

298 g, respectively). The results of this study show that STX ewes can raise DRP sired lambs under the tropical conditions found on St. Croix.

Because the crossbred lambs were heavier than the purebred lambs the potential exists for an increase in meat production.

Key Words: Sheep, Crossbreeding, Growth

Women and Minority Issues in Animal Agriculture

1629 Status and role of women in rural livestock production in central Punjab, Pakistan. A.U. Hyder, M. Abdullah*, and N. Khatoon, University of Agriculture, Faisalabad, Pakistan.

A survey of 105 farm families, selected randomly from village Youngpur, Okara, was conducted for ascertaining the contribution of women in livestock production. More than 65 % of the respondent families were having < 6 acres of land, however, some of them acquired some additional land on rent or as a tenants. The second major source of income was livestock after agriculture and 94 % families were engaged in raising livestock. Annual income per family ranged from Rs. 10,000

to 100,000. About 30, 31 and 41 % women were involved in fodder harvesting, hauling and chaffing respectively, while 29, 20 and 33 % were partially involved in these activities and remaining did not perform this work. Participation in livestock management was 82, 89, 91, 94 and 86 % for feeding and watering, milking, milk processing, manure disposal and marketing of products, respectively. Extent of women participation in livestock management was not affected by the level of education, age, size of land holding extent of their involvement in family affairs, their perception as house wives and annual income.

Key Words: Livestock production, Women in agriculture, Socioeconomic status

ADSA Student Affiliate Division Original Research/Independent Study

1630 Effect of breed, parity, and stage of lactation on milk fat content of CLA in the dairy cow. J.A. Kelsey¹, B.A. Corl^{*1}, R.C. Collier², and D.E. Bauman¹, ¹Cornell University, Ithaca, NY, ²University of Arizona, Tucson, AZ.

Conjugated linoleic acid (CLA) has been shown to possess a variety of health benefits in biomedical studies with animal models. Foods of ruminant origin are the major dietary source of CLA. Some milk fat CLA originates from CLA that escapes complete rumen biohydrogenation, but the major source is endogenous synthesis via Δ^9 -desaturase from *trans*-11 C_{18:1}. The four primary substrates for Δ^9 -desaturase are C_{14:0}, C_{16:0}, C_{18:0}, and *trans*-11 C_{18:1}. The ratio of these and their products (desaturase index) serves as a proxy for Δ^9 -desaturase activity. Diet has a major influence on milk fat CLA, however the effect of animal-related aspects is largely unknown. Our objectives were: 1) to determine the influence of breed, parity and stage of lactation on milk fat content of CLA and 2) to examine variation among individuals in milk fat content of CLA and desaturase index. Holstein (n = 116) and Brown Swiss (n = 106) cows (University of Arizona herd) were fed the same traditional TMR diet and milk was sampled on the same day to eliminate diet and seasonal effects. Cows ranged from 7 to 522 DIM and varied in parity (primiparous = 97 and multiparous = 125). Fatty acid analysis demonstrated that stage of lactation and parity had minimal effect on CLA. Breed differences were significant ($p < 0.05$), but of small magnitude; CLA averaged 4.4 ± 0.1 vs 4.1 ± 0.1 mg/g fatty acid for Holsteins and Brown Swiss, respectively. Similarly, *trans*-11 C_{18:1} concentration was higher in Holsteins than Brown Swiss (11.4 ± 0.2 vs 9.5 ± 0.2 mg/g fatty acid). Overall, the proportion of fatty acids that were γ C₁₆, C₁₆, and δ C₁₆ were 20.7 ± 0.2 , 30.7 ± 0.1 , and 48.7 ± 0.3 for Holstein, and 22.5 ± 0.2 , 30.7 ± 0.1 , and 46.8 ± 0.3 for Brown Swiss. There was a three-fold variation among individuals in milk fat content of CLA and in the desaturase index for all desaturase pairs. Overall, results indicate that breed, parity and stage of lactation had only minor effects on CLA concentration, but substantial individual variation existed in CLA content and desaturase index of milk fat.

