

RNH-031 Effect of Feeding Maize Fiber in Wet, Dry and Silage Form With Cotton Cake Supplementation on Intake, Nutrient Utilization and Performance in Nellore Brown Sheep

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MINI ABSTRACT

Maize fiber was evaluated in wet, dry and silage form with 200 g cotton cake supplementation in growing Nellore Brown ram lambs (24.8±0.96) using six sheep per treatment in a growth-cum-metabolism trial of 90 days with collection of feed, leftover, feces and urine samples during the last ten days. Average daily gain (g), nutrient digestibility (OM, CP, NDF, ADF) tended to be higher (P = 0.01 to 0.09) and intake of OM, DOM, CP (g/d) and ME (MJ/d) and nitrogen retention were significantly (P = 0.0002 to 0.002) higher in lambs when fed maize fiber in silage rather than in wet and dry form. Depending on input such as labor required ensilaging or drying of maize fiber seems an economically more beneficial and from a food security point of view a safer way than feeding wet maize fiber.

Key words: Maize fiber silage, Wet maize fiber, Performance, Nutrient Utilization, Sheep

INTRODUCTION

Wet maize fiber is a by-product of corn processing industries in India and used for feeding dairy animals. Maize fiber generated from the starch extraction processes contains about 50-70% moisture. The protein, carbohydrates and fat content of maize fiber ranges from 10-13, 60-85 and 3-6% (<http://www.sukhjitgroup.com/maize-by-product.html>), respectively, indicating its potential for feeding ruminants as a major part of the diet. However, high moisture content makes it more prone to mold growth and spoilage, particularly in tropical countries and maize fiber can't be stored for more than four days. Therefore, work was conducted to study the effect of drying and ensiling of maize fiber on intake, nutrient utilization and performance of sheep in relative to wet (fresh) maize fiber feeding.

MATERIALS AND METHODS

Wet maize fiber procured from M/s Gayatri Bio-organics Pvt. Ltd., Hyderabad was ensilaged by adding 15% sorghum mash,

0.2% mineral mix and 0.5% salt to each ton of maize fiber. The ingredients were mixed uniformly before and ensilaging in plastic drums (35"x11.5") for 52 days. Dry maize fiber was prepared by sun drying and wet maize fiber was procured twice a week as a control feed during the experiment. Eighteen Nellore Brown ram lambs (BW 24.8±0.96 kg) were divided into three groups of six each and offered maize fiber in wet, dry and silage form while maintaining similar ratio of maize fiber, sorghum stover mash, mineral mix and salt in all three diets. The animals were fed respective diets *ad lib.* with 200 g cotton cake supplementation during the 90-d growth-cum-metabolism trial. Body weights were recorded at 10 days interval for two consecutive days. Feces and urine were collected during the last 10 days of the experiment. Feed, leftover fecal and urine samples were analyzed by a combination of routine analytical techniques and NIRS and the data was analyzed by ANOVA using SAS (2008).

RESULTS

Daily gain (g/d) tended (P = 0.12) to be higher in lambs fed maize fiber silage than in those fed dry and wet maize fiber (Table 1). The difference was more pronounced in N retention (P = 0.12) where retention was 2.6 times (4.11 vs. 1.58 g/d) higher in silage fed animals compared to the wet maize fiber treatment. Organic matter (OM) and crude protein (CP) digestibility were significantly (P = 0.01) lower in lambs offered wet and dry maize fiber compared to those offered maize fiber silage. Intake of OM, digestible OM, CP (g/d) and metabolizable energy (ME; MJ/d) were significantly higher (P<0.01) in lambs fed maize fiber in silage and dry form than in wet form with the exception of DOMI in dry maize fiber fed lambs. Based on the findings feeding maize fiber in silage form with 200 g cotton cake appears to be suitable for growing sheep resulting in average daily gain of about 100 g. Cost per kg gain (Rs.) was lower by 19 and 10.5% in lambs fed maize fiber silage diet (Rs.119) compared to wet (Rs. 147) and dry (Rs. 133) maize fiber diets.

Table 1. Effect of feeding maize fiber in wet, dry and silage form with cotton cake supplementation on performance, nutrient digestibility, intake and nitrogen balance in Nellore brown ram lambs

Parameter	Maize fiber			SEM	P(<)
	Wet	Dry	Silage		
ADG (g)	71.1	91.9	102	10.2	0.12
Nutrient digestibility (%)					
OM	60.2 ^b	59.9 ^b	65.3 ^a	1.25	0.01
CP	48.2 ^b	50.7 ^b	59.2 ^a	2.24	0.009
NDF	53.6	50.2	55.7	1.68	0.09
ADF	35.0 ^a	25.9 ^b	37.4 ^a	2.70	0.02
Nutrient intake					
OMI (g/d)	863 ^b	1005 ^a	1082 ^a	35.6	0.002
DOMI (g/d)	523 ^b	603 ^b	709 ^a	27.2	0.0008
CP (g/d)	78.4 ^b	98.0 ^a	99.3 ^a	3.76	0.002
ME (MJ/d)	6.76 ^b	8.84 ^a	9.10 ^a	0.32	0.0002
N balance					
N retention (g/d)	1.58 ^b	3.10 ^{ab}	4.11 ^a	0.56	0.01

CONCLUSION

Depending on input such as labor required ensilaging or drying of maize fiber seems an economically more beneficial and from a food security point of view a safer way than feeding wet maize fiber.

REFERENCE

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