Subjek : Ekonomi Peternakan
Tahun 2004-2008 (58 judul)

Frank Coopman, Stefaan De Smet, Hans Laevens, Alex Van Zeveren, Luc Duchateau, Live weight assessment based on easily accessible morphometric characteristics in the double-muscled Belgian Blue beef breed, Livestock Science, Volume 125, Issues 2-3, November 2009, Pages 318-322, ISSN 1871-1413, DOI: 10.1016/j.livsci.2009.05.005.
(http://www.sciencedirect.com/science/article/B7XNX-4WDFCHR-1/2/71893d1333cc98b24a30f38947b3dc7d)
Abstract:
Live weight is an important trait in cattle farming. Weighing is not always feasible and therefore live weight is often estimated from easily accessible data. In this study, data on live weight, age and gender, and four body measurements, withers height (WH), heart girth (HG) and width of the shoulders (SW) and hind quarters (BcW) of double-muscled Belgian Blue beef (DM-BBB) farm animals were used to develop multivariable non-linear and linear regression models that predict live weight from these easily accessible data. The relationship between the logarithm of the live weight and the logarithm of time is adequately described by a general logistic function. The age period from 100 to 600 days of age is contained in the linear part of the logistic function. This region is of particular economic interest because it contains the yearling age and slaughter age that are important in DM-BBB breeding and management. Adding one of the body traits in the linear models that contain age and gender as fixed effects decreases the coefficient of variation. A model with withers height and shoulder width has the lowest coefficient of variation, with no further significant improvement when adding either heart girth or width of the hind quarters.
Keywords: Double muscled; Belgian Blue beef breed; Live weight prediction; Body measurements

Margaret K. Elliott, David P. Alt, Bovine immune response to papillomatous digital dermatitis (PDD)-associated spirochetes is skewed in isolate reactivity and subclass elicitation, Veterinary Immunology and Immunopathology, Volume 130, Issues 3-4, 15 August 2009, Pages 256-261, ISSN 0165-2427, DOI: 10.1016/j.vetimm.2009.02.010.
(http://www.sciencedirect.com/science/article/B6TD5-4VNH3P6-1/2/56a65b01991d90509e62c8670cbc58f7)
Abstract:
Papillomatous digital dermatitis (PDD) is a growing cause of lameness of dairy cattle worldwide. Farms with PDD-afflicted cows experience economic loss due to treatment costs, decreased milk production, lower reproductive efficiency and premature culling. Cows exhibit both humoral and cellular immune responses to PDD-associated spirochetes. This study was undertaken to further characterize the bovine humoral response to PDD-associated spirochetes. Forty-seven sera samples collected from cattle (Field cattle) on three different dairy operations in Iowa were analyzed. In addition, sera were obtained from six young steers (Test cattle) that received a mixed inoculum of four previously isolated Treponema phagedenis-like spirochetes (1A, 3A, 4A and 5B) on two separate occasions. Relative levels of total IgG, IgG1, IgG2 and IgM reactive to each individual spirochete were determined. Field cattle had a higher mean antibody response to 5B compared to the other isolates and T. phagedenis. Test cattle reacted most strongly with 4A following initial exposure, shifting to a greater reactivity with 5B and a reactivity profile similar to field cattle following secondary exposure. No measurable IgM was detected. IgG1 was produced predominately in all cattle. Low to moderate levels of total IgG reactivity to T. phagedenis occurred with sera from all cattle.
Keywords: Cattle; Papillomatous digital dermatitis (PDD); Treponema; Humoral response

Juan J. Armesto, Daniela Manuschevich, Alejandra Mora, Cecilia Smith-Ramirez, Ricardo Rozzi, Ana M. Abarzua, Pablo A. Marquet, From the Holocene to the Anthropocene: A historical framework for land cover change in southwestern South America in the past 15,000 years, Land Use Policy, In Press, Corrected Proof, Available online 13 August 2009, ISSN 0264-8377, DOI: 10.1016/j.landusepol.2009.07.006.
(http://www.sciencedirect.com/science/article/B6VB0-4X0F6PB-1/2/d535a3fd6005baf03a1ebfa8a887e2b1)
Abstract:
The main forest transitions that took place in south-central Chile from the end of the last glaciation to the present are reviewed here with the aim of identifying the main climatic and socio-economic drivers of land cover change. The first great transition, driven primarily by global warming, is the postglacial expansion of forests, with human populations from about 15,000 cal. yr. BP, restricted to coastlines and river basins and localized impact of forest fire. Charcoal evidence of fire increased in south-central Chile and in global records from about 12,000 to 6000 cal. yr. BP, which could be attributed at least partly to people. The subsequent expansion of agriculture led to much clearing of forests and the spread of weeds and other indicators of open habitats. The Spanish colonial period in America may have been followed by a transient expansion of forest cover into abandoned land, as indigenous population declined rapidly due to disease and slaughter. The 18th and 19th centuries brought about extensive loss of forests due to the massive impact of lumber extraction for mining operations both in central Chile and in western North America. Two centuries of intensive deforestation, coupled to grazing by cattle and extremely variable rainfall had long-lasting effects on forest cover in south-central Chile, which persist until today. The transition from a preindustrial to an industrial society brought about the 'golden age' of timber harvest, assisted by mobile sawmills and railway transportation since the late 1800s. These advances led to the exhaustion of native commercial timber by the late 20th century in south-central Chile. In North America, harvestable stands were exhausted in New England and the Midwest around 1920. Settlement of the independent territories in the late 1800s and early 1900s implied vast burning and clearing of land and mounting soil erosion. Industrial forestry, based on government-subsidized massive plantations of short-rotation exotic trees, developed in the late 20th century, in connection with postindustrial displacement of exploitative activities from developed to third-world nations. In the last two decades, economic globalization and free trade promoted the expansion of new crops and further decline of woodlands, despite modest increases in forest cover. These patterns are repeated in many Latin American countries. To prevent further depletion of native forest resources and to provide an insurance against climate change, in the 21st century developing nations should aim at: (1) relocating subsidies from fiber farms to restoring diverse forest cover, (2) promoting ecosystem management of diverse forest and crops within landscapes, and (3) fostering diverse cultural relationships between people and their land.
Keywords: Chilean rain forests; Land cover change; Fuel wood; Plantation forestry; Restoration; Fiber farms; Ecosystem management; Logging; Fire; Timber production

C. Mosnier, J. Agabriel, M. Lherm, A. Reynaud, A dynamic bio-economic model to simulate optimal adjustments of suckler cow farm management to production and market shocks in France, Agricultural Systems, In Press, Corrected Proof, Available online 3 August 2009, ISSN 0308-521X, DOI: 10.1016/j.agsy.2009.07.003.
(http://www.sciencedirect.com/science/article/B6T3W-4WXB55B-1/2/85bd3d6268d035b9c526c604e84ec282)
Abstract:
Tactical adjustments to seasonal weather conditions and beef price may generate additional income or avoid losses in French beef cattle farms. Due to the length of the suckler cow production cycle, adjustment decisions may impact not only on current production and profit but also on future farm outcomes. To better understand the consequences of shocks and subsequent

production adjustments on the evolution of farm earnings and production over time, we built a dynamic recursive bio-economic farm model. Our model introduced simultaneously the possibility of adjusting herd size and herd composition, diet composition and diet energy content, as well as crop rotation, haymaking and feed stocks, taking into account both their short- and long-term consequences. An application is provided to test impacts of crop yield and beef price shocks of different intensities. Main simulated adjustments to face unfavourable weather shocks are (1) purchased feed in order to maintain animal production objectives, and (2) area of pasture harvested for haymaking. Very severe beef price shocks induce forced sales. Weather shocks affect farm net profit not only of the current year but also of the following years. Profit losses caused by unfavourable weather conditions are not compensated by gains in favourable ones and this differential is amplified when intensity of shocks rises.
Keywords: Farm management; Livestock production; Recursive model; Tactical adjustments; Risk

M. Moriondo, C. Pacini, G. Trombi, C. Vazzana, M. Bindi, Sustainability of dairy farming system in Tuscany in a changing climate, European Journal of Agronomy, In Press, Corrected Proof, Available online 10 July 2009, ISSN 1161-0301, DOI: 10.1016/j.eja.2009.05.001.
(http://www.sciencedirect.com/science/article/B6T67-4WR5NV9-1/2/7c3f39f67f9095c00c41c4ca7d1e3044)
Abstract:
It is widely accepted that our climate is changing due to the increasing atmospheric concentrations of the `greenhouse gases', and these changes may exercise strong impacts on different economic sectors. In particular for agricultural systems, such a change may have significant impacts on crop yield, cattle breeding and related management practices. Accordingly, the economic viability of agricultural production systems in future scenarios is a main concern especially for policy-making purposes. Up until now, the impact of climate change on agriculture has focused on change in crop yield, whereas a `holistic' approach, considering both benefits (in terms of direct economic income) and detrimental environmental impacts of agricultural practices (soil loss, nitrogen leaching, water balance) has not been considered. On these premises, the objective of the present article was to assess agricultural sustainability on a farm level in Tuscany (central Italy) under the climate change regime, considering both conventional and organic farming systems (CFS and OFS, respectively). In particular, an ecological-economic optimisation model was run for both the present and future scenarios to perform an integrated assessment of sustainability of CFS and OFS on the case-study farm.
Keywords: Sustainability; Organic farming system; Conventional farming system; Crop rotation

