Clip plots were taken daily to determine DM availability of each paddock allotment. Heifers were weighed before and after each 24 d (approximately) grazing period. Heifers consuming PRG consumed slightly more DM than those consuming TF (9.7 vs 9.5 kg/h/d, P = 0.005). Intake of OG was intermediate, 9.6 kg/h/d. No difference in ADG resulted from grass species could be detected (P > 0.05). All heifers were gaining BW at an acceptable rate (1.2 kg/d). The carrying capacity of OG and PRG did not differ (194 vs 129 grazing d/ha, respectively, P > 0.05). The TF exhibited increased carrying capacity compared to OG (264 vs 194 grazing d/ha, respectively, P > 0.05) and PRG (264 vs 129 grazing d/ha, respectively, P < 0.05). Based on the results of this study, TF is superior to either OG or PRG for irrigated pasture in northern Utah for development of yearling beef heifers.

Key Words: Grazing, Heifers, Carrying capacity

W244 Influence of turning cows out to pasture on fatty acid profile of milk. R. C. Khanal*, T. R. Dhiman, and R. L. Bompan, Department of Animal, Dairy and Veterinary Sciences, Utah State University.

Five late lactation Holstein cows milking an average of 25.4±6.4 kg/d were used to study the influence of turning cows out to pasture on fatty acid profile of milk. The 45-d experiment was divided into 3 phases. During phase 1 (2 d) of the experiment cows were fed TMR containing 50% forage and 50% grain mix, from 32-45 d (Phase 2) cows were grazed on a predominantly ryegrass pasture with no grain supplementation, and from 32-45 d (Phase 3) cows were fed a diet similar to phase 1. Milk yield was recorded daily. Daily milk fat content and fatty acid profile was determined for samples collected from both a.m. and p.m. milkings. Milk fat content and fatty acid profile was determined for samples collected from both a.m. and p.m. milkings. The 45-d experiment was divided into 3 phases. Cows produced an average of 25.2±6.1, 14.0±4.8, and 11.2±5.6 kg/d of milk with 3.4, 4.0, and 3.6% fat in phase 1, 2, and 3, respectively. The CLA content was 4.54 mg/g of fat in phase 1 and reached a maximum of 25.3 mg/g of fat on d 23 of the experiment. No significant change (P>0.05) occurred thereafter. The C18:1 n-9 content was 28.9 mg/g of fat in phase 1 and reached a maximum of 79.5 mg/g of fat on d 24 of the experiment, with no significant change thereafter (P>0.05) in phase 2. The C18:2 n-6 fatty acid declined gradually with no further decrease observed after d 24 (P>0.05) of the experiment while C18:3 increased significantly (P<0.05) with no further increase after d 9 (P>0.05) of the experiment in phase 2. The C18:2 n-9 fatty acid declined gradually with no further decrease observed after d 24 (P>0.05) of the experiment while C18:3 increased significantly (P<0.05) with no further increase after d 9 (P>0.05) of the experiment in phase 2. The CLA content in milk fat reached the value similar to phase 1 within 5 once cows were taken off the pasture with no change thereafter (P>0.05). There was no significant change (P>0.05) in other fatty acids after d 7 once the cows were moved to phase 3. In the present study it took 23 days to establish the highest level of CLA in milk fat after cows were turned out to pasture for grazing with no grain supplementation. Other fatty acids were also stabilized near d 23 after turn out of cows to pasture.

Key Words: CLA, Pasture, Cows

W245 Consumer acceptability characteristics of conjugated linoleic acid (CLA) enriched milk and cheese. R. C. Khanal*, T. R. Dhiman1, C. Brennand2, R. L. Bompan1, and D. J. McMahoon1, 1Utah State University.

