MINNESOTA - Wheat Straw vs. Grass Hay for Dry Cows; Which Forage Prepares Cows for Greater Transition Success?

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Dairy producers and nutritionists continue to seek optimal feeding strategies to achieve a balance of good cow health along with high milk yield. The impact of forage on the success of the dry cow program is largely unknown. Wheat straw has been used to reduce energy intake and prevent excessive weight gain during the dry period. While wheat straw appears to reduce the incidence and severity of health disorders, other forage options that vary in physical and chemical properties should be explored. The rate of digestion is likely an important factor in the selection of forages for dry cow diets. Wheat straw has a slower ruminal disappearance rate compared with grass hay resulting in greater rumen fill that maintains a more stable rumen fiber mat reducing the risk for displaced abomasum after freshening, but perhaps also limits feed intake the first days after parturition. The rate and extent of NDF digestion impacts ruminants by altering DMI, influencing the rate of passage through the GI tract, microbial ecology, volatile fatty acid production, and rumination behavior.

Table 1. Effects of forage source (wheat straw vs. grass hay) fed at 30% of prepartum diet dry matter on postpartum dry matter intake (DMI) and milk yield.

Postpartum	Treatment		Standard Error	*P* - Value
	Wheat Straw	Orchardgrass		
Trial 1 (N=40)				
DMI, kg/d	18.0	21.0	1.5	<0.04
Milk Yield, kg/d	37.9	40.8	2.3	0.20
Trial 2 (N=60)				
DMI, kg/d	19.5	20.1	1.0	0.53
Milk Yield, kg/d	41.4	38.7	1.4	0.07

To answer these questions the impact of feeding two dry forages, wheat straw or vegetative orchardgrass hay, was compared. The objective of this study was to investigate the effects of forage source - wheat straw (WS) (2.6% CP, 73.6% NDF) or orchardgrass hay (OG) (14.4% CP, 58.6% NDF) prepartum on postpartum performance. Forty dairy cows were fed diets containing either 30% WS or OG prepartum and a single common lactation diet postpartum. Total tract apparent digestibility of DM and NDF were greater for OG vs. WS. Iso-caloric diets with OG resulted in higher postpartum DMI during the first month of lactation and greater milk yield on week one compared with WS. Amount of time spent eating prepartum tended to be greater by WS vs. OG and postpartum eating time per kg of NDF intake tended to be greater for WS vs. OG.

A follow-up study used 60 dairy cows to evaluate the effect of forage source (wheat straw (WS) vs. grass hay (GH)) on periparturient performance using low quality GH (6.6% CP, 60.5% NDF). Prepartum diets contained either 30% WS or GH in this study along with corn silage, alfalfa hay, ground corn, protein mix, and molasses. Diets with GH had greater prepartum energy balance (EB) than WS, but milk yield tended to be higher for WS vs. GH with no difference in postpartum feed intake. In summary, data from these studies indicates that forage source fed prepartum affects postpartum performance and these differences may be related to forage quality