Feed Into Milk A New Applied Feeding System For Dairy Cows

Effects of Forage Feeding on Milk: Bioactive Compounds and Flavor collates the research related to biologically active compounds associated with chain fresh/preserved temperate forages, the dairy animal, and cow ?s, goat ?s, and ewe ?s milk and milk products. Comprised of six chapters, this book begins by presenting a brief overview of components of the chain – the forage, the milking animal, and milk. The book then addresses desirable and detrimental compounds by providing an expansive description of each compound’s chemical nature, methods of analytical determination, biological properties and effects on humans, factors affecting level in forage, effects of ensiling and haymaking, processes within the animal, content in milk and milk products, and health evaluation. The book also outlines volatiles affecting the flavor of milk and milk products, and includes a conclusion and numerous relevant references for further reading. Summarizes the research related to biologically active compounds associated with milk and milk products Presents an overview of chain forage related to milking animal milk Explores desirable and detrimental compounds Outlines volatiles affecting the flavor of milk and milk products Includes relevant references for further reading
This manual explains the background and principles involved in deriving the FiM system and provides the rationale and the equations for the prediction of intake and the calculation of the requirements and supply of energy and protein. In addition the manual recognizes that an applied feeding system is only part of the process of diet formulation and provides a series of decision support systems (DSS) to assist in building rations for dairy cows.
Dairying once again finds itself at a crossroads. Increasingly, producers and scientists need to harness their knowledge and expertise to meet consumers' demands for quality milk and milk products. This volume discusses how the industry can meet the needs of today’s consumer. Scientists, producers, processors and marketeers together with those interested in the wider issues of biotechnology and the environment, present their views on six key areas of debate: cows for lifetime production; management for lifetime production; feeds and feeding; opportunities and impact; identifying the right model for accurate prediction of production; marketing – the myth against milk. The book concludes with a chapter looking at customers and consumers health.
Sixty lactating Holstein cows were used in a replicated block experiment to determine the efficacy of eight feed additives to reduce the transfer of aflatoxin (AF) from feed to milk. Six cows were allocated to each treatment group and 12 to a control group. All cows were fed the same aflatoxin-contaminated total mixed ration (TMR) with either no additive (control) or one of eight additives at 0.5% of the TMR dry matter (DM). Milk samples were collected twice daily to evaluate changes in milk AF concentration, milk AF excretion (milk AF concentration x milk yield); and AF transfer from feed to milk (AF excretion as a percentage of AF intake). All changes were expressed as percentages and calculated relative to the control group which defined zero change. Four of the eight additives resulted in significant reductions (P 0.05) in milk AF concentration, secretion, and AF transfer ranging from 34.98-40.39%, 36.36-52.28%, and 34.45-48.44%, respectively. Dry matter intake (DMI) was significantly reduced (P
Dry matter intake (DMI) is one of the most important factors affecting lactational performance and health of dairy cows. Control of DMI in dairy cattle is complicated and multifactorial, but we have chosen to prioritize the two main components that primarily drive farm profitability: forage quality and cow comfort. Brown midrib-3 (BM3) genetics in corn silage typically result in greater fiber digestibility and less indigestible fiber, which result in greater DMI and milk production compared to conventional, non-BM (CON) corn silage. Trace minerals may negatively affect fiber digestion by solubilizing in the rumen. Importantly, hydroxy trace minerals (HTM) are less soluble in the rumen compared to sulfate sources (STM). Still, to-date, no models have inputs that reflect social environment factors such as stocking density and feeding frequency. The objectives of this dissertation were to: 1) evaluate the effect of source of corn silage and trace mineral on lactational performance, total tract digestibility (TTD) of nutrients, and rumen fermentation, and 2) create a model that accurately quantifies the effect of management decisions on DMI. The study addressing the first objective (Chapters 2 and 3) investigated the effects of source of corn silage (CON or BM3) and trace minerals (STM or HTM) on lactational performance, TTD of nutrients, and particle passage rates. Sixteen Holstein cows averaging 82 (SE = 3) days in milk were used in a replicated 4 x 4 Latin square design with a 2 x 2 factorial arrangement of treatments. The dietary treatments were: 1) CON-STM, 2) CON-HTM, 3) BM3-STM, and 4) BM3-HTM. There was no significant interaction between corn silage and trace mineral for DMI and milk yield. Cows fed the BM3 diets had greater DMI and milk yield compared to the cows fed the CON diets. The cows fed the HTM diets had greater DMI than cows fed STM diets. The cows fed the BM3 diets had greater TTD of dry matter (DM) and organic matter (OM) than cows fed the CON diets. Cows fed the HTM diets had a tendency for greater TTD of neutral detergent fiber (NDF) than the cows fed STM diets. Cows fed the BM3 diets had a faster passage rate of small- and medium-sized corn silage NDF particles than cows fed the CON diets. The study addressing the second objective (Chapter 4) created a model that accurately quantifies the effects of stocking density and feeding frequency on behavior and performance of lactating dairy cattle. The foundation of the management model was a time budget. The eating time was predicted using common on-farm measures (NDF content, physically effective NDF, body weight, and milk yield) and had a good predictive ability with a mean absolute error of 39 min/d regardless of parity. Stocking density affected lying time, which accounted for 76% of the variance in lying time. The adjusted lying time was then used to predict a milk yield, which accounted for 36% of the variance in milk yield. The peuNDF240 accounted for 60% of the variance in DMI. Brown midrib-3 corn silage enhanced DMI, milk yield, TTD of OM, and greater passage rate of corn silage particles. Hydroxy trace minerals improved DMI, tended to improve TTD of NDF. The management model appeared to be a useful tool, although more data and research are needed to validate the model. In the future, hopefully, both forage quality and management decisions will be included in the same nutritional model to predict feed intake more accurately.
The cow is the most productive, efficient creature on earth. She will give you fresh milk, cream, butter, and cheese, build human health and happiness, and even turn a profit for homesteaders and small farmers who seek to offer her bounty to the local market or neighborhood. She will provide rich manure for your garden or land, and will enrich the quality of your life as you benefit from the resources of the natural world. Quite simply, the family that keeps a cow is a healthy family. Originally published in the early 1970s as The Cow Economy and reprinted many times over, Keeping a Family Cow has