Consumer acceptability characteristics of CLA enriched milk and cheese was studied in two experiments. Experiment 1: 15 cows were randomly assigned either to a diet containing 51:49 forage to concentrate ratio (TMR), grazed on pasture (PS) or PS with 3.2 kg/d of full-fat extruded soybeans, beet pulp, ground corn, and molasses on DM basis, respectively (ES). Experimental duration was 6 wk with final 3 wk for measurement. Average CLA contents in milk fat were 5.2±, 16.2±, and 16.9± mg/g of fat for TMR, PS, and ES diets, respectively. Milk from wk 4 to 6 was used for consumer acceptability characteristics. Experiment 2: 18 cows were randomly assigned either to a TMR, PS, or PS with 3.2 kg/d of full-fat extruded soybeans (ES) diet. Cheese was manufactured from the milk collected during wk 4 to 6 of the experiment. Cheese had 7.4±, 15.7±, and 14.6± mg of CLA/g of fat for TMR, PS or ES diet, respectively. An open panel of consumers (n=75) evaluated CLA enriched milk (mouth-fill, color, flavor, and overall quality) and cheese (color, flavor, texture, and overall quality) and from experiment 1 and 2, respectively, on a hedonic scale of 1-9. A trained panel evaluated the milk (n=8) and cheese (n=7) for evenness of color, flavor, and overall quality in a scale of 1-10. There were no significant differences (P>0.05) among treatments for any of the parameters studied for milk and cheese by both open and trained panels except for oxidized flavor in cheese. Trained panel scored significantly lower (P=0.04) for oxidized flavor in cheese from ES treatment (2.6) compared to either of the cheese from TMR (2.9) or PS (3.0) treatments. In conclusion, CLA enriched milk and cheese were similar in color, flavor, and consumer acceptability characteristics except for oxidized flavor in cheese made from the milk of cows fed full-fat extruded soybeans while on pasture.

Key Words: CLA, Milk and cheese, Consumer acceptability

W246 Influence of genotype, heading date and cutting date on fatty acid composition of ryegrass. V. R. Loyola1, J. J. Murphy2, M. O’Donovan2, N. Gowan2, M. D. S. Oliveira3, and C. Stanton1, 1Teagasc, Dairy Production Research Centre, Moorepark, Fermoy, Ireland, 2Teagasc, Dairy Research Centre, Moorepark, Fermoy, Ireland, 3Universidade Estadual Paulista, UNESP, Jaboratical, Brasil, supported by FAPESP.

Ruminant products are the only significant source of conjugated linoleic acid (CLA) and they are an alternative as a source of omega-3 fatty acids, which may be beneficial components in the human diet. Linoleic and α-linolenic acids in feed are the precursors of these fatty acids in milk and meat. Animals grazing fresh grass have higher levels of omega-3 and CLA in their meat and milk, when compared with those consuming conserved forages. Therefore, it is important to quantify the variation in the precursors of these fatty acids in grasses. Our objective was to evaluate the effects of genotype, heading date and cutting date on the concentration of fatty acids (FA) in perennial ryegrass (Lolium perenne L.) cultivars. Ryegrass samples were taken at four cutting dates (22/05, 12/06, 03/07 and 28/08/2000) from a 2x2 factorial experiment in a split-plot design with three replications. The four ryegrass cultivars used were: Millennium, Portstewart, Napoleon and Spegla. Forage samples were freeze-dried and ground. Fatty acids were methylated using a one-step methylation, and analyzed by gas chromatography. The genotype effect was significant (P<0.05), with tetraploid cultivars resulting in higher total FA concentrations (19.03 g/kg DM), in comparison to diploid cultivars (16.73 g/kg DM). Intermediate heading cultivars presented higher (P<0.05) total FA levels (19.38 g/kg DM), compared to late heading (16.38 g/kg DM). There was also a significant effect of cutting date (P<0.01) on total FA concentrations, with the highest levels 18.52 and 19.97 g/kg DM, found in May and August, respectively. The June and July total FA concentrations, 16.59 and 16.45 g/kg DM, respectively, differed only from August (P<0.05). This work demonstrates the viability of manipulation of ruminant products through management and breeding of grasses, aiming alter its FA levels.