K. Bartl, A.C. Mayer, C.A. Gomez, E. Munoz, H.D. Hess, F. Holmann, Economic evaluation of current and alternative dual-purpose cattle systems for smallholder farms in the central Peruvian highlands, Agricultural Systems, Volume 101, Issue 3, July 2009, Pages 152-161, ISSN 0308-521X, DOI: 10.1016/j.agsy.2009.05.003.
(http://www.sciencedirect.com/science/article/B6T3W-4WFGRW4-1/2/d19388a5308022834d34ba7c3c0aa29a)
Abstract:
In four communities in the Peruvian Andes, 56 farmers were interviewed every three months over a period of one year. Information linked to milk and cattle production such as activities, inputs (labour, means of production, capital) and outputs (milk, cheese, animals) were recorded using a closed-ended questionnaire. The communities were divided into two groups with low (LC) and high (HC) level of dependence on income from milk and animal sales. The survey results showed that cattle production on the LC farms was based on less land and a smaller herd (3.32 ha/farm, 1.06 lactating cows) than on HC farms (10.28 ha/farm, 4.19 lactating cows). The data from the survey and the results of the nutritional analyses of 74 feed samples were introduced into a model that applied linear programming techniques in order to estimate the farm household income under the

current production systems and evaluate the economic impact of improved forage varieties for hay production. Furthermore, the economic viability of other changes in fodder and herd management was tested. Both groups were characterised by a dual-purpose system generating a gross income from the sale of both, milk and live animals in the amount of -21 (LC) and +1057 US$/farm and year (HC). Due to higher production costs for forages and better access to markets, LC communities were characterised by an integrated crop-livestock system whereas in the HC group income was mainly based on livestock. Introduction of improved and fertilized barley for hay production, was estimated to increase the annual farm income to 127 and 1257 US$ for LC and HC, respectively. This increase was accompanied by an increment of the animal number. Maintaining the animal number but increasing the milk production/cow by feeding additional forage was a less profitable option generating 50 and 1221 US$ of income per farm and year for LC and HC, respectively. The production of hay was limited by high costs (external labour) in LC communities and the restricted availability of family labour in the HC group. A scenario based on the use of improved cow genotypes led to the highest estimated annual farm income for HC communities (1280 US$) but was less favourable for LC. The modelling results showed that the best development strategy depends on various factors such as production costs, access to the markets and to irrigation and availability of different feed resources.
Keywords: Crop-livestock system; Land use options; Milk production; Modelling; Peru

P. Tittonell, M.T. van Wijk, M. Herrero, M.C. Rufino, N. de Ridder, K.E. Giller, Beyond resource constraints - Exploring the biophysical feasibility of options for the intensification of smallholder crop-livestock systems in Vihiga district, Kenya, Agricultural Systems, Volume 101, Issues 1-2, June 2009, Pages 1-19, ISSN 0308-521X, DOI: 10.1016/j.agsy.2009.02.003.
(http://www.sciencedirect.com/science/article/B6T3W-4W329H2-1/2/44e47af606e0b1c061a3f5ed0c358623)
Abstract:
During participatory prototyping activities in Vihiga, western Kenya, farmers designed what they considered to be the ideal farm [Waithaka, M.M., Thornton, P.K., Herrero, M., Shepherd, K.D., 2006. Bio-economic evaluation of farmers' perceptions of viable farms in western Kenya. Agric. Syst. 90, 243-271]: one in which high productivity is achieved through optimising crop-livestock interactions. We selected four case study crop-livestock farms of different resource endowment (Type 1-4 - excluding the poorest farmers, Type 5, who do not own livestock) and quantified all relevant physical flows through and within them. With this information we parameterised a dynamic, farm-scale simulation model to investigate (i) current differences in resource use efficiencies and degree of crop-livestock interactions across farm types; and (ii) the impact of different interventions in farm Types 3 and 4 on producing the desired shifts in productivity towards the ideal farm. Assuming no resource constraints, changes in the current farm systems were introduced stepwise, as both intensification of external input use (fertilisers and fodder) and qualitative changes in the configuration of the farms (i.e. changing land use towards fodder production, improving manure handling and/or changing cattle breeds). In 10-year simulations of the baseline, current scenario using historical weather data the wealthiest farms Type 2 achieved food self-sufficiency (FSS) in 20% of the seasons due to rainfall variability, whereas the poorer Type 4 only achieved FSS in 0 to 30% of the seasons; soil organic C decreased during the simulations at annual rates of -0.54, -0.73, -0.85 and -0.84 t C ha-1 on farms of Type 1-4, respectively; large differences in productivity and recycling efficiency between farm types indicated that there is ample room to improve the physical performance of the poorer farms (e.g. light and water use efficiency was 2-3 times larger on wealthier farms). Simulating different intensification scenarios indicated that household FSS can be achieved in all farm types through input intensification, e.g. using P fertilisers at rates as small as 15 kg farm-1 season-1 (i.e. from 7 to 28 kg ha-1). Increasing the area under Napier grass from c. 20 to 40% and reducing the area of maize, beans and sweet potato in farms of Type 3 and 4 increased their primary productivity by c.

1 t ha-1 season-1, their milk production by 156 and 45 L season-1, respectively, but decreased the production of edible energy (by 2000 and 250 MJ ha-1 season-1) and protein (by 20 and 3 kg ha-1 season-1). By bringing in a more productive cow the primary productivity increased even further in Farm Type 3 (up to 5 t ha-1 season-1), as did milk production (up to c. 1000 L season-1), edible energy (up to c. 10,000 MJ ha-1 season-1) and protein (up to c. 100 kg ha-1 season-1). The impact of livestock management on the recycling of nutrients and on the efficiency of nutrient use at farm scale can be large, provided that enough nutrients are present in or enter the system to be redistributed. An increase in N cycling efficiency through improved manure handling from 25 to 50% would increase the amount of N cycled in the case study farms of Type 1 and 2 by only ca. 10 kg season-1, and only 1-2 kg season-1 in Type 3 and 4. The various alternatives simulated when disregarding resource constraints contributed to narrow the productivity and efficiency gaps between poorer and wealthier farms. However, the feasibility of implementing such interventions on a large number of farms is questionable. Implications for system (re-)design and intensification strategies are discussed.
Keywords: Sub-Saharan Africa; Farming systems design; Smallholder farms; Farm-scale modelling; Food security; Resource use efficiency

R.B. Pillars, D.L. Grooms, J.A. Woltanski, E. Blair, Prevalence of Michigan dairy herds infected with Mycobacterium avium subspecies paratuberculosis as determined by environmental sampling, Preventive Veterinary Medicine, Volume 89, Issues 3-4, 1 June 2009, Pages 191-196, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2009.02.022.
(http://www.sciencedirect.com/science/article/B6TBK-4W1BFJ0-1/2/d0caacb706b6ab127525fa67762898a8)
Abstract:
A cross-sectional, stratified random survey of Michigan dairy herds was conducted to estimate the prevalence of herds infected with Mycobacterium avium paratuberculosis (MAP), the causative agent of Johne's disease, in Michigan using targeted environmental sampling. One pooled sample each from the primary manure storage area and a high-traffic common cow area from each herd was collected and cultured for MAP using the ESP(R) culture system II. A herd was classified as positive if at least one sample was culture positive for MAP. State, agricultural district, and herd size stratum prevalence were calculated. Information on past MAP testing and cattle purchase history was collected, and logistic regression was performed to determine their importance to the MAP status of the herd. One hundred twenty-seven herds were contacted, and 94 agreed to participate in the study. The environment of 38 (40.4%) herds cultured positive for MAP. MAP was found in all herds (n = 15) with greater than 200 lactating cows. Herds that had tested for MAP or purchased cattle in the previous 5 years were 4.6 and 3.1 times, respectively, more likely to be infected than herds that had not. MAP continues to be prevalent on Michigan dairy farms, especially those with greater than 200 lactating cows. The environmental sampling protocol used in this study is an economically attractive alternative for monitoring herd level prevalence and the progress of Johne's disease control programs at the state or national level. Implementation of such a program would aid states in monitoring Johne's control program progress, and guide changes over time.
Keywords: Johne's disease; Paratuberculosis; Dairy herd Johne's prevalence; MAP

