

Estimating pasture intake by dairy cows

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Introduction Proper nutrient management planning minimizes the environmental impact of manure from dairy farms. Manure output from dairy cows can be predicted from feed intake (Wilkerson *et al.*, 1997). Weighing feed and refusals each day can determine accurately the feed intake of dairy cows in confinement. Intake determination is more difficult for dairy cows on pasture (Vasquez & Smith, 2000). As part of a larger study aimed at estimating manure production of dairy cows on pasture, this study compares 3 methods for estimating pasture yield and feed intake.

Materials and methods Six rotationally grazed dairy farms were selected to represent varying geographical areas of Wisconsin. Before each grazing event, 1m² samples were clipped to a height of 5 cm to determine yield. Yield was also estimated using a self-made acrylic pasture plate, where 1 cm = 194 kg/ha, and by measuring canopy height, where each 1 cm = 134 kg/ha (Cosgrove, 1999). These measurements were repeated after grazing in order to calculate animal intakes. Milk yields were obtained for the 24- hour period during the grazing event. Other feed inputs, such as corn grain, silage, dry hay, etc., were recorded. Predicted milk yield based on intake measurements were compared with actual milk yields to test the veracity of the different intake measurements in the pasture. Data was analysed as a completely randomised design using farms as replicates.

Results Table 1 shows pasture intake, calculated using yield estimates from the three different methods. Actual clipping of pasture samples and using a plate meter gave similar intake estimates. Estimating pasture intake using yields based on height alone gave significantly higher intake figures. These intake estimates were then used to predict milk production. These predictions were compared to actual bulk tank milk yield measurements (Table 2). Pasture yield estimated by the clipping and plate meter methods gave milk yield predictions that were similar to the actual milk yields. Using height alone predicted a significantly higher milk yield than was actually measured.

Table 1 Pasture intake as estimated by three different methods¹

Method	Intake (kg/cow/day)
Clipping	12.0a
Plate meter	15.6a
Height	34.3b
SE	4.5

¹Means followed by the same letter are not significantly different (P<0.05)

Table 2 Milk production of grazing cows as estimated by three different methods¹

Method	Milk production (kg/day)
Clipping	24.8a
Plate meter	27.0a
Height	36.9b
Actual milk weight	25.1a
SE	2.4

¹Means followed by the same letter are not significantly different (P<0.05)

Conclusions Using clipping and plate meters to estimate pasture yield and animal intake on pasture are more reliable methods than using pasture height alone.

References

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