Key Words: Ryegrass, Growth stage, Fatty acids

Extension Education

W247 Consumer response to beef quality assurance certification of producers. J. W. Comerford*, J. P. Slayton2, and L. Zerby1, 1Penn State University, University Park, PA USA, 2Pennsylvania Beef Council, Middletown, PA USA.

A study was conducted to evaluate the response of consumers to information about beef quality assurance certification training of producers. Two methods were used. First, six focus groups were interviewed after observing three separate informational posters about beef quality assurance training at a mock retail meat case. Secondly, 168 consumers were interviewed while shopping at the meat case at one of nine retail food stores in central and eastern Pennsylvania. Group interviews revealed that consumers were receptive to information about beef products; implications of "advertisement" and the use of the terms "animal welfare" and "training of producers" were highly negative, while "safety" and "quality" were neutral; some form of validation of the program was positive and desirable; and information should be located on the meat package or within the meat case. Store interviews revealed 74% of consumers thought quality assurance labeling had "some importance" to
counts were higher on the bottom than on the top of the inoculated sand. Depth was increased from 1 to 2 or more inches; the same trend held that observation was independent of time following inoculation. When the sand had lower bacteria counts per sq. cm. than wood shavings. This results of these studies indicates that regardless of depth the surface of sand and wood shavings were determined on the surface and bottom of the cylinders for both materials. Experiments on sand and wood shavings were performed in 4 inch diameter PVC pipe which had been cut. PVC pipe was used to simulate a cow’s stall. Sterile sand and wood shavings were placed in 4 inch diameter PVC pipe which had been cut to 1-4 inch lengths. The pipe was filled with bedding material and K. pneumoniae spray inoculated at a rate of 25 ml per 1 inch of bedding material. Experiments on sand and wood shavings were performed in duplicate at the same time. All bacteria concentration determinations were made in duplicate as well. At 0.5, 1.0, 1.5, 2.0 hours following inoculation bacteria concentrations were determined on the surface and bottom of the cylinders for both sand and wood shavings. These observations help explain why cows housed on clean groomed sand have lower incidence of udder infections than cows housed on wood shavings or dirty (unraked sand). In addition, it provides further evidence that care must be taken not to till to deep when grooming stalls.

Key Words: Beef quality assurance, consumers, food safety

W249  Bacteria counts on the surface and subsurface of Klebsiella pneumoniae inoculated sand and wood shavings. L. Clow, R. Bey, J. Reneau, and R. Farnsworth, University of Minnesota, St. Paul, MN 55108.

PVC pipe was used to simulate a cow’s stall. Sterile sand and wood shavings were placed in 4 inch diameter PVC pipe which had been cut to 1-4 inch lengths. The pipe was filled with bedding material and K. pneumoniae spray inoculated at a rate of 25 ml per 1 inch of bedding material. Experiments on sand and wood shavings were performed in duplicate at the same time. All bacteria concentration determinations were made in duplicate as well. At 0.5, 1.0, 1.5, 2.0 hours following inoculation bacteria concentrations were determined on the surface and bottom of the cylinders for both sand and wood shavings. Results of these studies indicate that regardless of depth the surface of sand had lower bacteria counts per sq. cm. than wood shavings. This observation was independent of time following inoculation. When the depth was increased from 1 to 2 or more inches the same trend held that bacteria counts on the surface were lower for sand. In general, bacteria counts were higher on the bottom than on the top of the inoculated sand or wood shavings.

Key Words: Dairy beef, Food safety, Training

W250  Oregon Dairy environmental stewardship program. M. E. French, T. W. Downing, and P. D. French, Oregon State University, Corvallis, OR/USA.