launched thousands of holistic small-scale dairy farmers and families raising healthy cows in accordance with their true nature. The book offers answers to frequently asked questions like, 'Should I get a cow?' and 'How Much Space do I need?' in addition to extensive information on: • The health benefits of untreated milk; • How to milk a cow effectively and with ease; • Choosing your dairy breed; • Drying off your cow; • Details on calving and breeding; • The importance of hay quality and how to properly feed your cow; • Fencing and pasture management; • Housing, water systems, and other supplies; • Treating milk fever and other diseases and disorders; • Making butter, yogurt, and cheese, and, of course . . . • . . . Everything else the conventional dairy industry doesn't tell us! Now revised and updated to incorporate new information on the raw milk debate, the conversation about A1 vs. A2 milk, fully grassfed dairies, more practical advice for everyday chores, and updated procedures for cow emergencies. Keeping a Family Cow has not only stood the test of time, it still remains the go-to inspirational manual for raising a family milk cow nearly forty years after its first publication. Joann Grohman has a lifetime of practical experience that has been bound into this one volume and presented in the spirit of fun and learning.

This widely used reference has been updated and revamped to reflect the changing face of the dairy industry. New features allow users to pinpoint nutrient requirements more accurately for individual animals. The committee also provides guidance on how nutrient analysis of feed ingredients, insights into nutrient utilization by the animal, and formulation of diets to reduce environmental impacts can be applied to productive management decisions. The book includes a user-friendly computer program on a compact disk, accompanied by extensive context-sensitive "Help" options, to simulate the dynamic state of animals. The committee addresses important issues unique to dairy science-the dry or transition cow, udder edema, milk fever, low-fat milk, calf dehydration, and more. The also volume covers dry matter intake, including how to predict feed intake. It addresses the management of lactating dairy cows, utilization of fat in calf and lactation diets, and calf and heifer replacement nutrition. In addition, the many useful tables include updated nutrient composition for commonly used feedstuffs.