Emilie Gay, Jacques Barnouin, A nation-wide epidemiological study of acute bovine respiratory disease in France, Preventive Veterinary Medicine, Volume 89, Issues 3-4, 1 June 2009, Pages 265-271, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2009.02.013.
(http://www.sciencedirect.com/science/article/B6TBK-4VVW4KF-1/2/4f1c99c81912f55cd934d08480fa0055)
Abstract:

Acute bovine respiratory disease (ABRD) is a respiratory syndrome caused by various infectious agents, and represents a major economic and health problem in cattle herds worldwide. The aim of the study was to present how we can describe the epidemiological characteristics of ABRD in France, including risk factor analysis and spatio-temporal pattern investigation.
The data were collected by specialized surveyors during the 2001 animal survey conducted by the French Ministry for Agriculture and Fisheries, from a representative sample of cattle herds. The health questionnaire concerned farm characteristics, practice of BRD vaccination, presence of ABRD, time of occurrence and number of affected animals for the period November 2000-October 2001. After a descriptive analysis of the syndrome, a space-time scan statistic was performed to detect potential clusters, and a logistic regression model was used for analysis of risk factors.
The study sample included 16,581 cattle herds as representative of the 260,000 French herds. The ABRD cumulative incidence at farm level was 9.8%, the cumulative incidence at animal level was 2.1%, the cumulative mortality 0.1% and the lethality proportion 6.5%. ABRD occurred mainly during cold months with an epidemic peak in December. Spatial repartition of the syndrome showed that the whole territory was affected, with a higher number of cases in the north-east region, the main bovine production area in France. Three space-time clusters were identified in the period November 2000-February 2001. ABRD was significantly associated with production type, herd size, and BRD vaccination. Beef herds were less affected than dairy herds, and increased herd size increased the risk of ABRD.
The outbreak was clustered in space and time, suggesting a common infectious agent for the epidemic in the detected areas. The influence of production type and herd size on syndrome occurrence highlighted the importance of management practices, human movement and animal density.
Keywords: Respiratory disease; Cattle; Clustering; Spatial analysis; Risk factor

W.J. Nauta, T. Baars, H. Saatkamp, D. Weenink, D. Roep, Farming strategies in organic dairy farming: Effects on breeding goal and choice of breed. An explorative study, Livestock Science, Volume 121, Issues 2-3, April 2009, Pages 187-199, ISSN 1871-1413, DOI: 10.1016/j.livsci.2008.06.011.
(http://www.sciencedirect.com/science/article/B7XNX-4T9TCC4-1/2/357a11b08be2aacb69646ed1231a01f9)
Abstract:
Organic farming principles give rise to multifunctionality: different activities are combined at farm level to create ecological and economic synergies. These principles do however allow for different operationalisations and different farm development strategies, for example with regard to the use of external inputs or the decision whether or not to use advanced breeding technologies such as artificial insemination. Maintaining and improving diversity are therefore characteristic to organic farming. Since organic farming took off in the early 1990 s, many specialised dairy farms which tend to be more mono-functional in nature, have converted to organic, adding a new farming strategy to the diverse collection of farming strategies in organic dairy farming. All these farming strategies actually create different organic production environments for cows, which might result in different demands on selective breeding and breeding technology. This differential demand was explored in a survey, among 151 organic dairy farmers, on general farm strategy, milk production, breeding goal, choice of breed and approach to reproduction. Farmers were divided into one of two groups on each of three strategic options: a) diversification in farm business--Specialised Dairy Farming vs. Multifunctional Farming; b) intensity of milk production--Low Input vs. High Input Farming and c) naturalness of breeding--Farming with Artificial Insemination vs. Farming with Natural Service.
A pair-wise comparison within each strategic option showed that each pair differed significantly with regard to farm characteristics, farm goal and animal production goals. However, there were only minor or no significant differences within each pair with regard to overall breeding goal. For

each strategic option, big differences were found within each pair as regards preferred cattle breeds and crossbreeds. Farmers in the Specialised Dairy Farming and High Input Farming groups preferred milk-type cattle (Holstein and Holstein crossbreeds), while farmers in the Multifunctional Farming and Low Input Farming groups preferred various native Dutch breeds. But even farmers with a similar strategy (within one group) differed strongly in their choice of breeds and crossbreeds. These results indicate that organic farmers are going through process of learning by doing, experimenting as they search for breeds or crossbreeds that are optimally suited to their farm environment and that best agree with their farm development strategy. In this, the growing preference for keeping bulls on the farm for natural service is remarkable.
Keywords: Organic dairy farming; Farming strategies; Breeding goal; Breeds; Crossbreeds

S. Schierenbeck, S. Konig, H. Simianer, Genetic and environmental impact on auction prices for Holstein cows, Livestock Science, Volume 121, Issues 2-3, April 2009, Pages 327-334, ISSN 1871-1413, DOI: 10.1016/j.livsci.2008.07.008.
(http://www.sciencedirect.com/science/article/B7XNX-4T5HJ85-2/2/d4782690315a51528e97024f2543c3d5)
Abstract:
The aim of the present analysis was to determine the impact of a variety of traits and effects (i.e. production, type, health, management effects, pedigree information) on prices of Holstein cows sold at auction, and to estimate genetic (co)variance components between type traits and auction price. Results were used to derive economic weights for type traits. Data of 1565 cows in first parity were collected at six monthly auction sales from August 2005 through January 2006. Seventeen linear type traits and body condition (scale 1 to 9), and four type composites (dairy character, body, feet and legs, and udder; scale 65 to 88) were scored by two classifiers in the auction hall before cows were sold. Analysis of variance revealed a highly significant impact ($P < 0.001$) of auction date, test day milk yield, stage of lactation, origin of sire, and miscellaneous defects on auction price. The most expensive cows were sold in August, they were from foreign proven sires, they had a high level of test day milk yield, and they were free from defects related to udder, feet and legs, or milkability. The feet and leg, udder, and body composite also had a significant effect on the price ($P < 0.001$), with higher scores being associated with higher prices. The opposite association was found for dairy character ($P < 0.01$). Utilizing results from regression analysis, economic weights per genetic standard deviation were highest for linear scored rear udder height (1.23 [euro]), front teat placement (0.97 [euro]), and strength (0.80 [euro]), but were negative for dairy character (- 0.69 [euro]). Genetic parameters for linear type traits scored at the auction date were consistent with literature reports. Heritability for auction price was 0.27, and auction price was genetically positively related to the feet and leg (0.55), udder (0.55), and body composite (0.21). A relative breeding value for auction price was estimated for 27 influential sires, and correlated with official indices for production, conformation, somatic cell count, functional herd life, fertility, and the total net merit index. Correlations were 0.15, 0.21, 0.11, 0.03, 0.05, and 0.19, respectively. Auction price in combination with type scores and information related to farm management provide valuable information for genetic analysis in dairy cattle, and results can be used to increase dairy cow profitability.
Keywords: Dairy cattle; Auction price; Type traits; Genetic parameters; Economic weights

H. Hayakawa, T. Hirai, A. Takimoto, A. Ideta, Y. Aoyagi, Superovulation and embryo transfer in Holstein cattle using sexed sperm, Theriogenology, Volume 71, Issue 1, 1 January 2009, Pages 68-73, ISSN 0093-691X, DOI: 10.1016/j.theriogenology.2008.09.016.
(http://www.sciencedirect.com/science/article/B6TCM-4TTM305-1/2/e1e805bcfd8f752e3dd5a583920fe728)
Abstract:

The use of sexed bull sperm in multiple ovulation and embryo transfer (MOET) programs for Holsteins was evaluated for (1) heifers housed at a commercial embryo transfer (ET) facility (Experiments 1 and 2), and (2) heifers and cows on dairy farms (Experiment 3). In Experiment 1, superstimulated heifers were inseminated with 5 x 106 sexed (X-sorted; n = 5) or unsexed (n = 5) frozen-thawed sperm from one bull at 12 and 24 h after estrus detection. No difference was observed in the rates of transferable embryos (53.4% vs 68.1%), degenerate embryos (24.8% vs 26.6%) and unfertilized ova (21.8% vs 5.3%) between sexed and unsexed sperm, respectively, except for the percent of female transferable embryos diagnosed by embryo sexing (100% vs 49.3%, P < 0.0001). In Experiment 2, donors were inseminated twice with 5 x 106 sexed unfrozen sperm (n = 10) or sexed frozen-thawed sperm (n = 9). Embryo production rates for both treatments were similar to that observed on a commercial ET facility using unsexed sperm. Pregnancy rates for frozen-thawed embryos were similar for sexed and unsexed sperm (70.4% vs 72.4%, respectively). In Experiment 3, 99 flushes were conducted using sexed frozen-thawed sperm from nine bulls but an overall statistical analysis was not completed because the use of bulls was not balanced. However, for one bull with balanced usage, the rate of transferable embryos was higher in heifers than in cows (P < 0.05) inseminated twice with 5 x 106 sperm/dose (10 x 106 total). We concluded that the use of sexed frozen-thawed sperm (>=90% X-sperm biased and 10 x 106 total sperm) may be economically viable for commercial MOET programs in Holstein heifers.
Keywords: Holstein cattle; Sexed sperm; Superovulation; Artificial insemination; Embryo transfer

