treatments as expressed as both kg/day or as a percentual of body weight, averaging 1.2% BW. Varying fNDF levels of diets did not influence apparent digestibility of DM, OM, NDF, CP and NFC ($p>.05$). A linear reduction was observed in milk yield as fiber level in ration was increased. Milk constituents did not alter by altering levels of fiber on ration. Similarly there was no influence of fDNF levels of diets on feeding behavior. The higher efficiency of using metabolizable energy consumed for milk yield was obtained by using 35% of fNDF.

Key Words: Forage, Goats, Fiber quality

W231 Evaluation of sorghum silage and grain with condensed tannin in the diet for ruminants. H. Carneiro*[1], S. Peregrino[2], and N. J. M. Matos[2], [1]*Empresa Brasileira de Pesquisa Agropecuária, Juiz de Fora, MG, Brazil*, [2]*Universidade Federal Rural do Rio de Janeiro, Soropédica, RJ, Brazil.*

Plant breeding programs have produced hybrids with increased grain content to improve silage production and quality. One of the biggest problems in sorghum silage production is its grain content. Since the sorghum plant is prone to bird attack, the amount of grain can fall in the silage, compromising its nutritional quality. To reduce this negative impact, researchers have been producing cultivars with content of condensed tannin, which can reduce the palatability to birds of the grain. However, condensed tannins in the forage are thought to cause either adverse or beneficial effects on nutrient use, health and production. The ideal concentration of CT in forage ranges from 20-40 g/kg DM, and at this level it may bind with dietary proteins during mastication and protect it from microbial attack in the rumen. Superior value of the tannin mentioned will perhaps reduce the nutritional value and the biological availability of the dietary protein intake. To verify the interference of condensed tannin in the nutritional quality of sorghum silage. Embrapa Corn and Sorghum Research Center has developed the genotype CMSXS114(CT) and CMSXS165(WCT) without tannin lines exclusively to evaluate the CT in nutritional quality of diet. A completely randomized design, with two treatments and nine replications were submitted to analysis of variance and the means were grouped by using Tukey's test. Animals around 200 kg, were carry out during 90 days. There were no differences ($P<0.05$) WCT = 0.395 kg and 0.417 kg for CT, among feed intake and weight gain during the experiment. Since the interference of condensed tannin was not shown in the nutritional quality of the sorghum silage and sorghum grain, it is necessary to disseminate its use to obtain other genotypes for commercialization, based on the fact that the CT interact with silage proteins, could protecting them against the action of the microorganisms in the rumen that release them for absorption in the intestine. In the conclusions, these results show that condensed tannin does not affect in vivo the dry-matter intake and weight gain and can be fed to ruminants the same way as sorghum without condensed tannin.

Key Words: Sorghum, Silage, Grain

W232 Development of an on-farm system to determine pef value of as fed forages and TMR. K. W. Cotanch*[1], R. J. Grant[1], C. S. Ballard[1], J. W. Darrah[1], H. M. Dann[1], and T. Takano[2], [1]*William H. Miner Agricultural Research Institute, Chazy, NY*, [2]*Zen-Noh National Federation of Agricultural Co-operative Associations, Tokyo, Japan.*

Physically effective neutral detergent fiber (peNDF) is a valuable means of evaluating forage and ration (TMR) particle length to ensure proper rumen function and animal health. Forage peNDF values are critical inputs in some ration balancing programs such as CPM 3.0 to predict microbial protein output. As defined by Mertens (1997), peNDF of a feed is the product of the NDF content and its physical effectiveness factor (pef; percentage of feed particles ≥1.18-mm as determined by dry sieving). Currently there is no means of accurately determining pef on farm with as fed forages. A particle size separation box (Z-Box) had been developed for assessing particle distribution of forages, TMR, grain, and manure on farm. The objective of this study was to modify the Z-Box to predict pef of as fed forages. A series of sieves (9.53, 4.76, 3.18, 2.38 or 1.14-mm hole diameter) and sieving methods were evaluated across a range of forage types, particle lengths, DM contents and operators and compared to pef determined by dry sieving using a Ro-Tap Sieve Shaker (Ro-Tap). A vigorous, vertical shaking method using a sample size of 150 g divided into three separate shakes was found to accurately assess pef for a variety of forages and TMR. For corn silage (CS) and CS-based TMR (n=102), a 3.18-mm sieve resulted in pef values ranging from 91-109% of Ro-Tap pef (X) (Z-Box pef=1.0018X; R^2=0.79). For hay crop silage (HCS) (n=30) the 4.76-mm sieve resulted in pef values ranging from 92-105% of Ro-Tap pef (Z-Box pef=1.0002X; R^2=0.93). The Z-box pef was repeatable among operators evaluating CS (CV=1.05%) and HCS (CV=2.44%). Although further evaluation of the Z-Box across a wider range of forages and TMR is warranted, this tool appears to provide an accurate and repeatable assessment of pef on the farm.

Key Words: Physically effective NDF, Particle separation, Z-Box

W233 Effect of physically effective fiber on digestion and milk production of dairy cows fed diets containing barley or corn grains. W. Z. Yang* and K. A. Beauchemin, *Research Center, Agriculture and Agri-Food Canada, Lethbridge, AB, Canada.*

Two studies were conducted to determine the effects of physically effective (pe) NDF content of dairy cow diets on intake, digestibility and milk production with varying type of grains. Barley and corn grains were each used in separate feeding studies. Each study was designed as a replicated 4 x 4 Latin square using eight lactating dairy cows. Alfalfa silage, chopped short (5/16″) and long (3/4″), was the forage in both studies. In each study, four diets were formulated using the short and long silage combined with two forage:concentrate (F:C) ratios (35:65 or 60:40, DM basis), and TMR was offered ad libitum. The peNDF contents of the diets were determined using the Penn State Particle Separator with two sieves and a pan, and the NDF content of the diets. The peNDF contents ranged from 9.6 to 19.8% for barley diets, and from 10.7 to 17.5% for corn diets (DM basis). For diets containing barley, increasing peNDF of diets by increasing forage chop length did not affect ($P > 0.15$) DMI, milk yield or milk composition, but total tract NDF digestibility increased ($P < 0.05$) by 17%. In contrast, for diets containing corn, increased forage chop length had no effect ($P > 0.15$) on NDF digestion in the total tract, DMI, milk production or milk composition. Regardless of whether the diets contained barley or corn grains, increasing the peNDF content of the diet by increasing F:C ratio decreased ($P < 0.01$) DMI and milk yield by 10 and 7%, respectively, even though digestibility of NDF was increased ($P < 0.01$) by 21%. Increasing F:C ratio also reduced ($P < 0.01$) milk protein content (3.36 vs 3.14%) and milk protein yield (1.07 vs 0.94 kg/d), although milk fat content was increased (3.51 vs 3.83%; $P < 0.01$). The results suggest that increasing the peNDF content of the diet by increasing forage particle length or by increasing F:C ratio can improve total tract fiber digestion, but may not increase intake or milk production of cows in mid-lactation.

Key Words: Physically effective NDF, Grain source, Digestion