a hundredweight of milk, knowledge of where the market has been and where it might be headed, and most importantly, a willingness to live with the decisions once they have been made. Forward contracting of milk has long been an untapped resource, due to the fact that we operate in a capitalistic society, and the complex steps that must first be taken to understand the full financial implications as they are related cost of production. The time has come for the dairy industry to start taking advantage of such tools as forward contracting to minimize risk and become more efficient.

Key Words: Forward contracting, Milk pricing, Risk management tool

Dairy Foods Undergraduate Paper Presentations

700 Dairy case wars: "got milk?" vs. "not milk?". J.H. Krall*[1] and D.R. Olver[1], [1]*Pennsylvania State University*.

Many supermarkets currently display both soy "milk" and dairy products on the same shelves. However, is soy beverage actually milk? Obviously it is not produced by a lactating mammal. For this reason, the National Milk Producers Federation (NMPF) filed a trade complaint with the Food and Drug Administration to prevent the labeling of soy beverage as milk. According to federal guidelines, some requirements for a beverage in its final packaged form to be labeled as milk include lacteal secretion from healthy cows, pasteurization, and contents of at least 8.25fat. Since the ingredient soy protein is not listed in this regulation, the NMPF argues that soy products cannot be labeled as milk. Soy industry officials respond that milk is a generic term attached to many products. According to a California research firm, sales of refrigerated soy milk in traditional supermarkets increased by 57October 31, 2001. Some speculate that a portion of this increase is due to consumers erroneously associating dairy's wholesome image and health benefits with soy because of the soy "milk" label. The resolution of this issue by FDA will be seen in supermarket dairy cases nationwide.

Key Words: Soy milk, Dairy products

701 Phage peptide inhibition of phage infection in cheese fermentation. J. Woodcock*, *University of Kentucky*.

Bacteriophages (phage) are viruses that infect bacteria by injecting their genetic material into the bacteria cell. Phage are commonly found in milk products and can affect manufacturing by destroying culture bacteria necessary for the formation of cheese and other fermented products. Phages lock onto a bacterial cell membrane by attaching a protein to a receptor site on the prokaryote. In particular, the c2 phage adsorption protein binds with the bacteria Lactococcus lactis ssp. lactic c2, creating an irreversible lock. By utilizing competitive inhibition, in which the receptor sites on the host bacteria are blocked by c2 phage peptides, the rate of phage proliferation is reduced.. With this reduction, cheese production and efficiency can increase. Considering the simplicity of introducing a phage to a cheese plant by clothing, cheese whey, and even mist, phage peptide inhibition could allow sufficient time for cheese fermentation without risk of phage infection.

Key Words: Phage Peptide, Bacteriophage, Cheese Fermentation

702 Will the "Real" Milk Please Stand Up? L. Ward, *Louisiana State University*.

In October, 1999, the FDA stated that "it recognizes the health benefits of daily consumption of soy protein. Specifically, consuming 25 grams of soy protein daily can help reduce the risk of heart disease." This announcement paved the way for the soy product market. One product that has been gaining in popularity is soy milk. Soy milk is high in protein, rich in vitamins and minerals, low in fat, and cholesterol free. It contains no lactose, which makes it a safe and nutritious alternative for lactose intolerant individuals. Research has shown that soy foods may help to prevent heart disease and some forms of cancer. This beneficial effect is possibly due to isoflavones, a phytoestrogen found in soybeans. While soy milk has numerous potential health benefits, it is not "nature's most nearly perfect food." Soy milk has been reported to be unpalatable. Sensory experts have reported off flavors, bitter taste, chalky mouth feel, and a bad aftertaste. With milk consumption declining and the soy milk market getting larger, the dairy industry must work harder to promote the health benefits of milk. Milk and dairy products have numerous health benefits because of their high concentrations of calcium, protein, vitamins, and minerals. The dairy case also has a full line of products for lactose intolerant individuals. In choosing their milk, consumers must be the judge. They can select a bad tasting product with health claims, or they can opt for "real" milk with its great taste and many nutritional benefits.