This lively book examines recent trends in animal product consumption and diet; reviews industry efforts, policies, and programs aimed at improving the nutritional attributes of animal products; and offers suggestions for further research. In addition, the volume reviews dietary and health recommendations from major health organizations and notes specific target levels for nutrients.

Caldwell offers readers a balanced perspective on the current regulatory environment in which raw-milk lovers find themselves. Keepers of cows, goats, or sheep will benefit from information on designing a well-functioning small dairy, choosing equipment, and understanding myriad processes, including details about the business of making milk; managing the farm to create superior milk; understanding the microbiology of milk; and risk-reduction plans to have in place prior to selling raw milk.

Comprehensive and best selling guide for farmers and advisers who wish to become more adept at solving nutritional problems and at devising improved diets for efficient milk production. Included is diet formulation computer program.

The long-term goal of the work is to improve protein efficiency in lactating dairy cows. To achieve this goal, four specific objectives were proposed: 1) determine the relationship of residual feed intake (RFI) to protein efficiency in lactating Holstein cows fed high or low protein diets, 2) determine whether low protein resilience (LPR) is an indicator of protein efficiency in individual dairy cows, 3) examine the association of digestibility with RFI and LPR in lactating dairy cows, and 4) quantify the importance of including body weight (BW) change in the cow response to decreased dietary protein content and develop models for predicting BW change when dietary protein is altered. Lactating Holstein cows (n= 166; 92 primiparous, 77 multiparous) with initial milk yield (MY) of 41 ± 9.8 kg/d were fed high (HP) and low (LP) protein diets in crossover experiments of two 28-35 d periods. Experiments were repeated in 69 of the 166 cows (42 primiparous, 27 multiparous) in late lactation. Low protein diets were 14% CP in peak lactation and 13% CP in late lactation and were formulated to contain adequate rumen-degraded protein to maintain rumen function. Expeller soybean meal was added to formulate the HP diet, which contained 18% CP in peak lactation and 16% CP in late lactation. Cows were milked twice daily; DMI and MY were recorded once daily. Milk composition was measured over 4 consecutive milkings weekly, and BW was measured 3 times weekly. Samples of feed ingredients, orts and feces were collected in the last 5 days of each period and analyzed to determine digestibilities of DM, NDF, and CP for each cow on each diet. Fixed effects of diet, parity, treatment sequence nested in experiment, treatment period nested in experiment, interaction of parity and diet, and random effects of experiment and cow nested within experiment were included in models to compare production of cows fed different levels of CP. Protein efficiency was calculated for each cow on each diet in both peak lactation and late lactation. Residual feed intake was estimated for each cow on each treatment based on the actual intake, milk energy output, metabolic BW, and body energy change (estimated from BW change and BCS). Low protein resilience was estimated for each cow in peak lactation and also late lactation, based on protein captured in milk and body tissue when fed the LP vs HP diet. A negative correlation was observed between RFI and protein efficiency in cows fed the HP and LP diets in peak lactation and cows fed the HP diet in late lactation. Cows with higher LPR values had similar protein efficiency on the HP diet but significantly higher protein efficiency on the LP diet. Neither RFI nor LPR was correlated with digestibility regardless of diets or lactation stages. When dietary protein content was reduced, 40-50 % of the total energy loss, 10-20 % of total protein loss, and 15-25% of total income loss were due to BW loss, indicating that considering only changes in milk production underestimates the impact of dietary protein changes. In conclusion, 1) cows with lower RFI values utilized protein more efficiently, and protein efficiency will be improved in the process of selecting dairy cattle for low RFI, 2) cows with higher LPR values are better able to maintain production and have higher protein efficiency to adapt to low-protein feeding conditions, 3) variation in digestibility cannot explain the variations of RFI or LPR among lactating dairy cows, and we suggest that post-absorptive metabolism explains most of the variation in RFI and LPR when lactating cows are fed diets with minimal NDF in peak lactation and 40% NDF in late lactation, and 4) body reserve mobilization should not be neglected when assessing the cow response to changes in dietary protein.

