



USDA Agricultural Research Service  
**PASTURE SYSTEMS AND WATERSHED  
MANAGEMENT RESEARCH UNIT  
FACTSHEET**

## Case study: Dairies Utilizing Ultra-high Stocking Density Grazing in the Northeastern U.S.

### Introduction

Ultra-high stocking density (UHSD) grazing has recently gained interest in the forage industry. This grazing approach is characterized by:

- High stocking density (units liveweight/units area; up to 560,000 + kg/ha)
- Small paddock size
- Mature forage
- Short grazing durations
- Long forage recovery periods

Perceived benefits include:

- Increased profitability (via increased carrying capacity)
- Improved animal performance
- Improved forage species diversity
- Increased soil quality (improved organic matter and microbial action and greater water holding capacity)

**Because UHSD grazing developed using beef cattle in arid environments, little science-based evidence exists on the application of this system on grazing dairy farms in the northeastern U.S.**



### The Study

Four farms (3 in Pennsylvania and 1 in New York) participated in this study. The dairy farmers selected were self-described UHSD graziers and were initially surveyed to capture their experience and management practices. In June 2012, one pasture on each farm was identified to be the sample pasture. Farm visits occurred each time the study pastures were grazed from June to Nov. of 2012 and from Apr. to June of 2013.

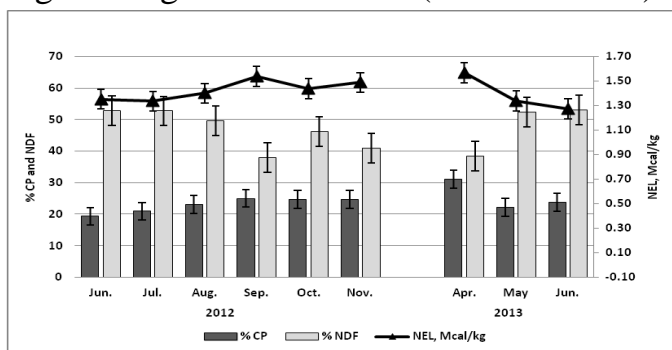
During each farm visit number of cows grazing, measurements of pre-grazed forage height, canopy stratification, botanical composition, and samples for forage quality analyses were collected.



## Findings

The farmers in this study achieved grazing systems that fall somewhere between the definitions for management intensive (MiG) and UHSD grazing. The stocking densities were generally lower (Table 1) than indicated by proponents of UHSD grazing. Soil organic matter values were as expected for pastures in the northeastern U.S., but did not exceed values typical for this region.

Pastures were rested longer (30 - 49 days) and grazed taller (8 – 17”) than usually seen with MiG but the quality of the pasture remained high throughout the season (Chart 1 below).



UHSD grazing with beef cattle allows for a more mature, fibrous pasture. Lactating dairy cows can fill up on fiber before meeting nutrient and energy needs which may result in decreased milk production. Dairy farms must match animal requirements with forage quality and quantity to be successful with UHSD grazing systems.

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**Table 1. Observed grazing strategies of dairy farmers in PA and NY practicing self-defined ultra high stocking density in 2012 and 2013.**

Item	Farm 1	Farm 2 <sup>4</sup>	Farm 3	Farm 4
Sample pasture size, ac <sup>1</sup>	2.6	1.36	0.52	0.99
No. cows grazing	100 to 145	50	135 to 149	200
Fresh pasture allotment, ha/cow	0.02	0.02	< 0.02	< 0.02
Stocking density, kg/ha <sup>2</sup>	46,332 to 67,181	44,118	305,660 to 337,358	240,000
Average days between grazing	39	49	30	39
Forage height at grazing (2012), cm	8.7	7.9	10.2	9.4
Forage height at grazing (2013), cm	17.3	-	16.9	9.4
Forage consumed (2012), % DM <sup>3</sup>	55	-	24	59
Forage consumed (2013), % DM <sup>3</sup>	100	-	25	9

<sup>1</sup>Estimated ac for each offer of fresh pasture.  
<sup>2</sup>Estimated assuming 1200 lb cows.  
<sup>3</sup>Estimated using pre- and post-grazed stratifications. Total % DM consumed for Farm 1 in 2013 was considered 100%, as the small amount of residue left was old plant material.  
<sup>4</sup>No stratifications collected on Farm 2. No forage height on Farm 2 in 2013.

**Based on observations of this case study, grazing dairies in the northeastern U.S. have taken a modified approach to current UHSD grazing definitions by grazing forages slightly more mature than recommended in MiG systems, and slowing the rotation slightly to allow plants to mature. Grazing dairy farmers who are interested in adopting UHSD grazing should proceed by taking small steps and letting the system (animals, forages, soils) respond before making further grazing management modifications.**



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