Key Words: Milk, Soy, Health benefits

703 Wazzu's famous variety. J. DeVoe*, *Washington State University*.

Cougar Gold is a unique cheese made only by Washington State University Creamery in Pullman, WA. This cheese was developed in the 1930's with a unique bacterial strain giving it its own particular taste. To this day the same strain is cultured every three days, derived from the same clone that was selected over seventy years ago. Cougar Gold is a sharp, white cheddar with a taste that resembles Swiss or Gouda and it is aged for at least one year. This cheese is packaged in a can, because of research in the 1930's for a more ideal packing medium. Cougar Gold is the only known cheese in the USA that is canned, therefore making it Washington State's own unique cheese. The scarcity of Cougar Gold also adds to its uniqueness. The only way to get this cheese is either to make a trip to Pullman or to have it mail ordered. It is not shipped in mass quantity and anyone ordering it can only order twenty cans at a time. Therefore, not only is this cheese unique, but it's supply is restricted. The WSU Creamery makes this cheese year round and produces a little less than 150,000 cans of Cougar Gold a year. To add to its singleness, Cougar Gold helps to support student employment in the WSU Creamery. Furthermore, the facility provides opportunities for students to work with and learn about cheese. For example, the Food Science Human Nutrition club works with the cheese for a fund-raiser, students from the food science department hold classes and graduate and undergraduate students hold research studies at the Creamery. Therefore, a can of Cougar Gold is not just a plain old can of cheese; it is unique and represents many years of support, education and quality.

Key Words: Cougar Gold, Cheese

704 On-farm dairy processing: Opportunity for diversification of small farms. E. Moss*, *Virginia Polytechnic Institute and State University*.

To better compete in the changing dairy industry, many small dairy producers are considering diversification. One diversification strategy that is growing in popularity is on-farm processing of fluid milk, cheeses, and other dairy products. There are currently 13 registered on-farm creameries in the state of Virginia. Many of these farms are family run and owned. These operations produce their own milk from small milking herds and turn the raw product into a "cow to consumer" product. The start up cost for the typical Virginia on-farm processing operation varies from $1 million to $1.5 million. Examples of products manufactured at these creameries include several flavors of milk with varying fat content, specialty cheeses, yogurts, and chip dips. On-farm processed dairy products are often, but not always, produced organically, and are promoted as being of excellent quality and freshness. On-farm processing of dairy products offers a new technological twist on the old-fashioned concept of diversified farming. Homestead Creamery and Shenville Creamery in Virginia are two examples of small dairies that are competing by processing their own fluid milk. Both of these creameries use Pladot^{TM} Mini-Dairy, an Israeli-made milk processing system that includes a cream separator and cheese-curding tank. These systems are made especially for small-scale operations with from 30 to 300 cows. Homestead and Shenville use traditional glass bottles, offers home delivery, and charge a premium for their product. A half-gallon of Homestead Creamery whole milk retails for $4.19 at grocery stores including $1.50 deposit that is refunded upon return of the glass bottle. This compares to $2.99 for a gallon of milk in a regular plastic jug.

705 Innovative applications of membrane filtration.

C. Machado*, *Califonia Polytechnic State University, San Luis Obispo*.

Membrane filtration research is currently aimed at the standardization of milk, enhancing functional properties of milk proteins, fractionating whey proteins, and improving milk quality. Membrane filtration requires little energy and does not destroy any product during treatment. The pore size of the filter determines the type and size of the molecules to be retained by the filter. Alteration of the pore size yields a customized permeate and retentate. With the use of membrane filtration there could be an improvement in the quality of existing dairy foods, a creation of new and innovative products, and progress could be made in processing efficiency and profitability. Permeates gathered from filtration could be used as a value-added ingredient, fortifying foods, from sports drinks to infant formulas. The permeate could add a boost to the existing nutritional identity of fluid milk or create an entirely new product using milk's functional or nutritional components. Filtration could become a key element in the production of cheese. It could extract valuable proteins prior to making cheese, greatly decreasing the amount of protein lost to acid whey during cheesemaking. Milk could be considered a collection of individual components with different nutritional values, such as protein, fat, casein, lactose, vitamins, and minerals. Federal standards have not been implemented to support this technology to date, but membrane filtration allows for promising economic benefits compared to the more traditional methods of concentrating, fractionating, and separating milk components.

Key Words: Membrane filtration, Milk components, Dairy processing