NMPF co-ops can request the FARM ES evaluation through NAJ. Assistant General Manager Drew Duncan, is a certified Second-Party Evaluator for the FARM programs. (dduncan@usjersey.com)

Figure 2. Your Farm Energy Use
MJ / lb FPCM produced



NAJ Milk & Component Outlook - 2020 Prices through August

2020 AVERAGE STATISTICAL BLEND PRICE FOR EACH FEDERAL ORDER		2020 MILK VOLUME (Million #)		2020 AVERAGE JERSEY REGULATED BLEND PRICE	
Northeast (Boston)	\$17.00	Northeast (Boston)	17,925	Northeast (Boston)	\$21.70
Appalachian (Charlotte)	\$18.50	Appalachian (Charlotte)	3,510	Appalachian (Charlotte)	\$20.87
Southeast (Atlanta)	\$18.62	Southeast (Atlanta)	3,136	Southeast (Atlanta)	\$21.67
Florida (Tampa)	\$20.53	Florida (Tampa)	1,669	Florida (Tampa)	\$22.92
Midwest (Cleveland)	\$15.80	Midwest (Cleveland)	12,588	Midwest (Cleveland)	\$19.90
Upper Midwest (Chicago)	\$15.73	Upper Midwest (Chicago)	15,689	Upper Midwest (Chicago)	\$21.01
Central (Kansas City)	\$15.23	Central (Kansas City)	9,612	Central (Kansas City)	\$19.75
California (Los Angeles)	\$14.81	California (Los Angeles)	15,554	California (Los Angeles)	\$16.86
Southwest (Dallas)	\$15.79	Southwest (Dallas)	7,929	Southwest (Dallas)	\$19.52
Arizona (Phoenix)	\$15.59	Arizona (Phoenix)	3,175	Arizona (Phoenix)	\$17.91
<u>Pacific Northwest (Seattle)</u>	<u>\$15.55</u>	<u>Pacific Northwest (Seattle)</u>	<u>5,263</u>	<u>Pacific Northwest (Seattle)</u>	<u>\$19.44</u>
ALL FMMO MARKET AVERAGE	\$16.65	ALL FMMO MARKET TOTAL	96,050	ALL FMMO MARKET AVERAGE	\$20.14

Prices reflect Federal Order minimum blend prices for city shown.

Total Grade A milk volume sold under FMMO.

Prices reflect FMMO minimum prices at Jersey component values.

2020 AVERAGE JERSEY BLEND WITH ESTIMATED PROTEIN OR CHEESE YIELD PREMIUMS		2020 AVERAGE DOLLAR DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE		2020 AVERAGE PERCENT DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE	
Northeast (Boston)	\$21.92	Northeast (Boston)	\$4.95	Northeast (Boston)	28.9%
Appalachian (Charlotte) (includes protein prem.)	\$21.21	Appalachian (Charlotte)	\$2.48	Appalachian (Charlotte)	13.3%
Southeast (Atlanta)	\$21.67	Southeast (Atlanta)	\$2.29	Southeast (Atlanta)	11.9%
Florida (Tampa)	\$22.92	Florida (Tampa)	\$2.46	Florida (Tampa)	12.0%
Midwest (Cleveland) (includes protein premium)	\$20.47	Midwest (Cleveland)	\$4.66	Midwest (Cleveland)	29.3%
Upper Midwest (Chicago) (includes cy premium)	\$21.24	Upper Midwest (Chicago)	\$4.86	Upper Midwest (Chicago)	29.2%
Central (Kansas City)	\$19.75	Central (Kansas City)	\$4.48	Central (Kansas City)	29.2%
California (Los Angeles)	\$16.86	California (Los Angeles)	\$2.15	California (Los Angeles)	14.6%
Southwest (Dallas)	\$19.52	Southwest (Dallas)	\$3.86	Southwest (Dallas)	24.7%
Arizona (Phoenix) (includes protein)	\$18.24	Arizona (Phoenix)	\$2.63	Arizona (Phoenix)	16.8%
<u>Pacific Northwest (Seattle)</u>	<u>\$19.44</u>	<u>Pacific Northwest (Seattle)</u>	<u>\$3.96</u>	<u>Pacific Northwest (Seattle)</u>	<u>25.4%</u>
ALL FMMO MARKET AVERAGE	\$20.29	ALL FMMO MARKET AVERAGE	\$3.52	ALL FMMO MARKET AVERAGE	21.4%

Includes a protein premium of \$0.05 for every 0.01% increase in protein over the market average.

Prices reflect difference between Jersey price with premiums, and the statistical blend price.

Percent difference in Jersey price with premiums, over the statistical blend price.