The Oregon Dairy Environmental Stewardship Program was designed to recognize dairies for producing high quality milk and providing safe dairy products to Oregonians as well as educating the public. Today many of the dairy’s neighbors have been removed from agriculture. There is a wealth of misinformation that has generated consumer concerns, from antibiotic residues to odor issues. The Oregon Dairy Environmental Stewardship Program focuses on the need for environmental soundness, but assumes the producer’s care and concern for the environment and considers how to work with the producer to achieve this goal. As animal agriculture becomes more consumer driven, dairy producers will be challenged to enhance product value, while simultaneously controlling cost, animal well being, integrity of the environment, and food safety.

This is a voluntary program that will put the dairy industry in the forefront of any future regulations. In order to become an Oregon Dairy Environmental Steward, a ten-step process must be completed. These include: a nutrient management plan, milk sanitation permit to produce and sell Grade A milk, completion of a water quality evaluation, wildlife protection assessment/ wetlands determination, odor management plan, elimination of mercury, emergency action plan/ farm plan, confined animal feeding operation (CAFO) compliance, six hours of continued education - completed within 18 months, and some form of public outreach. The dairy must remain in compliance with changing state regulations, take at least three hours of continued education within a twenty-four month period after certified and update plans as needed. Many dairies have already achieved several of the stewardship criteria and should be recognized for their continued achievements. The Stewardship program was patterned after several programs already in existence and was revised to meet the needs of both Oregon dairy producers and Oregon citizens. Overall, the Oregon Dairy Environmental Stewardship Program was designed to protect the long-term growth of the entire dairy industry.

Key Words: Environment, Stewardship, Voluntary

W251  Effect of artificial insemination versus natural service breeding on production and reproduction parameters. J. W. Smith, L. O. Ely, W. D. Gilson, and W. M. Graves, University of Georgia.

U.S. dairy cows are bred by artificial insemination (AI), natural service (NS), or by a combination. This study examines the effect of four breeding systems on production and reproduction performance parameters and the interaction of region and herd size on breeding system. DHI Holstein herd summary records for the year ending 2001 obtained from DRMS, Raleigh, NC were sorted and classified by region (North, Midsouth, South) and herd size [small (<100 cows], medium [100-240], and large [> 250]). Hirts were assigned to breeding systems by % NS usage as follows: (1) 0, (2) 1-2, (3) 21-89, and (4) 90-100. The average % AI and % NS usage by breeding system was: (1) 100, 0; (2) 93, 7; (3) 54, 46; and (4) 1, 99. The main effects of breeding system on milk production and reproductive performance parameters are in the table. Milk production and actual calving interval (CI) were lower (P < 0.05) with breeding system 4 within each region. Milk production was not different between breeding systems 1 and 2 within each region. Actual CI was not different for breeding systems 1, 2, and 3 in the Midsouth and South regions and breeding systems 1 and 2 in the North region. Days dry tended to be higher for breeding systems 3 and 4 than breeding systems 1 and 2. Breeding system 4 had the lowest average % in milk within each region. The % dry 40-70 days was lowest for breeding system 4 within each region and within each herd size group (P < 0.05).

Key Words: Bedding, Cows, Klebsiella

The objective was to compare the ranking of dairy farms based on economic performance measures per cwt milk sold and per cwt milk equivalent. A common method is to calculate cost, revenue, and profit per cwt sold. A disadvantage of this straightforward method is that the production cost per cwt cannot be directly compared to the price received for milk when other revenue is obtained, such as from the sale of livestock or milk. Therefore, an alternate method is to calculate economic performance measures based on cwt equivalent. Cwt equivalent is calculated as the total revenue divided by the price of milk per cwt. It is the amount of milk produced to obtain the same total revenue if no revenue was obtained from other sources but milk on the farm. The total production cost per cwt equivalent can be directly compared to the price of milk. The same price of milk should be used to compare the economic performance of dairies. Data were collected through the Dairy Business Analysis Project (DBAP) from dairy farms in Florida, Georgia, and Alabama between 1995 and 2001 (n = 15, 20, 33, 44, 20, 15, 39, respectively). Average milk price used was $17.50. The ratio of cwt sold to cwt equivalent was on average 0.93, ranging from 0.65 to 1.26. Total production cost / cwt sold ranged from $12.71 to $25.28 (average $17.58) while total production cost / cwt equivalent ranged from $11.59 to $23.54 (average $16.19). Average net farm income from operations (NFIFO) / cwt sold was $1.52 and average NFIFO / cwt equivalent was $1.31. The top 6 dairies based on NFIFO / cwt sold and NFIFO / cwt equivalent were identical for 1995, 1996, 1999, and 2000. One of the top 6 dairies was replaced in 1997, 1998, and 2001. The lowest Pearson correlation coefficient between NFIFO / cwt sold and per cwt equivalent of the seven years was 0.984 (1996). The Pearson correlation coefficient between total production cost / cwt sold and per cwt equivalent ranged from 0.419 (2001) to 0.878 (1995). We concluded that the ranking of dairies based on the cost of production may be significantly affected by the method of choice, whereas the ranking based on NFIFO is hardly affected.