Key Words: CLA

1631 Nanofiltration of tryptic peptide mixtures in the presence of β -lactoglobulin. J. Lemay*, S. F. Gauthier, and Y. Pouliot, Centre de recherche STELA, Universite Laval, Sainte-Foy, Quebec, Canada.

The separation of peptide mixtures by nanofiltration (NF) membranes is strongly affected by electrostatic interactions between peptides and with the negatively charged membrane material. Our work is based on the hypothesis that adding β -lactoglobulin (β -LG) to a peptide mixture can modify its NF-fractionation profile by promoting Donnan exclusion phenomena and by specific interactions between β -LG and peptides. The goal of our study was to evaluate the effect of adding β -LG on the permeation flux and peptide transmission during NF. Solutions 1% w/v of β -LG tryptic peptides were prepared at different levels of added β -LG (

0, 0.01, 0.05, 0.07, 0.1, 0.3 and 0.5 %), and the solutions were adjusted at 3 different pH values (5.0, 7.0 et 9.0). Solutions were concentrated using a polymeric NF-membrane mounted on a dead-end cell, to a volumic concentration factor of 3X. A significant effect of the pH ($p < 0.001$) on permeation flux and protein concentration of the permeate was found. The lowest values of permeation flux was observed at pH 7.0, and the highest nitrogen transmission was obtained at pH 9.0. Levels of added β -LG had a significant effect ($p < 0.001$) only on the permeation flux. Our results suggest that presence of β -LG in the polarization layer affects the NF-separation characteristics of peptide mixtures. Preliminary data revealed changes in peptides transmission through NF-membranes as a result of the presence of β -LG. Similar experimental conditions are currently used to study the effect of added β -LG on peptides transmission by NF-membranes in tangential filtration mode.

Key Words: β -lactoglobulin, peptides mixtures, nanofiltration

1632 The effect of dietary zeolites on fecal ammonium concentrations. E. L. Williams^{*1}, F. Lundy², and G. A. Varga¹, ¹Pennsylvania State University, ²Clemson University.

The objectives of this study were to determine the effects of type of zeolite on the release rate of ammonium nitrogen from manure and effects on dry matter intake, nutrient digestibility, and milk production. Phillipsite and Clinoptilolite, both naturally occurring hydrophilic zeolites, were selected for their ability to adsorb ammonium. The synthetic hydrophobic zeolite, CBV, was selected for its ability to remove odor causing organic molecules. The experiment was conducted using multiparous Holstein cows (197 ± 25.41 DIM), in a 4 x 4 replicated Latin Square design. Cows were fed one of three zeolites, Clinoptilolite, Phillipsite, or CBV, topdressed at 2% DMI and a control ration without zeolite. Diets were formulated to contain on a DM basis 49% forage and 51% concentrate with a nutrient composition of 17.5% CP, 1.73 Mcal/kg NEL, and 34% NDF. Experimental periods were 21 days in duration and feces and urine were collected on d 17, 18, 19 pooled and then subsampled. Fecal ammonium concentrations were evaluated using a system for indirect measurement of ammonium nitrogen. The Quantofix-N-Volumeter, a commercially available product, utilizes a system of reactions that allows ammonium nitrogen content to be determined through water displacement. Compared to the control, addition of the zeolite to the diets did not have an effect on dry matter intake ($20.8 \text{ kg/day} \pm 0.64$), fiber digestibility ($41.8\% \pm 1.1$), or milk production ($24.3 \text{ kg/day} \pm 1.1$). An average increase of 30% fecal ammonium nitrogen concentration was observed for all zeolites compared to the control ($P < 0.11$; 1.90 kgs/m^3 vs 2.46 kgs/m^3). Results of this study demonstrate that the addition of zeolites to the diets of Holstein cows increases ammonium nitrogen binding in the manure, thereby decreasing the release rate of ammonium nitrogen into the environment.

Key Words: Zeolite, Ammonium, Manure