The high cost of protein feeds and the growing concern for the environment has motivated dairy producers and nutritionists to focus their attention on increasing nitrogen (N) use efficiency in dairy farms. It is well recognized that reducing N content of cattle diets is the single most important factor to increase the efficiency of N use. However, to effectively feed lower protein diets requires the nutritionist to know the availability of N in feeds in order to not negatively affect milk production. Nutrition models are an

essential tool to allow feeding lower protein diets. However, these models require precise characterization of N in feeds. A new assay was developed that predicts N indigestibility (unavailable N, uN) in non-forage feeds using an in vitro approach. This approach is known as the in vitro N indigestibility assay (IVNIDA). The predictions of this assay have not been prospectively evaluated in lactating dairy cattle as a primary experimental objective. The objective of this study was to evaluate in high producing dairy cattle, both the outcome of the IVNIDA and the ability to utilize the prediction of the uN assay in the Cornell Net Carbohydrate and Protein System (CNCPS) to predict cattle performance. To evaluate the uN assay predictions, a replicated pen study was conducted to assess the effect of balancing diets for uN on the performance of high producing dairy cattle. One hundred and twenty-eight cattle that were greater than 60 days in milk (DIM) at the beginning of the experiment were distributed into 8 pens of 16 cows and pens were randomly allocated to the two dietary treatments. Cattle were fed one of two iso-nitrogenous, iso-caloric and iso-NDF treatment diets where the only difference was from the inclusion of two different blood meals (BM) used in each diet. The uN content of the two BM was 9% and 34% as predicted by the assay, whereas with acid detergent insoluble nitrogen, no difference in indigestibility was expected. The inclusion of the BM was done on an iso-nitrogenous basis and the formulated predicted difference in uN was 39 g/d or 5.8% of actual N intake, thus that represented the difference in available N between the two treatments. There was no effect of uN on dry matter intake (DMI) or N intake and averaged 27.3 kg/d and 668 g/d for both treatments, respectively. However, milk yield and energy corrected milk (ECM) were 1.6 and 1.9 kg/d higher for the cows fed the LOW uN diet (P

Excerpt from The Influence of Calcium and Phosphorus in the Feed on the Milk Yield of Dairy Cows In the case of cows, of which the milk yield has been reduced by several years' standard feeding, a greatly increased yield can be brought about by feeding alternated rations with phosphate dur ing the dry period. This is taken to mean that the ordinary rations are more likely to be deficient in one or both of the principal bone building elements than in any other constituent. About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format whilst repairing imperfections present in the aged copy. In rare cases, an imperfection in the original, such as a blemish or missing page, may be replicated in our edition. We do, however, repair the vast majority of imperfections successfully; any imperfections that remain are intentionally left to preserve the state of such historical works.

The Model Chapter on Infant and Young Child Feeding is intended for use in basic training of health professionals. It describes essential knowledge and basic skills that every health professional who works with mothers and young children should master. The Model Chapter can be used by teachers and students as a complement to textbooks or as a concise reference manual.

From birth to first calving, the replacement heifer undergoes tremendous changes anatomically as well as in feeding and management practices. The calf changes from being a pseudo-monogastric to a full ruminant within a period of two months. During the same period, the calf is fed colostrum, milk, or milk replacer, and starter with or without hay. Notably, the lifetime milk production and health of a dairy cow is highly dependent on early life nutrition and management of the calf and, subsequently, the heifer. Hence, animal scientists continue to investigate critical areas such as colostrum feeding, the level of liquid feeding, gut microbial succession, energy and protein levels, housing, health management, and their interactions with the animal in an effort to help dairy producers raise successful and sustainable dairy enterprises.