Willem Takken, Niels Verhulst, Ernst-Jan Scholte, Frans Jacobs, Yde Jongema, Ron van Lammeren, The phenology and population dynamics of Culicoides spp. in different ecosystems in The Netherlands, Preventive Veterinary Medicine, Volume 87, Issues 1-2, Special Issue: The 2006 Bluetongue outbreak in North-West Europe: The outcome from the epidemiological investigation coordinated by the European food safety authority (EFSA), 15 October 2008, Pages 41-54, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2008.06.015.
(http://www.sciencedirect.com/science/article/B6TBK-4T13J58-2/2/5c7de60db30fdc3cf0610b5b8ba39ef1)
Abstract:
The Netherlands has enjoyed a relatively free state of vector-borne diseases of economic importance for more than one century. Emerging infectious diseases may change this situation, threatening the health of humans, domestic livestock and wildlife. In order to be prepared for the potential outbreak of vector-borne diseases, a study was undertaken to investigate the distribution and seasonal dynamics of candidate vectors of infectious diseases with emphasis on bluetongue vectors (Culicoides spp.). The study focused primarily on the relationship between characteristic ecosystems suitable for bluetongue vectors and climate, as well as on the phenology and population dynamics of these vectors.
Twelve locations were selected, distributed over four distinct habitats: a wetland area, three riverine systems, four peat land areas and four livestock farms. Culicoides populations were sampled continuously using CO2-baited counterflow traps from July 2005 until August 2006, with an interruption from November 2005 to March 2006. All vectors were identified to species level. Meteorological and environmental data were collected at each location.
Culicoides species were found in all four different habitat types studied. Wetland areas and peat bogs were rich in Culicoides spp. The taxonomic groups Culicoides obsoletus (Meigen) and Culicoides pulicaris (Linnaeus) were strongly associated with farms. Eighty-eight percent of all Culicoides consisted of the taxon C. obsoletus/Culicoides scoticus. On the livestock farms, 3% of Culicoides existed of the alleged bluetongue vector Culicoides dewulfi Goetghebuer. Culicoides impunctatus Goetghebuer was strongly associated with wetland and peat bog. Many Culicoides species were found until late in the phenological season and their activity was strongly associated with climate throughout the year. High annual variations in population dynamics were observed

within the same study areas, which were probably caused by annual variations in environmental conditions.
The study demonstrates that candidate vectors of bluetongue virus are present in natural and livestock-farm habitats in the Netherlands, distributed widely across the country. Under favourable climatic conditions, following virus introduction, bluetongue can spread among livestock (cattle, sheep and goats), depending on the nature of the viral serotype. The question now arises whether the virus can survive the winter conditions in north-western Europe and whether measures can be taken that effectively halt further spread of the disease.
Keywords: Culicoides; Biting midge; Population dynamics; Surveillance; Bluetongue; Habitat; The Netherlands

Julio C. Garcia, Phillip H. Klesius, Joyce J. Evans, Craig A. Shoemaker, Non-infectivity of cattle Streptococcus agalactiae in Nile tilapia, Oreochromis niloticus and channel catfish, Ictalurus punctatus, Aquaculture, Volume 281, Issues 1-4, 1 September 2008, Pages 151-154, ISSN 0044-8486, DOI: 10.1016/j.aquaculture.2008.05.028.
(http://www.sciencedirect.com/science/article/B6T4D-4SNGM29-2/2/f61152a92bd3dfea2980fb9797ae151a)
Abstract:
Streptococcus agalactiae is classified as a Lancefield's group B Streptococcus. It is one causative bacterium of streptococcosis that is responsible for severe economic losses in wild and cultured fish worldwide. S. agalactiae also causes bovine mastitis. No information is available on infectivity of cattle S. agalactiae isolates in fish. In the present study, the results showed that 10 cattle isolates from 8 different dairy farms were not infectious in Nile tilapia (Oreochromis niloticus) or channel catfish (Ictalurus punctatus) at greater than 108 colony forming units per fish. S. agalactiae was not re-isolated from the brain or head kidney of the fish at 24 and 48 h post-injection.
Keywords: Streptococcus agalactiae; Fish; Cattle; Phenotypic characteristics; Infectivity

S.V. Singh, A.V. Singh, R. Singh, S. Sharma, N. Shukla, S. Misra, P.K. Singh, J.S. Sohal, H. Kumar, P.K. Patil, P. Misra, K.S. Sandhu, Sero-prevalence of Bovine Johne's disease in buffaloes and cattle population of North India using indigenous ELISA kit based on native Mycobacterium avium subspecies paratuberculosis `Bison type' genotype of goat origin, Comparative Immunology, Microbiology and Infectious Diseases, Volume 31, Issue 5, September 2008, Pages 419-433, ISSN 0147-9571, DOI: 10.1016/j.cimid.2007.06.002.
(http://www.sciencedirect.com/science/article/B6T5H-4PMYXM4-1/2/a579e3adf6a145cac6ef1bbd9d4fb252)
Abstract:
Present pilot study is the first attempt in the country to estimate sero-prevalence of Bovine Johne's disease (BJD) by screening cattle and buffaloes representing large population belonging to farmer's and farm herds in the home tracts (Uttar Pradesh (UP) and Punjab) of Hariana cattle and Murrah buffaloes in North India. Indigenous and in-house plate ELISA kit (using protoplasmic antigen from native Mycobacterium avium subsp. paratuberculosis `Bison type' strain of goat origin), originally developed for goats and sheep was standardized in bovines and used for screening. For this study, 33 villages of south and west UP were randomly selected and surveyed from 2001 to 2003. There were 7943 farmer's families having 38,251 livestock, including cattle, buffaloes, goats and sheep (per family 4.8% livestock). Numerically, buffaloes and cattle were 54.7% and 22.1%, respectively. Serum samples were collected from 726 animals (4.2% of 16, 981 livestock with 4375 farmer's families) located in 33 randomly surveyed villages. Serum samples (699), submitted to Epidemiology Department of Veterinary College (Punjab Agricultural University, Ludhiana), in the year 2004 by farmer's and organized farm herds (Buffaloes, 372, Cattle, 327), were screened by this ELISA kit.

Soluble protoplasmic antigen was prepared from Map (S 5) `Bison type' strain isolated from a terminally sick goat with Johne's disease. Of the total 1425 bovine (Buffaloes and cattle) serum samples screened using indigenous ELISA kit, sero-prevalence of Johne's disease was 29.0% (28.6% in buffalo and 29.8% in cattle) in Northern India. State-wise sero-prevalence was 31.9% and 23.3% in UP and Punjab, respectively. In UP, of the 601 randomly sampled buffaloes, sero-prevalence was 40.3% (16.6% in young and 40.9% adults) and 25.5% (10.5% in young and 26.3% adults) in south and west UP, respectively. Of the 125 cattle screened, sero-prevalence was 42.6% (nil in young and 44.4% adults) and 30.0% (nil in young and 30.6% adults) in south and west UP, respectively. Of the 699 serum samples screened from Ludhiana, Punjab, sero-prevalence of BJD was 23.0%. Sero-prevalence was 23.3% (12.1% in young and 24.4% in adults) and 26.9% (27.2% in young and 26.8% in adults) in buffaloes and cattle, respectively. High prevalence of BJD in buffaloes in native tract of Murrah breed, and Hariana breed of cattle correlated with poor per-animal productivity and BJD may be the major cause. Indigenous ELISA kit was rapid, economic and sensitive test for large-scale screening of buffaloes and cattle population against incurable BJD.
Keywords: Maladie de Johne; Paratuberculose; Mycobacterium avium; Sous espece paratuberculosis; Type bison; Antigene protoplasmique; Kit ELISA; Bovins.buffles; Buffalo; Cattle; Bovine Johne's disease; Paratuberculosis; Mycobacterium avium subspecies paratuberculosis; `Bison type'; Protoplasmic antigen; Plate ELISA kit; S/P ratio