Key Words: Dairy, Economics, Production equivalent

W253 Lamb carcass education program for Oregon sheep producers identifies characteristics that determine carcass value. R. R. Mills*, J. M. Thompson, and K. Walburger, Oregon State University, Corvallis, OR.

A lamb carcass education program in conjunction with the Umatilla County Fair was established in 1990 as a carcass value information feedback system for purebred and commercial sheep producers in northeast Oregon. The program provides the opportunity for participants and other producers to evaluate value-determining factors of market lambs and correlate live animal characteristics with the carcasses from the same lambs. Detailed lamb carcass data, including ribeye area were collected and analyzed on market lambs (n=241) entered by producers from the years 1990 to 2002. Sire breed types represented were SF (Suffolk, n=200), TX (Texel and Texel x Suffolk, n=28), and OT (other sire breeds, n=13). Lambs from TX sires had lighter live weights, lighter carcass weights, and lower dressing percentages than SF and OT sired lambs (live weight = 48.8, 54.1, and 52.4 kg; carcass weight = 24.9, 29.3, and 28.3 kg; and dressing percent = 50.9, 54.1, and 53.9%, respectively; P<0.05). There were no sire type effects (P>0.05) for fat thickness, leg conformation score, ribeye area, USDA Quality Grade, or USDA Yield Grade. However, TX sired lambs produced larger ribeye areas / unit of carcass weight than SF and OT sired lambs (0.64, 0.59, and 0.57 cm²/kg carcass weight, respectively; P<0.05). Over the 13 year history of the program there was no change (P>0.05) in fat thickness, dressing percentage, ribeye area, or USDA Yield Grade. During the same time, live weight and carcass weight declined (3.4 and 0.5 kg, respectively; P<0.05), but leg conformation score and ribeye area per unit of carcass weight increased (0.57 conformation score and 0.08 cm²/kg carcass weight, respectively; P<0.05). The data from this study (2.1% Yield Grade 4 and 5) confirms that genetics and management / production systems currently exist in the US lamb industry to produce high quality, lean, heavily muscled lamb that can be competitive with other sources of human dietary protein.

Key Words: Reproduction, Breeding, DHI
model, the authors estimated net present values over the ten-year expected useful life of $56,990 and $28,915. All investments with positive net present values are attractive investments, since they assure a rate of return that is greater than the minimum acceptable rate specified for the individual farm business. Sensitivity analyses results suggest that factors having a negative impact on overall economic worth include low milk production response, high electricity costs, and high ration costs. Farm managers that utilize this analysis tool in decision-making should find this tool valuable for estimating the economic worth associated with long-day lighting technology.

**Key Words:** Net present value, Photoperiod manipulation, Economic analysis model

**W258 Regionalization of dairy Extension in-service training in the Mid-Atlantic and Northeast states. R. R. Peters*, 1 M. L. O’Connor2, L. J. Hutchinson3, M. L. Westendorf4, E. A. Claypoole5, G. W. Anderson6, D. P. Marcinkowski7, W. E. Graves8, S. M. Andrew9, W. L. Stohkey5, P. S. Erickson10, and J. W. Barlow10. 1University of Maryland, 2Pennsylvania State University, 3Rutgers University, 4Cornell Cooperative Extension, 5University of Maine, 6University of Massachusetts, 7University of Connecticut, 8West Virginia University, 9University of New Hampshire, and 10University of Vermont.

