

# ORGANIC VALLEY SATELLITE GRAZING PILOT PROGRAM

## OVERVIEW AND OBJECTIVES

In 2021, Organic Valley launched a pilot program that uses satellite imagery and a computer software program to estimate pasture growth and health in real time for dairy farms. The pilot is being trialed on 22 Organic Valley dairy farms that practice management intensive rotational grazing. The trial length spans the local grazing seasons for the participating farms, located in eight U.S. states.

Using daily high-resolution imagery from Planet Labs,<sup>1</sup> Organic Valley's model calculates the level of vegetation in each paddock and converts it into an estimate of available feed per paddock.

## METHODOLOGY: "GROUND-TRUTHING"

Each participating farm works with an Organic Valley grazing specialist to physically measure pasture biomass weekly using a rising plate meter. This data is used to validate and calibrate an equation that uses high-resolution satellite imagery and a normalized difference vegetative index (NDVI) to provide a predictive analysis of on-the-ground pasture growth. This "ground-truthing," or confirming the calculations with physical measurements, is critical for refining the equation for future expanded use.

When viable images are obtainable (i.e., when the ground is not obscured by clouds), farmers receive a weekly report to assist them in making informed pasture management decisions.

Once the equation and satellite data are refined, Organic Valley plans to offer the satellite grazing measurement service to all Organic Valley farms across the country interested in voluntarily participating.



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## MOTIVATION AND INVESTMENT VALUE

Grazing and pasture use is required in the organic standards.<sup>2</sup> This pilot program represents a technological innovation that supports the farmer's bottom line and fits with our long-standing cooperative objectives to provide a sustainable livelihood for organic farmers, produce the highest quality organic products, and reduce our impact on the planet.

### **IMPROVE PASTURE CROPPING EFFICIENCIES.**

Research out of Michigan State University's W.K. Biological Station found significant improvement of stocking densities and pasture use when technology was integrated into management techniques.<sup>3</sup>

### **ENHANCE FAMILY SCALE FARM PROFITABILITY.**

A primary driver of this pilot program is to help producers reduce labor outlay. The project is expected to reduce pasture review and in-field cropping assessments. Effective grazing has been shown to be a low-cost dairy production model.<sup>4</sup>

### **ELEVATE THE NUTRITIONAL PROFILE OF MILK.**

Optimizing a farm's grazing potential can bring about desirable attributes in milk. A scientific study from 2018<sup>5</sup> showed that whole milk from organically managed cows fed an essentially 100% grass- and legume-based diet contains:

- 147% more omega-3s than conventional whole milk.
- 125% higher conjugated linoleic acid (CLA) than conventional whole milk.
- A balanced 1:1 ratio of omega-6 to omega-3 fatty acids.

### **ALIGN WITH CONSUMER EXPECTATIONS OF ORGANIC DAIRY.**

Organic Valley internal consumer research shows organic consumers, in large part, have an affinity for animals that are freely grazing outside and living as natural a life as possible. Effective pasture management is the cornerstone of Organic Valley's animal care program.

### **OPTIMIZE ENVIRONMENTAL BENEFITS.**

Well managed grassland and management intensive rotational grazing have stacked benefits that can reduce nutrient runoff, stabilize soil structure, and potentially be the most effective carbon sequestration option in agriculture.<sup>6</sup>

*For more on Organic Valley's Satellite Grazing Pilot Program, please contact Senior Farm Resources Director Wade Miller at [wade.miller@organicvalley.coop](mailto:wade.miller@organicvalley.coop).*

<sup>1</sup> Planet Labs, [www.planet.com](http://www.planet.com)

<sup>2</sup> National Organic Program, 7 CFR § 205.240 - Pasture practice standard.

<sup>3</sup> Insuba, Juan R et al. "Estimation of spatial and temporal variability of pasture growth and digestibility in grazing rotations coupling unmanned aerial vehicle (UAV) with crop simulation models." *PLoS One* vol. 14,3 e0212773. 13 Mar. 2019, doi:10.1371/journal.pone.0212773

<sup>4</sup> Horner, Joe; Ryan Milhollin. University of Missouri Extension Service. "Dairy Grazing: Keys to Building a Profitable Pasture-Based Dairy." University of Missouri Extension Service. Revised May 2020. Accessed May 2021.

<sup>5</sup> Benbrook, Charles M et al. "Enhancing the fatty acid profile of milk through forage-based rations, with nutrition modeling of diet outcomes." *Food Science & Nutrition* vol. 6,3:682-700. 28 May 2018.

<sup>6</sup> Paine, Laura; Randy Jackson. "Grassland 2.0 Fact Sheet: Understanding soil carbon dynamic in pasture systems." University of Wisconsin-Madison Department of Agronomy. September 2020.