the Ankom Daisy Oven system. The Uppsala dietary fiber method was used to analyze feeds and residues for cell wall polysaccharide constituents (neutral sugars and uronic acids). Week of rumen fluid collection significantly ($P < 0.05$) affected IVCWPD across feeds, with collection 3 having lower IVCWPD values than collections 1 and 2. Ranking of forages, but not byproduct feeds, by IVCWPD was affected ($P < 0.05$) by collection week. Average IVCWPD for whole cottonseed and wheat middlings were 33 and 56%, respectively, while the other 8 byproduct feeds ranged from 73-92%. For two corn silage samples (conventional and BMR), IVCWPD results from collections 1 and 2 were greater ($P < 0.05$) than for collection 3. Comparing the conventional and BMR corn silages, IVCWPD was different for collection 2 (72 vs. 64%), but not different for collections 1 (74 & 67%) and 3 (57 & 57%). For an alfalfa haylage sample, IVCWPD was greater ($P < 0.05$) for collection 2 than collection 3 (74 vs. 67%), with collection 1 being intermediate. Rankings of 3 alfalfa samples (1 haylage, 2 hays) for IVCWPD changed among rumen collections. The IVCWPD of the haylage was greater ($P < 0.05$) than of hay 2 for collection 1 (72 vs. 63%), greater than hays 1 and 2 for collection 2 (74 vs. 66 & 65%), but similar to hays 1 and 2 for collection 3 (67 vs. 63 & 62%). Repetitive rumen fluid collections under standardized conditions resulted in different IVCWPD values for forages but not byproduct feeds.

Key Words: In vitro cell wall polysaccharide digestibility, Forages, Byproduct feeds

226 Influence of bovine somatotropin and varying levels of enzose on nutrients intake, digestibility, milk yield and its composition in mid-lactating *Nili-Ravi* buffaloes. M. Nisa*, A. Sufyan, M. Sarwar, and M. A. Shahzad, *University of Agriculture*, *Faisalabad, Pakistan*.

The study was conducted to investigate the effect of bovine somatotropin hormone (bST), with varying levels of enzose (corn dextrose, by product of corn products Industry) in the ration, on nutrients intake, digestibilities, nitrogen balance, milk yield and its composition in mid lactating *Nili-Ravi* buffaloes (n=12). Three rations were formulated to replace 0, 20 or 40% concentrate with enzose of equivalent energy and offered to buffaloes administered 0 or 250 mg bST, biweekly, for a period of 100 days in a 2 x 3 factorial arrangement and means were compared by using Duncan's Multiple Range test. The bST administration increased ($P<0.05$) DM, CP, NDF and ADF intakes, N retention and N excretion in the milk. The NDF and ADF digestibilities, daily milk yield and milk fat% were also increased by bST administration. Addition of 40% enzose in the ration decreased ($P<0.05$) DM, CP, NDF and ADF intakes, NDF and ADF digestibilities and daily milk yield. Overall N balance was not affected either by bST administration or enzose addition in the ration. Enzose interacted ($P<0.05$) with bST for milk yield and milk ash contents. The bST administration in buffaloes increased milk production by 30%. Up to 20% concentrates can be replaced with enzose in the ration. Replacement of 40% concentrate with enzose in the ration can adversely affect nutrients intake, their digestibilities and milk yield in lactating buffaloes.

Key Words: Mid lactating buffaloes, Bovine somatotrophin, Enzose

ADSA – SAD Undergraduate Competition: Dairy Foods

227 Effect of pasteurization on the survival of *Mycobacterium avium paratuberculosis*. A. Bush*, *University of Kentucky*, *Lexington*.