The Middle Atlantic Consortium was awarded a grant from the Kellogg Foundation to develop a project titled, Regionalization of Programs in the Mid-Atlantic and Northeast to Enhance the Quality and Accessibility of Education in Animal Science. The objective for Extension training was to develop a high quality, regional program by increasing the cooperation among institutions and reducing redundancy in development and delivery of training materials. The organizational structure to plan the annual two-day dairy Extension in-service training program has been through a regional steering committee. The themes and location for the training programs during the last four years are as follows: 1999,Cattle Health Assurance Training, New Palz, NY; 2000, Environmental Management of Dairy Farms, Hagerstown, MD; 2001,Tools for Dairy Profitability: Nutrition and Herd Health, Labor Management, and Profitability, Wilkes-Barre, PA. Nationally recognized keynote speakers with expertise on the theme subject have participated each year. Attendance has ranged from 55 to 65 educators. A valued feature of this training program is that speakers prepare presentations in PowerPoint. These presentations and other resources in electronic format are copied to a CD and presented in a notebook at registration. The training program has provided the opportunity to capitalize on cooperative efforts that provides excellent in-depth, regular training. Participants have rated the program as excellent or very good (84%), and 94% plan to use some part of their learning experience in their next year’s Extension programs.

**Key Words:** Regional, Extension, Training


The objective of this study was to investigate if there was any correlation between cow hygiene score and individual cow SCC. A scoring system scale from 1 to 5 was selected to score cows for hygiene. Score 1 indicates a cow that is clean while a score 5 indicates a very dirty cow. The cow hygiene scorecard was broken down into five general areas: Dale head, Flank, Belly, Udder, and Rear legs and feet. Nine herds were selected for the trial (8 free stall, 1 tie stall). All herds were deemed to have predominantly environmental mastitis problems as indicated by bulk tank cultures. Individual cow SCC and culture data were used to edit known contagious mastitis pathogen infected cows from the data. A total of 1093 cows in the 9 herds were hygiene scored within 2 days of DHIA test day. Each cow was scored in each of the five body areas. An udder-leg composition score was created, by averaging the udder and rear legs scores. A regression model was used to determine the effect that hygiene score had on SCS: SCS = Herd + Parity + DIM + DIM + “Hygiene score”; where SCS is the linear somatic cell count on DHIA test day, there were four parity groups (1,2,3, and 4 or greater), and DIM is the days in milk on DHIA test day. The model was run separately for each hygiene score trait. The mean SCC, SCS, FCM, DIM, and 305ME for the 1093 cows in the study were 405,242 (SD 1,017,000).

**Key Words:** Dairy, Manure, Nutrient cycling


New technologies requiring capital investment in assets that have useful lives greater than one year should be analyzed using Net Present Value methods to assess whether the technology should be adopted. Photoperiod manipulation, also known as long-day lighting, is an emerging technology in the dairy industry. A Net Present Value Analysis Model to determine discounted cash flows over a ten-year expected useful life associated with the adoption of long-day lighting technology was developed by the authors. The model, in electronic spreadsheet form, allows farm business managers to evaluate the economic worth associated with the investment, and perform quick assessment of “best” and “worst” case scenarios using farm-specific values. In addition, the farm manager can easily develop more extensive sensitivity analyses on key variables. Using farm level data from two operating dairy farm businesses and the
B. Zisu*, mophilus 1275: influence of pH, temperature, nutrients and E. coli
N. P. Shah
Kohn
ers, Tingalpa, Queensland, Australia
EPS also reduced the concentration of lactic acid. Co-culturing with non-
lactic acid concentrations were lower with WPC supplementation. Sig-
ificant increases were seen at pH 5.5 and this was further stimulated by
increasing CrP supplemented to the medium at pH 5.5. The highest lactic acid concentration of 31.41 g/L. EPS production was
co-culturing with non-EPS reaching at 458 mg/L. The EPS production was further stimulated by
Department of Agriculture, Annapolis, MD
J. E. Hall
extracellular EPS.