N. Bourne, D.C. Wathes, K.E. Lawrence, M. McGowan, R.A. Laven, The effect of parenteral supplementation of vitamin E with selenium on the health and productivity of dairy cattle in the UK, The Veterinary Journal, Volume 177, Issue 3, September 2008, Pages 381-387, ISSN 1090-0233, DOI: 10.1016/j.tvjl.2007.06.006.
(http://www.sciencedirect.com/science/article/B6WXN-4PC90PB-2/2/82e75fc2156103da30bda0ca49e1ebcb)
Abstract:
Recent work has suggested that the recommended intakes of vitamin E for dairy cattle need to be increased, particularly in dry cows. However, these suggestions are based on data from cattle in the USA, which may have significantly different oxidative stresses than European cattle. This study, which involved 594 cattle on three dairy farms, was designed to determine the effect of increased vitamin E supplementation on the health and fertility of UK dairy cows. Cattle were randomly allocated to receive either two intramuscular injections of 2100 mg of vitamin E (and 7 g of sodium selenite) 2 weeks before calving and on the day of calving, or no additional vitamin E supplementation.
Although supplementation had no effect on milk yield, reproductive efficiency, or incidence of uterine infections, supplemented cattle had a lower risk of culling and a lower rate of mastitis. These figures were economically significant but not statistically significant at the 10% level. Supplementation reduced the incidence of retained fetal membranes from 6.5% to 3%, an effect which was almost significant at the 5% level. If these data are representative they suggest that vitamin E recommendations for UK cattle should be reassessed.
Keywords: Vitamin E; Mastitis; Fertility; Retained fetal membranes; Dry cow; Culling

D. Haltar, G. Ankhbayar, Using the maximum principle of impulse control for ecology-economical models, Ecological Modelling, Volume 216, Issue 2, Special Issue dedicated to the memory of Yuri Svirezhev, 24 August 2008, Pages 150-156, ISSN 0304-3800, DOI: 10.1016/j.ecolmodel.2008.03.025.
(http://www.sciencedirect.com/science/article/B6VBS-4SS9VB9-1/2/93920a4154f5fe0625bfb6a3d969aad2)
Abstract:

In this work we present mathematical models for population of single cohort and homogeneous animals. Investigating these mathematical models, we determine structure of optimal impulsive control which used maximum principle for optimal processes with impulse control.
Keywords: Hamiltonian; Maximum principle; Impulse control; Impulse moment; Conjugate function; Phase diagram; Single cohort population; Homogeneous population; Cattle-breeding farm; Hiring of labor

D. Haltar, G. Ankhbayar, B. Altansuvd, The optimal harvest and management in the models of animal populations, Ecological Modelling, Volume 216, Issue 2, Special Issue dedicated to the memory of Yuri Svirezhev, 24 August 2008, Pages 240-244, ISSN 0304-3800, DOI: 10.1016/j.ecolmodel.2008.03.026.
(http://www.sciencedirect.com/science/article/B6VBS-4SNB8P8-6/2/1c4bf1105a8d26b5fa3a0e4210c8f8ac)
Abstract:
We extended zero-cost optimization model for population of domestic animals. Also the model of hiring of labor in cattle-breeding farm is constructed and investigated.
Keywords: Hamiltonian; Maximum principle; Conjugate function; Phase diagram; Optimal harvest and management; Zero-cost; Nonzero-cost; Homogeneous population; Domestic animals; Cattle-breeding farm; Index of economic limitation; Hiring of labor

Nicolas Barre, Andrew Y. Li, Robert J. Miller, Huguette Gaia, Jean-Michel Delathiere, Ronald B. Davey, John E. George, In vitro and in vivo evaluation of deltamethrin and amitraz mixtures for the control of Rhipicephalus (Boophilus) microplus (Acari: Ixodidae) in New Caledonia, Veterinary Parasitology, Volume 155, Issues 1-2, 1 August 2008, Pages 110-119, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2008.04.016.
(http://www.sciencedirect.com/science/article/B6TD7-4SGD4X0-6/2/587c448144ff79a68b421c3a3f2ee337)
Abstract:
Acaricide resistance is a major problem that hinders the control of the tropical cattle tick, Rhipicephalus (Boophilus) microplus (Canestrini), in many parts of the world where cattle production continues to suffer severe economic losses to tick infestation. Deltamethrin and amitraz have been used alone to control R. microplus in New Caledonia for the past decade, and tick populations have developed resistance to both acaricides. A study was conducted to evaluate the effectiveness of deltamethrin and amitraz mixtures, through in vitro laboratory bioassays and in vivo on-animal efficacy trials, for the control of resistant R. microplus on cattle at two dairy farms in New Caledonia. Results of laboratory bioassays using modified larval packet tests (LPT) revealed up to 16.59-fold resistance to deltamethrin, and up to 5.86-fold resistance to amitraz. Significant synergism was observed when amitraz was used as a synergist in deltamethrin bioassays. Amitraz significantly increased deltamethrin toxicity to tick larvae, while deltamethrin was much less effective on amitraz toxicity. Synergism of amitraz by deltamethrin only occurred when the deltamethrin concentration was relatively high. Results of on animal efficacy trials of deltamethrin and amitraz alone and mixtures of both at different concentrations revealed a similar pattern of synergism. Adding amitraz to a deltamethrin formulation led to dramatic increases of percent reduction of both immature and adult ticks. In contrast, adding deltamethrin to an amitraz formulation did not increase control efficacy. Results from this study may lead to the adoption of an acaricide mixture strategy for the control of pyrethroid-resistant R. microplus in New Caledonia and elsewhere.
Keywords: Tropical cattle tick; Acaricide resistance; Synergism; Resistance management

G. More, L. Pardini, W. Basso, R. Marin, D. Bacigalupe, G. Auad, L. Venturini, M.C. Venturini, Seroprevalence of Neospora caninum, Toxoplasma gondii and Sarcocystis sp. in llamas (Lama

glama) from Jujuy, Argentina, Veterinary Parasitology, Volume 155, Issues 1-2, 1 August 2008, Pages 158-160, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2008.04.003.
(http://www.sciencedirect.com/science/article/B6TD7-4S98V2P-4/2/d4a317573e3f06031c560479132e653c)
Abstract:
Llamas (Lama glama) are South American camelids described as intermediate hosts of Neospora caninum, Toxoplasma gondii and Sarcocystis aucheniae. Due to the potential role of these protozoan infections as a cause of economic losses, the aim of this study was to determine the seroprevalence for T. gondii, N. caninum and Sarcocystis sp. in llamas from Argentina. Serum samples from 308 llamas (>2 years old) were collected between 2005 and 2007. A total of 55 farms located in six departments of Jujuy province, Argentina were sampled. Presence of antibodies to N. caninum, T. gondii and Sarcocystis sp. was determined by the indirect fluorescent antibody test (IFAT). For Sarcocystis, 2 different bradyzoites-based antigens were prepared using S. aucheniae and S. cruzi. Sera were tested at dilutions 1:25 and 1:50. Antibodies to N. caninum were found in 4.6% serum samples. Fifty percent of departments and 14.5% of farms had positive animals. Antibodies to T. gondii were found in 30% of samples, distributed in 66% of departments and 43.6% of farms. Antibodies to Sarcocystis sp. were detected in 96% of samples and all departments and farms had positive animals, suggesting frequent contact between llamas and canids. Co-infection with N. caninum, T. gondii and Sarcocystis sp. was also recorded. Low seroprevalence of N. caninum in llamas detected in this study could be related to climatic and geographical conditions that limit cattle breeding activity, reducing the source of infection for definitive hosts. Seroprevalence of T. gondii and the positive animal distribution suggest frequent contamination of grass with felid faeces. In conclusion, this is the first report of combined seroprevalence for N. caninum, T. gondii and Sarcocystis sp. in llamas. Further studies are needed to determine the potential role of these protozoan infections as cause of abortion in Argentina as well as presence of these protozoans in llama meat used for human consumption.
Keywords: Neospora caninum; Toxoplasma gondii; Sarcocystis sp.; Lama glama; Seroprevalence

