

Case Study: Dairies Using Ultra-high Stocking Density Grazing in New York and Pennsylvania

This was a collaborative project between USDA-ARS and Penn State Extension.

Funding was provided by Northeast SARE grant #PG12-021.

Penn State **Extension**



Ultra-high stocking density (UHSD) grazing, sometimes referred to as “mob grazing”, is characterized by: high stocking density (units bodyweight/units area; 500,000 + lb/ac), small paddock size, mature forage, short grazing durations, and long forage recovery times (90 to 180 days).

Some perceived benefits include: increased profitability (via increased carrying capacity), improved animal performance, improved forage species diversity, and increased soil quality (improved organic matter, improved microbial action, and greater water holding capacity).

Ultra-high stocking density grazing was developed using beef cattle, often in arid rangeland environments. Little science-based evidence exists about the application of this grazing management practice on dairy farms in the northeastern U.S.

Objective

Describe the management practices and forage and soil quality on dairy farms using self-described ultra-high stocking density grazing in PA and NY.

The Case Study

- Four farms (3 in PA and 1 in NY) participated in this study.
- All dairy farmers were self-described UHSD graziers, with 15+ years of grazing experience.
- Farmers were initially surveyed to capture experience and management practices.
- In June 2012, one representative pasture on each farm was identified to be study pasture.
- Farm visits to collect data occurred each time the study pastures were grazed from June to November of 2012 and from April to June of 2013.



- During each farm visit, researchers collected information about the number of cows grazing, pre- and post-grazed forage height, pre-grazed canopy stratification, and forage samples for forage quality analysis.
- In May of 2013 soil samples were collected from each study pasture.



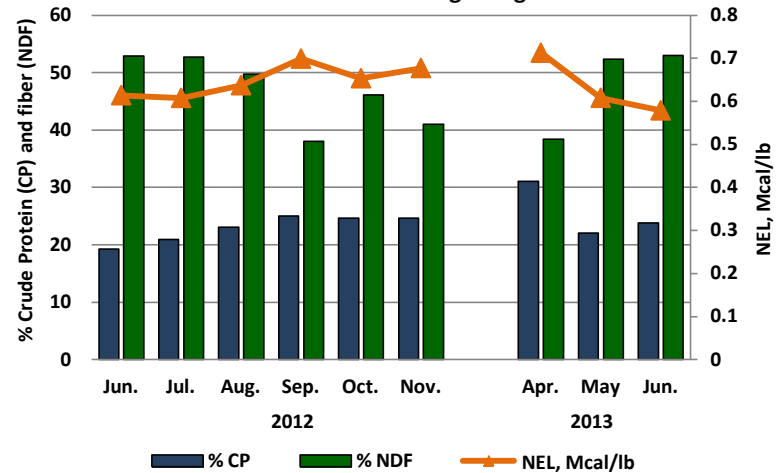
Table 1. Observed grazing strategies of dairy farmers in PA and NY practicing self-defined ultra-high stocking density grazing in 2012 and 2013.

	Farm 1	Farm 2	Farm 3	Farm 4
Sample pasture size, ac*	2.6	1.36	0.52	0.99
# cows grazing	100 to 145	50	135 to 149	200
# times fresh pasture offered per day	1	2 to 5	2 to 3	2
Stocking density, lb/ac	46,305 to 67,142	44,091	205,482 to 337,161	239,859
Days of forage rest	39	49	30	39
Forage height at grazing (2012), inches	9	8	10	9
Forage height at grazing (2013), inches	17	no data	17	9

*Size for each offer of fresh pasture

- Stocking densities were lower (44,091 to 337,161 lb/ac; Table 1) than UHSD grazing with beef cattle (500,000+ lbs/ac).
- Pastures were rested longer (30 to 49 days) than usually seen with rotational grazing (21 day cycle).
- Pastures were grazed taller (8 to 17 inches) than usually seen with rotational grazing (6 to 8 inches).
- Forage utilization = 45% of total available dry matter.
- Most of forage consumption was from the upper canopy.
- Forage quality was high throughout the season (Figure 1).
- Soil organic matter values (3.2 to 4.1 %) were as expected, but did not exceed values typical for this region.

Figure 1. Forage quality of pastures managed with self-described UHSD grazing



Conclusions

The dairies in this study have taken a modified approach to current UHSD definitions by grazing slightly more mature (taller) forages and implementing slightly longer periods of forage rest, compared to rotational grazing.

UHSD grazing with beef cattle allows for more mature forage within a production system that is more forgiving on a daily basis (ADG) compared to a dairy system. Grazing forages that are too mature could result in an overestimation of nutrient availability and intake for lactating dairy cows, resulting in reduced animal production immediately reflected in the bulk tank.

Grazing dairy farmers who are interested in adopting UHSD grazing should proceed by taking small steps and allowing the system (animals, forages, soils) to respond before making further grazing management modifications.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-