The book review the various milk production system according to agro-climate and technical, economical and sociological conditions, review new knowledge in ruminant digestion nutrition and physiology, match milk production systematic available and potential feed resources, taking into account their nutritional characteristics. The book make recommendations for the development of sustainable milk production systems based on locally available feed resources. Contents Chapter 1: Medium Terms Outlook for Dairying in the Developing Countries by W Krostitz, Chapter 2: The Lactating Cow in the Various Ecosystems: Environmental Effects on Its Productvity by H D Johnson, Chapter 3: Physiological Constraints to Milk Production: Factors which Determine Nutrient Partitioning, Lactation Persistency and Mobilization of Body Reserves by Y Chillard, Chapter 4: Influence of Nutrition on Reproductive Performance of the Milking/Gestating Cow in the Tropics by K H Lotthamer, Chapter 5: The Role and Mechanisms of Genetic Improvement in Production Systems Constrained by Nutritional and Environmental Factors by O Syrstad, Chapter 6: Matching Livestock Systems with Available Resources by T R Preston, Chapter 7: Nutritional Characteristics of Tropical Feed Resources: Natural and Improved Grasslands, Crop Residues and Agro Industrial by Products by M Chenost and R Sansoucy, Chapter 8: Feeding Strategies for Improving Milk Production of Dairy Animals Managed by Small Farmers in the Tropics by R A Leng, Chapter 9: Feeding Riverine Buffaloes for Milk/Dual Purpose Production by A M El Serafy, Chapter 10: Feeding Swamp Buffalo for Milk Production by S Khajarern and J M Khajarern, Chapter 11: Future Prospects for Fodder and Pasture Production by A Aminah and C P Chen, Chapter 12: Forage and Legumes as Proteing Supplements for Pasture Based Systems by F A Moog, Chapter 13: The Development of Dairy Farming in Thailand by S Pichet, Chapter 14: Milk Production Systems Based on Pasture in the Tropics by Roberto Garcia Trujillo, Chapter 15: Dairy Production in the Semi Arid Rangelands of West Africa by Modibo Traore, Chapter 16: Feeding Systems and Problems in he Indo Ganges Plain: Case Study by V C Badve, Chapter 17: Feeding Dairy Cattle in Tropical Region of China by Cheng Naging, Chapter 18: Milk Production Systems in Tropical Latin America by J I Restrepo, E Murgueitio and T R Preston, Chapter 19: Restricted Suckling in Dual Purpose Systems, Chapter 20: Heifer Rearing in the Tropics by J Ugarte, Chapter 21: Feeding Cows for Milk Production in the Arusha/Kilimanjaro Coffee/Banana Belt of Tanzania FAO Project: Assistance to Smallholders in Dairy Development: Case Study by L S Morungu, Chapter 22: Milk Production From Tropical Fodder and Sugarcane Residues Case Study: on Farm Research in Mauritius by A A Boodoo, Chapter 23: Training in the Development of Feed Resources by R W Froemert.

Dietary fat is an important component on the diets of lactating dairy cattle. Concentration of dietary fat can be increase by feeding oilseeds or enriched fat supplements which allows cattle to partition energy differently which can lead to increases in milk fat concentration, milk fat yield, or milk yield. One common oilseed fed to dairy cattle is cottonseed, as it is high in fiber but also relatively high in fat compared to other common feedstuffs. Fat supplements are very high in fat (>95%) but are more expensive so dairy producers often strike a balance and may feed both fat supplements and oilseeds to dairy cattle. The first objective of this thesis was to investigate the effects of cottonseed on milk production in dairy cattle. Previous research feeding cottonseed fed inclusion rates of cottonseed in excess of 15% of dry matter intake (DMI), but cattle were producing less milk and consuming less so therefore, the actual mass of the cottonseed consumed may not be as high as contemporary dairy cattle. This thesis fed cottonseed at up to 9.9% of DMI and found that cottonseed inclusion into the diets of multiparous cattle did not affect milk yield or milk composition but led to a decrease in DMI indicating that it could be safely fed to mature cows. In primiparous cattle, cottonseed inclusion induced milk fat-depression, indicating that the level of unsaturated fatty acids in the diet was greater than the biohydrogenation potential of the ruminal microbes of these animals. The second part of this thesis was to examine the effects of increased concentrations of an unsaturated fatty acid (cis-9 C18:1; oleic acid) in a prilled fat supplement on the milk production and milk composition in dairy cows. Previous research suggests that oleic acid may increase digestibility of dietary fatty acids and consequently increase the amount of preformed fat for milk fat synthesis. This experiment indicated that fat supplementation in