Tiago M. Martins, Olivia C. Pedro, Rubina A. Caldeira, Virgilio E. do Rosario, Luis Neves, Ana Domingos, Detection of bovine babesiosis in Mozambique by a novel seminested hot-start PCR method, Veterinary Parasitology, Volume 153, Issues 3-4, 31 May 2008, Pages 225-230, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2008.01.037.
(http://www.sciencedirect.com/science/article/B6TD7-4RSBYFH-1/2/1b6b0d323791cfe5d96de96157cf128a)
Abstract:
Babesiosis is a tick borne disease (TBD) caused by parasites of the genus Babesia, with considerable worldwide economic, medical, and veterinary impact. Bovine babesiosis and other TBDs were considered responsible for 50% of the deaths of cattle that occurred in Mozambique in the first year after importation from neighbouring countries.
Here, we present the detection of Babesia bigemina and Babesia bovis in cattle from Mozambique using two distinct PCR methods. For this study, blood samples were collected in one farm located near Maputo city. The DNA samples were analyzed using a previously described nested PCR and a novel hot-start PCR method. Primers were selected for the hot-start PCR based on the putative gene of an undescribed aspartic protease named babesipsin, present in both B. bovis and B. bigemina. The combination of hot-start polymerase and long primers (29-31 bp) were in this study determinant for the successful amplification and detection in only one PCR. With a seminested approach the sensitivity was further increased. The babesipsin seminested hot-start PCR was in this study more sensitive than the nested PCR. A total of 117 field samples were tested by seminested hot-start PCR, and 104 were positive for B. bigemina (90%), 97 were positive for B. bovis (82%), 86 were mixed infections (52%) and only 2 were negative for both Babesia species

(1.7%). The results confirm that this area of Mozambique is endemic for babesiosis, and that this TBD should be regarded as a threat for imported cattle.
Keywords: Babesia bigemina; B. bovis; Hot-start PCR; Aspartic protease

T. Geurden, R. Somers, N.T.G. Thanh, L.V. Vien, V.T. Nga, H.H. Giang, P. Dorny, H.K. Giao, J. Vercruysse, Parasitic infections in dairy cattle around Hanoi, northern Vietnam, Veterinary Parasitology, Volume 153, Issues 3-4, 31 May 2008, Pages 384-388, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2008.01.031.
(http://www.sciencedirect.com/science/article/B6TD7-4RRNXSV-2/2/2e8383c4a4a931571599d7cf63cca4af)
Abstract:
In northern Vietnam, dairy cattle are mainly managed in small-scale farms, where animals are kept confined and feeding occurs by cut and carry methods. In the present study the occurrence of parasitic infections was examined in five provinces around Hanoi. A total of 201 farms were visited, and 334 stool and 239 blood samples were collected from calves younger than 3 months, animals between 3 and 24 months and adult cows. Furthermore, 254 milk samples were collected from lactating animals. Coproscopical examination indicated a high prevalence of nematode eggs (Cooperia spp., Haemonchus and Oesophagostomum spp.) in animals (n = 176) between 3 and 24 months (66%) and in adult cows (n = 90; 54%). In these age groups the prevalence of Fasciola was 28% and 39%, respectively, and for Paramphistomum the prevalence was 78% and 82%, respectively. Fifty percent of the calves younger than 3 months (n = 68) were positive for Giardia, and none for Cryptosporidium. Most Giardia isolates were identified as the non-zoonotic G. duodenalis assemblage E on the [beta]-giardin gene. The blood samples were examined with commercially available Svanovir(R)Elisa's for the presence of Anaplasma marginale and Babesia bigemina specific antibodies, and a prevalence of 28% and 54% was found, respectively. In the milk samples Neospora caninum specific antibodies (Svanovir(R)Elisa) were detected in 30% of the lactating animals. The present study demonstrates that parasitic infections occur frequently in dairy cattle around Hanoi although animals are mainly kept confined, and indicates that further research on the economic impact of these infections is needed.
Keywords: Prevalence; Parasite; Dairy; Hanoi; Vietnam

G.J. Gunn, C. Heffernan, M. Hall, A. McLeod, M. Hovi, Measuring and comparing constraints to improved biosecurity amongst GB farmers, veterinarians and the auxiliary industries, Preventive Veterinary Medicine, Volume 84, Issues 3-4, 2007 SVEPM - Papers presented at the 2007 Annual meeting of the Society for Veterinary Epidemiology and Preventive Medicine (SVEPM), 15 May 2008, Pages 310-323, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2007.12.003.
(http://www.sciencedirect.com/science/article/B6TBK-4RWBCT1-1/2/8e68f29ec6717919d8fd04599b034805)
Abstract:
Constraints to the introduction of enhanced biosecurity systems are rarely considered in sufficient detail when population medicine specialists initiate new control schemes. The main objective of our research was to investigate and compare the different attitudes constraining improvement in biosecurity for cattle and sheep farmers, practising veterinary surgeons and the auxiliary industries in Great Britain (GB). This study was carried out utilizing farmer focus groups, a questionnaire survey of veterinary practitioners and a telephone survey of auxiliary industry representatives. It appears that farmers and veterinarians have their own relatively clear definitions for biosecurity in relation to some major diseases threatening GB agriculture. Overall, farmers believe that other stakeholders, such as the government, should make a greater contribution towards biosecurity within GB. Conversely, veterinary practitioners saw their clients' ability or willingness to invest in biosecurity measures as a major constraint. Veterinary practitioners also felt that there was need for additional proof of efficacy and/or the potential economic benefits of proposed farm biosecurity

practices better demonstrated. Auxiliary industries, in general, were not certain of their role in biosecurity although study participants highlighted zoonoses as part of the issue and offered that most of the constraints operated at farm level.
Keywords: Biosecurity; Attitudes; Farmers; Veterinarians; Auxiliary industries

David Styles, Fiona Thorne, Michael B. Jones, Energy crops in Ireland: An economic comparison of willow and Miscanthus production with conventional farming systems, Biomass and Bioenergy, Volume 32, Issue 5, May 2008, Pages 407-421, ISSN 0961-9534, DOI: 10.1016/j.biombioe.2007.10.012.
(http://www.sciencedirect.com/science/article/B6V22-4RB5BGH-2/2/dd6bafc2131707086f4c001785c8a827)
Abstract:
Recent full decoupling of EU agricultural subsidy payments from production in Ireland is forecast to result in substantial destocking of grassland over the coming decade. In conjunction with increased energy prices, this presents new opportunities for energy crops. This paper uses extensive literature review and country-specific information on current prices to construct life-cycle cost assessments for production of Miscanthus and short-rotation coppice willow (SRCW) in Ireland. Gross margins for different harvest and supply strategies (e.g. chopped or baled harvest for Miscanthus; stick or chipped harvest for SRCW) are calculated based on farm-gate biomass prices equivalent to 70, 100 and 130 [euro] t-1 dry matter (DM) at maximum 20% moisture content--reduced for some SRCW supply strategies to reflect additional chipping and transport costs, and lower heating values. These are compared with gross margin projections for conventional agricultural systems (dairy, cattle rearing, `cattle and other', sugar beet, winter wheat, spring barley and set aside) using a net present value approach. Production costs expressed per tonne DM were similar for Miscanthus ([euro]37-48) and SRCW ([euro]31-46). Mid-estimate discounted, annualised gross margins ranging between 326 and 383 [euro] ha-1 for Miscanthus, and between 211 and 270 [euro] ha-1 for SRCW, compared favourably with all conventional agricultural systems considered except dairy. These gross margins were based on peak-productivity combustible yields of 14 and 10 t DM ha-1 a-1 for Miscanthus and SRCW. Yield variation will affect gross margins, but low yields were still calculated to realise positive returns. However, the application of high-activity cost estimates for all energy-crop cultivation activities resulted in negative returns for some supply strategies. Recently announced government support for SRCW and Miscanthus considerably reduces investment risk for farmers, whilst utilisation of SRCW to treat waste water could substantially increase revenues. Energy crop cultivation has the potential to offer farmers a modestly profitable alternative to declining returns from conventional land uses.
Keywords: Miscanthus; Willow; Energy crops; Net present value; Gross margins; Economics

Antonio Ruggiero, Regis Cereghino, Jordi Figuerola, Pierre Marty, Sandrine Angelibert, Farm ponds make a contribution to the biodiversity of aquatic insects in a French agricultural landscape, Comptes Rendus Biologies, Volume 331, Issue 4, April 2008, Pages 298-308, ISSN 1631-0691, DOI: 10.1016/j.crvi.2008.01.009.
(http://www.sciencedirect.com/science/article/B6X1F-4S02857-2/2/f4a5827fa995346ccc1f5b2240211211)
Abstract:
Manmade ecosystems provide a variety of resources that have strong economic values. We assessed the importance of 37 farm ponds for the biodiversity of Odonata in an agricultural landscape lacking natural wetlands in southwestern France. Farm ponds captured 40% of the regional species pool, including both common and rare species. The species assemblages were not correlated with pond use (e.g., cattle watering, duck farming, etc.) or to landscape variable. Species richness was correlated with pond area, suggesting that community diversity was

primarily driven by autoecological processes. Farm ponds thus made a positive contribution to the maintenance of aquatic biodiversity. This added value for biodiversity should be considered when calculating the costs and benefits of constructing water bodies for human activities. To cite this article: A. Ruggiero et al., C. R. Biologies 331 (2008).
Keywords: Agriculture; Ponds; Ecosystem services; General linear modelling; Odonata; Self-organizing maps; Species richness; Agriculture; Mares; Services ecosystemiques; Modeles lineaires generalises; Odonates; Cartes auto-organisatrices; Richesse specifique