Lactic acid bacteria that synthesise exopolysaccharides (EPS) are used increasingly in the dairy industry to improve rheological behaviour,
material count was also enumerated. EPS was isolated by protein removal
of EPS, and levels of lactic acid, lactose, glucose and galactose. The bac-
cular count was also enumerated. EPS was isolated by protein removal
and precipitation with ethanol and quantified using the phenol-sulphuric
method. Lactic acid, lactose, glucose and galactose were determined using
HPLC.

S. thermophilus 1275 was grown in skim milk in a Biostat B fermenter and samples were taken at 0, 6, 12, 18 and 24 h to determine the amount of
EPS, and levels of lactic acid, lactose, glucose and galactose. The bac-
tarial count was also enumerated. EPS was isolated by protein removal
and precipitation with ethanol and quantified using the phenol-sulphuric
method. Lactic acid, lactose, glucose and galactose were determined using
HPLC.

S. thermophilus 1275 produced 406 mg/L of EPS and 3.09 g/L of lactic
acid at 37
1 C. This experiment response surface methodology to create
four hours incubation at 37 with seven prebiotics which were of dif-
ferent concentrations to increase the growth of
43121 selectively. From this experiment results, the effect of prebiotics
was significantly(P<0.05) higher in control media compared to media
dozying ratio of fructooligosaccharide, lactulose, raffinose for incubation
24 hours. The addition ratio expansion of this three prebiotics was increased consequently by strains growth but pH was de-
creased. For this experiment response surface methodology to create
the right mix ratio which will maximize the bacteria’s vital energy by
using mix of selected three prebiotics and from this, the right mixture ratio was 36.5%, 0.00% and 63.5%.  
W262 selection of prebiotics utilization from Lactobacillus acidophilus ATCC 43121 for synbiotics. E. Y. An1, S. Oh2, and S. H. Kim1, 1Korea University, 2Hnkuk Yakult Institute.

The number of food and other dietary products containing live Bifi-
dobacterium and Lactobacillus bacteria has increased in recent years. In the large intestine, prebiotics, in addition to their selective effects on bifidobacteria and lactobacilli, have influenced many aspects of bowel function through fermentation. The selected synbiotic pairs of stimu-
lated lactic acid strains and oligosaccharide enhancing their growth were studied to determine the effect of probiotics, prebiotics and synbi-
otics. This research was investigated effective ability of L. acidophilus ATCC 43121 bacteria on minimal media by ratio of adding prebiotics which was used as substrates. Viable cell count of L. acidophilus ATCC 43121 and pH of media were measured during twelve, twenty four hours incubation at 37 with seven prebiotics which were of dif-
ferent concentrations to increase the growth of L. acidophilus ATCC 43121 selectively. From this experiment results, the effect of prebiotics
was significantly(P<0.05) higher in control media compared to media
dozying ratio of fructooligosaccharide, lactulose, raffinose for incubation
24 hours. The addition ratio expansion of this three prebiotics was increased consequently by strains growth but pH was de-
creased. For this experiment response surface methodology to create
the right mix ratio which will maximize the bacteria’s vital energy by
using mix of selected three prebiotics and from this, the right mixture ratio was 36.5%, 0.00% and 63.5%.  
Recent evidence suggests that the addition of bifidobacteria as a dietary adjunct or probiotic may have important health benefits. However, in order for these bacteria to manifest beneficial effects, they need to
achieve an essential mass through aggregation. Consequently, the abil-
ity of bifidobacteria to aggregate is a desirable property sought for use
in commercial food preparations. The objective of this research was to
determine the effect of media composition and incubation temperatures
on autoaggregation behavior of bifidobacteria. Another objective of this
work was to determine the cell surface characteristics of bifidobacteria
as related to autoaggregation. Autoaggregation behavior of bifidobacte-
ria was determined using different media (TPY, Wilkins-Chalgren and
team approach to problem solving was implemented to enhance learn-
ing. Dairy advisory teams usually included six professionals. The ini-
tial team meeting with the producer started with a survey of farm and
herd health information, herd goals and concerns, employee manage-
ment, a farmstead map, detailed maternity and heifer-calf management
practices, and ranking of current herd health concerns. Subsequently,
a walk-through progressing from youngest to oldest animals was con-
ducted with the advisory team using risk assessment forms. At the
completion of risk assessment, the team convened with the farm fam-
ily. Areas in need of improvement were discussed from two perspectives:
most important for animal health risk and most practical for producer
to improve. As assessments were completed, the advisory team out-
lined a herd plan with three to five goals supporting the overall herd
goals initially discussed with the producer. The herd plan included the
person responsible for task implementation, deadline for implementing
the practice and the frequency to conduct task. Rations were examined
and milk urea nitrogen was measured monthly to evaluate herd nutri-
tion. The producer and team met at least quarterly to monitor progress.
A personal interview was completed for each herd using producer atti-
Dairy Foods: Microbiology and Cheese