ESTIMATED JERSEY MILK COMPOSITION	2020	REGULATED MILK PRICES	2020	AVERAGE JERSEY PRICE ADJUSTMENT PER CWT:	2020
Butterfat	5.01	FMMO Milkfat	\$1.7691	FMMO Milkfat Adjustment	\$2.05
TRUE Protein	3.75	FMMO True Protein	\$3.5015	FMMO True Protein Adjustment	\$2.10
Other Solids	5.73	FMMO Other Solids	\$0.1653	FMMO Other Solids Adjustment	(\$0.01)
Solids Not Fat (SNF)	9.48				
Cheese Yield (90% Fat Recovery, 38% Moisture)	12.98				
CME Block Cheese Price	\$1.91				

NAJ Milk & Component Outlook - August 2020 Jersey Price Comparisons

<u>AUG'20 STATISTICAL BLEND PRICE</u>		<u>AUG'20 MONTHLY MILK VOLUME</u> (Million #)		<u>AUG'20 JERSEY REGULATED BLEND PRICE</u>	
Northeast (Boston)	\$18.02	Northeast (Boston)	2,260	Northeast (Boston)	\$25.91
Appalachian (Charlotte)	\$20.25	Appalachian (Charlotte)	449	Appalachian (Charlotte)	\$22.33
Southeast (Atlanta)	\$20.18	Southeast (Atlanta)	368	Southeast (Atlanta)	\$24.86
Florida (Tampa)	\$22.69	Florida (Tampa)	197	Florida (Tampa)	\$24.86
Mideast (Cleveland)	\$16.84	Mideast (Cleveland)	1,351	Mideast (Cleveland)	\$24.30
Upper Midwest (Chicago)	\$17.71	Upper Midwest (Chicago)	1,091	Upper Midwest (Chicago)	\$25.51
Central (Kansas City)	\$16.15	Central (Kansas City)	864	Central (Kansas City)	\$23.96
California (Los Angeles)	\$14.53	California (Los Angeles)	1,832	California (Los Angeles)	\$17.13
Southwest (Dallas)	\$16.01	Southwest (Dallas)	900	Southwest (Dallas)	\$22.54
Arizona (Phoenix)	\$15.84	Arizona (Phoenix)	299	Arizona (Phoenix)	\$18.00
<u>Pacific Northwest (Seattle)</u>	<u>\$16.16</u>	<u>Pacific Northwest (Seattle)</u>	<u>627</u>	<u>Pacific Northwest (Seattle)</u>	<u>\$22.94</u>
ALL FMMO MARKET AVERAGE	\$17.67	ALL FMMO MARKET TOTAL	10,238	ALL FMMO MARKET AVERAGE	\$22.94

Prices reflect Federal Order minimum blend prices for city shown.

Total Grade A milk volume sold under FMMO during month.

Prices reflect FMMO minimum prices at Jersey component values.

<u>AUG '20 JERSEY BLEND WITH ESTIMATED PROTEIN OR CHEESE YIELD PREMIUMS</u>		<u>AUG'20 DOLLAR DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE</u>		<u>AUG'20 PERCENT DIFFERENCE: JERSEY MILK WITH PREMIUMS VS. STATISTICAL BLEND PRICE</u>	
Northeast (Boston)	\$26.10	Northeast (Boston)	\$8.08	Northeast (Boston)	44.9%
Appalachian (Charlotte) (includes protein prem.)	\$22.63	Appalachian (Charlotte)	\$2.38	Appalachian (Charlotte)	11.8%
Southeast (Atlanta)	\$24.86	Southeast (Atlanta)	\$2.17	Southeast (Atlanta)	9.6%
Florida (Tampa)	\$24.86	Florida (Tampa)	\$2.17	Florida (Tampa)	9.6%
Mideast (Cleveland) (includes protein premium)	\$24.79	Mideast (Cleveland)	\$7.95	Mideast (Cleveland)	47.2%
Upper Midwest (Chicago) (includes cy premium)	\$25.70	Upper Midwest (Chicago)	\$7.99	Upper Midwest (Chicago)	45.1%
Central (Kansas City)	\$23.96	Central (Kansas City)	\$7.81	Central (Kansas City)	48.4%
California (Los Angeles)	\$17.13	California (Los Angeles)	\$2.60	California (Los Angeles)	17.9%
Southwest (Dallas)	\$22.54	Southwest (Dallas)	\$6.53	Southwest (Dallas)	40.8%
Arizona (Phoenix) (includes protein)	\$18.28	Arizona (Phoenix)	\$2.44	Arizona (Phoenix)	15.4%
<u>Pacific Northwest (Seattle)</u>	<u>\$22.94</u>	<u>Pacific Northwest (Seattle)</u>	<u>\$6.78</u>	<u>Pacific Northwest (Seattle)</u>	<u>42.0%</u>
ALL FMMO MARKET AVERAGE	\$23.07	ALL FMMO MARKET AVERAGE	\$5.17	ALL FMMO MARKET AVERAGE	30.2%

Includes a protein premium of \$0.05 for every 0.01% increase in protein over the market average.

Prices reflect difference between Jersey price with premiums, and the statistical blend price.

Percent difference in Jersey price with premiums, over the statistical blend price.

<u>ESTIMATED JERSEY MILK COMPOSITION</u>	<u>Aug-20</u>	<u>REGULATED MILK PRICES</u>	<u>Aug-20</u>	<u>AVERAGE JERSEY PRICE ADJUSTMENT PER CWT:</u>	<u>Aug-20</u>
Butterfat	4.90	FMMO Milkfat	\$ 1.6275	FMMO Milkfat Adjustment	\$1.84
TRUE Protein	3.68	FMMO True Protein	\$ 4.4394	FMMO True Protein Adjustment	\$2.61
Other Solids	5.73	FMMO Other Solids	\$ 0.1387	FMMO Other Solids Adjustment	(\$0.00)
Solids Not Fat (SNF)	9.41				
Cheese Yield (90% Fat Recovery, 38% Moisture)	12.72				
CME Block Cheese Price	\$ 1.77				