J.R. Amory, Z.E. Barker, J.L. Wright, S.A. Mason, R.W. Blowey, L.E. Green, Associations between sole ulcer, white line disease and digital dermatitis and the milk yield of 1824 dairy cows on 30 dairy cow farms in England and Wales from February 2003-November 2004, Preventive Veterinary Medicine, Volume 83, Issues 3-4, 17 March 2008, Pages 381-391, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2007.09.007.
(http://www.sciencedirect.com/science/article/B6TBK-4R70VMC-1/2/31c84ae525c8f684d5f35f8535339802)
Abstract:
The milk yields of 1824 cows were used to investigate the effect of lesion-specific causes of lameness, based on farmer treatment and diagnosis of lame cows, on milk yield. A three-level hierarchical model of repeated test day yields within cows within herds was used to investigate the impact of lesion-specific causes of lameness (sole ulcer, white line disease, digital dermatitis and other causes) on milk yield before and after treatment compared with unaffected cows. Cattle which developed sole ulcer (SU) and white line disease (WLD) were higher yielding cattle before they were diagnosed. Their milk production fell to below that of the mean of unaffected cows before diagnosis and remained low after diagnosis. In cattle which developed digital dermatitis (DD) there was no significant difference in milk yield before treatment and a slightly raised milk yield immediately after treatment. The estimated milk loss attributable to SU and WLD was approximately 570 and 370 kg, respectively. These results highlight that specific types of lameness vary by herds and within herds they are associated with higher yielding cattle. Consequently lesion-specific lameness reduction programmes targeting the cow and farm specific causes of lameness might be more effective than generic recommendations. They also highlight the importance of milk loss when estimating the economic impact of SU and WLD on the farms profitability.
Keywords: Dairy cows; Lameness; Milk yield; Claw lesions; Multilevel models

V.G. Allen, C.P. Brown, E. Segarra, C.J. Green, T.A. Wheeler, V. Acosta-Martinez, T.M. Zobeck, In search of sustainable agricultural systems for the Llano Estacado of the U.S. Southern High Plains, Agriculture, Ecosystems & Environment, Volume 124, Issues 1-2, Special Section: Problems and Prospects of Grassland Agroecosystems in Western China, March 2008, Pages 3-12, ISSN 0167-8809, DOI: 10.1016/j.agee.2007.08.006.
(http://www.sciencedirect.com/science/article/B6T3Y-4R003D9-1/2/249d51d84a7c5f8c9ed4bcb7d07b2cc3)
Abstract:
Crop production on the Llano Estacado of the Texas High Plains has used precipitation and supplemental irrigation with water pumped from the Ogallala aquifer at rates that have far exceeded recharge for many years. Over 20% of the U.S. cotton (Gossypium hirsutum L.) crop is produced currently in this once vast grassland. Most of this cotton is produced in monoculture systems that are economically risky and contribute to wind-induced erosion and depletion of ground water resources. Although large numbers of cattle are found in this region, little integration of livestock and crop production exists. Integrated crop-livestock systems could improve nutrient cycling, reduce soil erosion, improve water management, interrupt pest cycles, and spread economic risk through diversification. Two whole-farm scale systems compared (1) a cotton

monoculture typical of the region; and (2) an alternative integrated system that included cotton, forage, and Angus-cross stocker beef steers (initial body weight 249 kg). Steers grazed the perennial warm-season grass `WW-B. Dahl' old world bluestem [Bothriochloa bladhii (Retz) S.T. Blake] in sequence with rye (Secale cereale L.) and wheat (Triticum aestivum L.) from January to mid-July when they were sent to the feedyard for finishing. Grass seed were harvested from bluestem in October. Cotton in the alternative system was grown in a two-paddock rotation with the wheat and rye. Cotton was harvested from both systems in October. At the end of 5 years, the alternative system reduced needs for supplemental irrigation by 23% and for nitrogen fertilizer by 40% compared with the conventional cotton monoculture. Fewer chemical inputs including pesticides were required by the alternative system. Soil with perennial grass pasture was lower in predicted soil erosion and was higher in soil organic carbon, aggregate stability, and microbial biomass than soil where continuous cotton was grown. Profitability was greater for the alternative system until cotton lint yields reached about 1500 kg ha-1 for the continuous cotton system. Differences between the systems became larger as depth to ground water increased. Systems that are less dependent on supplemental irrigation and less consumptive of non-renewable resources and energy-dependent chemical inputs appear possible, but further improvements are required to ensure sustainability of agricultural systems for the future in the Texas High Plains.
Keywords: Water; Aquifers; Cropping and livestock systems; Grazing systems; Soil quality

Francesca B.L. Palmeira, Peter G. Crawshaw Jr., Claudio M. Haddad, Katia Maria P.M.B. Ferraz, Luciano M. Verdade, Cattle depredation by puma (Puma concolor) and jaguar (Panthera onca) in central-western Brazil, Biological Conservation, Volume 141, Issue 1, January 2008, Pages 118-125, ISSN 0006-3207, DOI: 10.1016/j.biocon.2007.09.015.
(http://www.sciencedirect.com/science/article/B6V5X-4R172XJ-2/2/b1650c4f5f921185d784690e09823923)
Abstract:
In this study, data on cattle depredation by puma (Puma concolor) and jaguar (Panthera onca) were recorded for six years (1998-2003) in a cattle ranch in central-western Brazil. Depredation represented 18.9% of the overall cattle mortality, being predominant on calves. In biomass, kills represented 0.4% (63.8 kg/km2) of the ranch's annual stock. In economic loss, kills represented 0.3% of the cattle stock value. Depredation was mainly associated with cattle's age class and location along with the time of birth of calves. The proportion of pastures next to forest with depredation (n = 33, 48.5%) was not distinguished to the proportion of pastures not bordering forest with depredation (n = 35, 51.5%). However, the proportion of pastures next to forest with depredation represented 54% (n = 33) of the 61 total pastures that were at least partially surrounded by forest patches or riparian forests that comprised eight continuum blocks of forest fragments of different sizes in the ranch and adjacent areas. No kills occurred in the central portion (main house) of the farm, close to the headquarters where the pastures not bordering forest. The distances of the kills in relation to areas of native forest was 1317.48 +/- 941.03 m. In order to reduce depredation, calves should be kept as far as possible from forest areas and concentrated cattle breeding and calving seasons should be encouraged.
Keywords: Cattle breeding season management; Cattle production; Human-wildlife conflict; Landscape; Livestock depredation; Wild felids conservation

P. Gaspar, M. Escribano, F.J. Mesias, A. Rodriguez de Ledesma, F. Pulido, Sheep farms in the Spanish rangelands (dehesas): Typologies according to livestock management and economic indicators, Small Ruminant Research, Volume 74, Issues 1-3, January 2008, Pages 52-63, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2007.03.013.
(http://www.sciencedirect.com/science/article/B6TC5-4NRCRWK-1/2/f4686833cc09b0147e5cbc9999e4ac1d)
Abstract:

Forty-six dehesa sheep farms of Extremadura (SW Spain) were analyzed on the basis of previously determined technical and economic indicators. A principal component analysis gave five principal components - related to intensification, profitability, and livestock mix - that characterized the farms. Using multivariate techniques based on these factors, a farm typology was established with six categories--three of sheep alone at different levels of intensification, and three of sheep in combination with beef cattle or Iberian pig. This typology enabled homogeneous groups of farms to be considered for possible administrative actions relating to their optimal dimensions and stocking rates.
Keywords: Sheep; Dehesa; Farm typology; Technical and economic management; Principal component analysis

