
Pasture Pointers for the Dairy Herd

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When you put your dairy herd out on grass, you have to change your management to maintain production.

As they enjoy a cold glass of milk, many consumers likely contemplate the image of cows grazing lush green pastures while the sun sets on another summer day. Turning cows out on grass can also mean cheaper feed costs for you and a way to provide exercise for your cows.

However, managing lactating cows on pasture presents its own set of challenges, particularly maintaining production and feed intake. Cows may struggle to eat enough to meet their dietary requirements. Milk production tends to drop when cows graze, often with fat and protein percentages.

A Penn State University study looking at how pasture management affects dry matter intake suggests ways of meeting these challenges. Research on grazing shows Holstein cows eat the equivalent of about three per cent of their body weight per day on pasture. How effectively a cow harvests grass determines intake. Penn State researchers actually developed an equation to calculate how much a cow consumes on pasture. Intake equals grazing time, multiplied by biting rate, multiplied by bite size.

You can influence grazing time by regularly providing your cows with fresh pasture, the equivalent of pushing up feed to the bunk in confinement operations. You have no control over biting rate-the number of times per minute cows decide to clip the grass with their teeth. Grass height and density establish how much forage is available to cows each time they bite, determining bite size. Ideal grass height is 8-12 inches (20-30 cm), this is critical to maximize bite size.

Higher yielding cows eat more than lower yielding cows. They graze more and have more bites per minute. The biggest factor influencing pasture intake is bite size, the amount of forage intake per bite.

The Penn State study grazed two groups of high-producing Holstein cows on different pasture amounts. One group was offered the forage equivalent of 55 pounds of dry matter (DM) per day and the other 90 pounds. Cows were equipped with electronic recorders to monitor eating and chewing behaviour. Researchers supplemented half the cows in each group with concentrate.

Pasture-only cows grazed for 617 minutes per day, about 10 hours, and averaged 56 bites per minute. Cows that bit more often produced more milk. Cows supplemented with concentrate grazed 1.5 hours less than the pasture-only groups.

Table 1 shows cows offered more pasture consumed seven more pounds on a dry matter basis and produced 6.8 pounds more milk per day. There was a milk production response to the supplement fed. For each pound of supplement fed, milk production went up by one pound. The table also shows providing a more luxuriant forage stand (90 pounds versus 55 pounds) let the cows increase pasture intake – 45 pounds of dry matter intake versus

38.5 pounds.

To maximize a cow's forage intake, you have to make 80 to 90 pounds forage available daily. This compares favourably with other pasture research around the world. Fresh pasture should be offered after each milking. Maintaining quality fresh forage on a twice daily basis will provide you with a positive economic grazing opportunity.

Supplementing pasture with concentrate reduces the amount of forage a cow needs. Penn State researchers devised guidelines for concentrate supplied versus forage offered as shown in **Table 2**.

For dairy cattle on pasture, energy becomes the most limiting nutrient for milk yield. Feeding concentrates can help meet the grazing cows' energy needs. Increasing energy content will usually increase milk yield, and milk protein percentage. However, it often decreases fibre intake from forage, lowering butterfat percentage.

Maintaining rumen pH poses another challenge. If pasture quality is less than 35 per cent neutral detergent fibre (NDF) and greater than 80 per cent digestibility, rumen pH could drop below 5.8. If effective NDF is low, you may observe these effects on your cows:

- low milk components, especially butterfat
- loose manure
- lameness and abnormal hoof growth patterns
- free-choice consumption of sodium bicarbonate
- licking or eating dirt

To compensate for low fibre levels when supplementing grazing cows with concentrates, especially on lush pastures, give them four to five pounds of long hay each. This helps overcome the fibre deficit to maintain butterfat and a proper rumen pH level. Another nutrient issue for grazing cattle is bypass protein. Lush pasture tends to be high in rumen-available protein. Cows can make use of some supplemental bypass protein.

By adjusting your management, you can have a successful grazing season. It offers a great option for lowering your feed costs, exercising your cows and providing that satisfying image for consumers.

	Low Pasture Allowance (55 lb/cow/day)		High Pasture Allowance (90 lb/cow/day)	
Grazing Behaviour	o Suppl.	+Suppl. ^a	o Suppl.	+Suppl. ^a
Grazing Time, min/day	609	534	626	522
Bites/minute	56	54	56	55
Intake, lb/day				
Pasture	38.5	34.1	45.1	35.4
Supplement	—	19.1	—	19.1

Total	3.5	53.2	45.1	54.6
Milk Yield, lb/day	42.1	65.3	48.8	65.8

Table 1: Grazing Behaviour, Intake, and Milk Yield of Cows Grazing Two Pasture Allowances and Either Supplemented or Unsupplemented.^a Cows were fed 19 lb of concentrate per day

Expected Dry Matter Intake (DMI)			Pasture Allowance (DM)
Pasture	Concentrate	Total	Recommended/Cow/ Day
lb DM/cow/day			
40	0	40	70-80
37	6	43	60-70
34	12	46	50-60
31	18	49	40-50

Table 2: Pasture Allowance and Availability Guidelines

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