W261 EPS and lactic acid production by S. thermophilus 1275: influence of pH, temperature, nutrients and co-culturing with non-EPS starter. B. Zsu1, G. Harvey2, and N. P. Shah1, 1Victoria University, Melbourne, Australia, 2Dairy Farmers, Tingalpa, Queensland, Australia.

A one-year pilot Dairy Quality Management Program (DQMP) was
launched starting with a one-day training program for five Maryland
dairy producers and their advisors on July 3, 2001. The training pro-
gram focused on three programmatic areas: biosecurity, animal health,
and animal nutrient management. As a pilot program, it was empha-
sized that a major objective for everyone was experiential learning. The


The number of food and other dietary products containing live Bifi-
dobacterium and Lactobacillus bacteria has increased in recent years. In the large intestine, prebiotics, in addition to their selective effects on bifidobacteria and lactobacilli, have influenced many aspects of bowel function through fermentation. The selected synbiotic pairs of stimu-
lated lactic acid strains and oligosaccharide enhancing their growth were studied to determine the effect of probiotics, prebiotics and synbi-
otics. This research was investigated effective ability of L. acidophilus ATCC 43121 bacteria on minimal media by ratio of adding prebiotics which was used as substrates. Viable cell count of L. acidophilus ATCC 43121 and pH of media were measured during twelve, twenty four hours incubation at 37 with seven prebiotics which were of dif-
ferent concentrations to increase the growth of L. acidophilus ATCC 43121 selectively. From this experiment results, the effect of prebiotics
was significantly(P<0.05) higher in control media compared to media
dozying ratio of fructooligosaccharide, lactulose, raffinose for incubation
24 hours. The addition ratio expansion of this three prebiotics was increased consequently by strains growth but pH was de-
creased. For this experiment response surface methodology to create
the right mix ratio which will maximize the bacteria’s vital energy by
using mix of selected three prebiotics and from this, the right mixture ratio was 36.5%, 0.00% and 63.5%.

Recent evidence suggests that the addition of bifidobacteria as a dietary adjunct or probiotic may have important health benefits. However, in order for these bacteria to manifest beneficial effects, they need to
achieve an essential mass through aggregation. Consequently, the abil-
ity of bifidobacteria to aggregate is a desirable property sought for use
in commercial food preparations. The objective of this research was to
determine the effect of media composition and incubation temperatures
on autoaggregation behavior of bifidobacteria. Another objective of this
work was to determine the cell surface characteristics of bifidobacteria
as related to autoaggregation. Autoaggregation behavior of bifidobacte-
ria was determined using different media (TPY, Wilkins-Chalgren and