The goal of milk pasteurization is to provide consumers with a safe, shelf-stable product, while preserving milk's unique organoleptic properties. Pasteurization is applied primarily for safety, but also greatly reduces the number of spoilage microorganisms and slows degradative enzymatic activity in milk products. Some recent studies suggest *Mycobacterium avium paratuberculosis* (MAP) may be capable of surviving current milk pasteurization standards (72°C for 15 sec). MAP is the causative agent of Johne's disease in cattle. Johne's is a chronic, incurable bowel condition that leads to weight loss, decreased milk production, and eventual death. Humans do not contract Johne's disease, but can develop Crohn's disease, which some scientists suspect may involve MAP organisms. Those that suffer from Crohn's disease commonly experience abdominal pain, diarrhea, fever, and weight loss. MAP is difficult to study because of the lack of a common selective lab media, a long incubation period, and because of the waxy cell wall that makes differential staining tedious. Various studies have been performed with MAP in the United States, as well as Europe, but have produced conflicting results. If MAP is proven to survive pasteurization and to be involved with Crohn's disease, then revisions will need to be made in the FDA processing standards for fluid milk.

Key Words: Pasteurization, Mycobacterium, Crohn's

228 Dairy foods and reduced risk of colon cancer. A. Greenbaum*, *Louisiana State University*, *Baton Rouge*.

The American Cancer Society estimated that there will be 146,940 cases of colon cancer in the United States in 2006 and 56,730 deaths. Colon cancer is thought to be caused by genetic predisposition and dietary factors. Low fat dairy foods might have a protective role against colon cancer. Several components in dairy foods namely, calcium, vitamin D, conjugated linoleic acid (CLA), sphingolipids, butyric acid, bacterial cultures (in cultured dairy products), protein and vitamin A may protect against colon cancer. Several studies indicate that increasing calcium intake reduces colonic epithelial cell hyperproliferation or normalizes the distribution of proliferating cells within colorectal crypts in individuals at risk for colon cancer. Mechanisms on how calcium directly induces cell death of colonic epithelial cells have been proposed. Vitamin D increased calcium absorption and reduces the risk of developing colon cancer. Three to four servings of low fat dairy foods daily along with a well planned high fiber diet and exercise can go a long way in preventing the onset of colon cancer.

Key Words: Cancer, Health, Dairy

229 Probiotic dairy products: A healthy choice. R. Kilgore*, *Pennsylvania State University*, *University Park*.

During the early 1900s, Eli Metchnikoff, a Russian biologist, first advocated the benefits provided by yogurt with Lactobacillus bacteria. He linked those positive effects to the longevity of Bulgarian peasants. Since then, a significant amount research has been conducted to determine the exact effects of probiotics. These are living microorganisms that when consumed in sufficient numbers can provide health benefits beyond basic nutrition. According to studies by the California Dairy Research Foundation, proven positive effects of probiotic products include improving immune function, minimizing symptoms

of lactose intolerance, preventing intestinal diseases, and even reducing the risk of colon cancer. After gaining much popularity in other parts of the world, several probiotic dairy products are now on the market within the United States. Leading this campaign is Dannon which manufactures DanActive, a probiotic fermented milk product. Additionally, Dannon has recently released Activia, the first probiotic yogurt available in the United States. To assist consumers in identifying products which contain probiotics, the National Yogurt Association has established the Live and Active Cultures seal that manufacturers can place on their products that contain at least 100 million bacterial cultures per gram. As Americans become more and more concerned about the health benefits of their foods, products such as probiotic yogurts and fermented milk drinks will gain public interest and appeal.

Key Words: Probiotic, Yogurt, Cultured dairy products

230 The rippling effects of processor expansion: A texas sized example. S. Brauning*, *Virginia Polytechnic Institute and State University*, *Blacksburg*.