multiparous cows may decrease milk yield and DMI but was no effect of increased levels of oleic acid on other production components in dairy cattle. Further investigation of the data collected for each half of the thesis is required to determine the effects on the respective methods of fat supplementation on fatty acid digestibility in lactating dairy cattle.

In the high Andean community of Tunshi San Nicolás, Ecuador, families own dairy cattle which are milked once daily. Milk is sold to the local cheese plant as part of the families' income. Many community members also belong to a cooperative which owns and operates the cheese plant. This cooperative owns 25 head of Holstein-crossbred cattle. Feed for these cattle consists of a six hour (10:00 A.M.-4:00 P.M.) pasture (alfalfa/grass mixture) grazing period. For the remainder of the day cattle are housed in dry lots with no feed. This switch-back experiment was performed to determine the effects that supplementing the diet of lactating cows with alfalfa would have on milk production. The eight lactating cows owned by the cooperative were utilized in this study. Information on parity, days in milk, and milk production were lacking. Therefore, milk production per cow was quantified during an eight day period and cows were ranked and paired based on this measure. The control treatment consisted of the traditional six hours of pature grazing. The supplement treatment consisted of the six hours of pasture grazing plus offering freshly cut alfalfa ad libitum from 4:00 P.M. until 8:00 A.M. Milk production per cow was measured on a daily basis. Each cow consumed approximately 30 kilograms of fresh-cut alfalfa per day while on the supplement treatment. Supplemental feeding increased daily milk production by 1.13 liters/cow (P

Animal Agriculture: Sustainability, Challenges and Innovations discusses the land-based production of high-quality protein by livestock and poultry and how it plays an important role in improving human nutrition, growth and health. With exponential growth of the global population and marked rises in meat consumption per capita, demands for animal-source protein are expected to increase 72% between 2013 and 2050. This raises concerns about the sustainability and environmental impacts of animal agriculture. An attractive solution to meeting increasing needs for animal products and mitigating undesirable effects of agricultural practices is to enhance the efficiency of animal growth, reproduction, and lactation. Currently, there is no resource that offers specific knowledge of both animal science and technology, including biotechnology for the sustainability of animal agriculture for the expanding global demand of food in the face of diminishing resources. This book fills that gap, giving readers all the necessary information on important issues facing modern animal agriculture, namely its sustainability, challenges and innovative solutions. Integrates new knowledge in animal breeding, biotechnology, nutrition, reproduction and management Addresses the urgent issue of sustainability in modern animal agriculture Provides practical solutions on how to solve the current and future problems that face animal agriculture worldwide

Tropical Dairy Farming is a manual designed for use by dairy production advisors working in tropical areas, especially in South-East Asia. It aims to increase the productivity of small holder dairy farmers in the humid tropics by improving the feeding management of their livestock. It shows how to provide dairy cows with cost-effective feeds that match small holder farming systems and discusses the major obstacles to improving feeding management in the humid tropics. The author shows the benefits and drawbacks of various feed components and the calculation of balanced diets based mainly on forages combined with some supplementary feeding. Diseases and problems associated with unbalanced diets are also covered, as well as important information on growing and conserving quality forages as silage. The book draws on examples from a variety of countries including Indonesia, Malaysia, Thailand, Vietnam, China, East Timor and the Philippines.