Cheese consumption across America has been on the rise for many years in the United States. The demand and market for cheese products are continuing to increase both a domestically and internationally. Hilmar Cheese Company, located in the Central Valley, of California is currently the largest single site producer of wholesale cheddar cheese and whey products in the United States. The company was founded in 1984 by twelve Jersey dairy farmers who wanted to capitalize on the value of their high-component milk. Today Hilmar Cheese Company processes the world's largest volume of Jersey milk, over 11 million pounds per day, with over 600 employees. The company prides itself in maintaining "mutually beneficial relationships between company owners, employees, milk producers, customers and the local community." To keep abreast the growing demand for their product, they have broken ground in Dalhart, Texas to install a second processing plant. Dalhart is located in the northwest panhandle of Texas, with a population of 7500 people; the local economy flourishes off agriculture. The Dalhart expansion of Hilmar is to be made in two phases. It is anticipated that the plant will originally have the capacity to process about 5 million pounds of milk per day with room for future expansion. The company expects to hire approximately 120 local residents, and hopes to contract their milk supply exclusively from Jersey herds. With such an expansion upon Texas's Dairy Industry one must consider the impacts the expansion could have. One may expect changes to be seen in areas such as cattle numbers, milk supply, milk prices, dairy cattle replacement availability and replacement pricing. The installation of the new plant can be expected to have local, regional and national effects on the economy in various facets.

Key Words: Cheese plant

Sheep Species: Application of Genomics to Sheep Production

231 Resources available for sheep genomics research. N. E. Cockett*, T. S. Hadfield, C. H. Wu, and K. Nomura, *Utah State University*, *Logan*.

Animal geneticists have been searching for the molecular basis of production traits in livestock species, including sheep, for over 40 years. Phenotypes of interest in sheep include fertility, reproduction, growth rate and efficiency, milk production, carcass quality and composition, wool characteristics, and disease resistance. The development of an ovine genome map containing molecular markers and genes has greatly advanced the identification of genetic regions containing quantitative trait loci (QTL) in sheep. Other genomic resources available for researchers investigating traits in sheep include an ovine radiation hybrid panel, large insert genomic libraries, and large-scale sequencing projects. These resources will greatly facilitate current positional cloning efforts to identify causal mutations that underlie economic trait loci. Scientists involved in sheep molecular genetics will be better able to exploit comparative information from the fully sequenced, information-rich genomes (human, mouse, and rat). These resources will also provide the scaffold for sequencing the ovine genome, a project that the sheep community is working towards for the future. In order to continue the identification of genes controlling important phenotypes in sheep, development of ovine genomic resources should continue.

Key Words: Ovine, Genomics, Resources

232 Molecular tools for sheep breeding: DNA-based markers for monogenic traits and QTL. J. E. Beever* and A. D. Markey, *University of Illinois*, *Urbana*.

Advances in sheep genomics during the past decade have led to the identification of molecular variation influencing a number of phenotypic characteristics. As a result, DNA-based genetic tests are becoming common in selection programs and thus, are destined to impact breeding management. A review of current DNA-based diagnostic tests for monogenic traits, as well as the potential use of marker-assisted selection for QTL will be discussed.

Key Words: Sheep, DNA, QTL

233 How genomics will continue to improve productivity for the New Zealand sheep sector. T. Wilson*, *AgResearch, University of Otago*, *Dunedin, New Zealand*.

The New Zealand sheep industry has been very successful over the past 15 years in increasing production of lambs and increasing the meat produced per lamb for the export market. This is due to many factors such as better fertilisers, and improved plant cultivars and farming systems. Alongside this, significantly more attention has focused on detailed phenotyping and selection of rams for key traits which has maintained this growth in an upward direction. Genomics has already started to deliver benefits with the discoveries of the causative gene mutations for reproduction genes (Inverdale and Booroola) now having commercial application in certain farming systems. Several other research programmes are close to finding the gene mutations, with many traits fine mapped to regions where commercial strategies can be employed. For the next five to ten years, outcomes from genomic research programmes will be needed to maintain the growth in on-farm productivity within the New Zealand sheep industry. Strategies combining bioinformatics, expression profiling and high density SNP chips soon to be available will offer unprecedented opportunities for the sheep sector.

Key Words: Genomics, Productivity, DNA technologies