J.L. Khol, J. Damoser, M. Dunser, W. Baumgartner, Paratuberculosis, a notifiable disease in Austria--Current status, compulsory measures and first experiences, Preventive Veterinary Medicine, Volume 82, Issues 3-4, 14 December 2007, Pages 302-307, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2007.06.002.
(http://www.sciencedirect.com/science/article/B6TBK-4P5RKMG-2/2/3efa507a813bb3f998eb720831528947)
Abstract:
Paratuberculosis (Johne's disease) is one of the most important diseases in ruminants today. Its contribution is worldwide and the disease is causing severe financial losses among cattle producers in some countries [Hasanova, L., Pavlik, I., 2006. Economic impact of paratuberculosis in dairy cattle herds: a review. Vet. Med.-Czech. 51, 193-211]. Paratuberculosis is untreatable; diagnosis limited to the early stages of the infection and control of the disease is difficult. The prevalence of serologically positive Austrian cattle farms rose significantly to 19.0% during the past years [Baumgartner, W., Damoser, J., Khol, J.L., 2005. Comparison of two studies concerning the prevalence of bovine paratuberculosis (Johne's disease) in Austrian cattle in the years 1995-1997 and 2002/2003 (Article in German with extended English summary). Vet. Med. Austria/Wien. Tierarztl. Mschr. 92, 274-277]. Based on these findings clinical paratuberculosis in ruminants was declared a notifiable disease in Austria in April 2006.
A survey of the current situation in Austria, the most important parts of the new compulsory measures and their practical implementation and impacts are presented in this short communication.
Keywords: Paratuberculosis; Ruminants; Notifiable disease; Austria

G. Schweizer, M.L. Meli, P.R. Torgerson, H. Lutz, P. Deplazes, U. Braun, Prevalence of Fasciola hepatica in the intermediate host Lymnaea truncatula detected by real time TaqMan PCR in populations from 70 Swiss farms with cattle husbandry, Veterinary Parasitology, Volume 150, Issues 1-2, 30 November 2007, Pages 164-169, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2007.08.006.
(http://www.sciencedirect.com/science/article/B6TD7-4R1NNMP-1/2/4ea388c7b7893948a01f016085e22092)
Abstract:
Bovine fasciolosis is an economically important parasitic disease. Quantitative real time PCR was utilized to determine the prevalence of Fasciola hepatica in the snail intermediate host Lymnaea truncatula from 70 selected, infected Swiss cattle farms, and to gain information on the infection risk to the definitive host. Snails from 130 habitats (36 streams, 21 wells, 24 drainage ditches, 33 spring swamps, 14 reeds, 1 drainage shaft and 1 pond) originating from 71 dairy cow pastures, 39 pastures for young stock, 14 hay fields and 6 dry cow pastures were collected. Of these, 51 populations were found to be infected with F. hepatica. A total of 4733 snails were examined of which 331 were infected (7.0%). The numbers of snails collected from different sites ranged from 1 to 159 snails. Clustering of infection in snails was found on the farm of origin with a mixed logistic

model with random effects. The risk of infection of L. truncatula with F. hepatica was significantly higher in populations originating from spring swamps, wells and reeds compared to populations from streams. In addition the risk of snail infection was significantly lower in populations collected in young stock and dry cow pastures compared to dairy cow pastures. The greater the population size collected from a habitat also increased the risk of an individual snail being infected.
Keywords: Fasciola hepatica; Lymnaea truncatula; Real time TaqMan PCR; Cattle

I. Boone, E. Thys, T. Marcotty, J. de Borchgrave, E. Ducheyne, P. Dorny, Distribution and risk factors of bovine cysticercosis in Belgian dairy and mixed herds, Preventive Veterinary Medicine, Volume 82, Issues 1-2, 15 November 2007, Pages 1-11, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2007.05.002.
(http://www.sciencedirect.com/science/article/B6TBK-4NX8R7J-1/2/db4f17c744e0c341be234f28c4f1c284)
Abstract:
Bovine cysticercosis is an important food safety issue that is of economic concern. In Belgium, in the last years an increase in the number of cases, mostly light infections, was observed. The role of contact with contaminated surface water has been hypothesized as the main route of transmission. Based on abattoir records from 2001 till 2003 the distribution and risk factors of bovine cysticercosis among dairy and mixed farms were studied in four provinces, using Geographic Information Systems (GIS) and questionnaires. The risk factors were analysed using a case-control study design. The case group consisted of herds from which homebred cattle with cysticercosis had been detected at the abattoir; the control group was composed of herds where no cases had been detected. Case herds were distributed over the study area. A logistic regression analysis revealed that the location (province), the number of slaughtered cattle, the flooding of pastures, free access of cattle to surface water and the proximity of wastewater effluent were significant explanatory variables for bovine cysticercosis to be recorded in a herd.
Keywords: Cattle-cestoda; Taenia saginata; Epidemiology-cestoda; Risk factors; Meat inspection; Belgium

D.P. Morgavi, R.T. Riley, An historical overview of field disease outbreaks known or suspected to be caused by consumption of feeds contaminated with Fusarium toxins, Animal Feed Science and Technology, Volume 137, Issues 3-4, Fusarium and their toxins: Mycology, occurrence, toxicity, control and economic impact, 1 October 2007, Pages 201-212, ISSN 0377-8401, DOI: 10.1016/j.anifeedsci.2007.06.002.
(http://www.sciencedirect.com/science/article/B6T42-4P5YK4D-2/2/2c81134474794ece6dd4d507b44d1634)
Abstract:
The interest in mycotoxins began when aflatoxins were found to be carcinogens and to be widespread in foodstuffs and feedstuffs. Today, mycotoxins and mouldy feedstuffs are known causes of animal disease. Symptoms are often subtle and there can be many equally non-definitive contributing factors; for example, environmental stress, exposure to multiple mycotoxins and infectious agents, and nutrient/vitamin deficiencies. Thus, it is often difficult to establish cause-effect relationships with contaminated feedstuffs. The Fusarium toxins of greatest concern are deoxynivalenol (DON), fumonisins, and zearalenone. For each, mould-contaminated feed was implicated as the cause of animal disease long before the toxins were identified. In the field, changes in performance or behaviour and increased susceptibility to infectious disease are possible subtle signs of exposure to mycotoxins in feed. Because most cases of toxicity present non-specific clinical signs, cases of suspected mycotoxicosis often remain unreported. Nonetheless, for DON, fumonisin and zearalenone there are signs that are highly suggestive of exposure. For DON a commonly observed effect is feed refusal which has been reported in cattle, pigs and chickens; however, pigs appear to be the most sensitive. Although DON is not

considered to be acutely toxic to farm animals, it is considered to be a major cause of economic loss due to reduced performance. In pigs, the reduction in feed intake occurs relatively soon after consuming feeds containing greater than 1 mg deoxynivalenol/kg and emesis at >10 mg/kg. Field outbreaks of mouldy maize-induced equine leukoencephalomalacia (ELEM) have been reported since 1891 and in 1988 pure fumonisin was shown to produce ELEM in a horse. ELEM syndrome is a fatal disease that apparently occurs only in equids. The length of exposure, level of contamination, individual animal differences, previous exposure, or pre-existing liver impairment may all contribute to the appearance of the clinical disease. Analysis of feeds from confirmed cases of ELEM indicates fumonisin B1 concentration greater than 10 mg/kg in the diet is associated with increased risk of ELEM. Another disease caused by fumonisin is porcine pulmonary edema syndrome. Zearalenone has been implicated in field outbreaks of reproductive problems, vulvovaginitis and anestrus in pigs. The primary effect of zearalenone is estrogenic and prepubertal female pigs are the most affected animal. The history of discovery of mycotoxin involvement in animal diseases serves as a warning that yet to be discovered mycotoxins could also be involved in current or future inexplicable animal production problems.
Keywords: Mycotoxins; Fusarium toxins; Deoxynivalenol; Fumonisin; Zearalenone

H. Pathak, R. Wassmann, Introducing greenhouse gas mitigation as a development objective in rice-based agriculture: I. Generation of technical coefficients, Agricultural Systems, Volume 94, Issue 3, Special Section: sustainable resource management and policy options for rice ecosystems, International symposium on sustainable resource management and policy options for rice ecosystems, June 2007, Pages 807-825, ISSN 0308-521X, DOI: 10.1016/j.agsy.2006.11.015.
(http://www.sciencedirect.com/science/article/B6T3W-4MV1H7G-2/2/77852c467101b5796fa5c6969507fc9a)
Abstract:
This study presents a modeling tool to assess emission of greenhouse gases (GHG) from the agricultural sector as affected by land-use and residue utilization options. The overall purpose of this tool is twofold: (i) a spreadsheet model for comprehensive compilation of the direct and indirect emissions from land management, residue-burning and fossil fuel consumption through on-farm and off-farm operations and (ii) a decision support tool to explore economically viable mitigation options through detailed cost-benefit analysis of different technological options. We developed TechnoGAS (technical coefficient generator for mitigation technologies of greenhouse gas emissions from agricultural sectors), which integrates analytical and expert knowledge with regional databases on bio-physical, agronomic and socio-economic features to establish input-output relationships (`Technical Coefficients') related to GHG emissions in agriculture. The approach includes emissions of methane (CH4) from rice fields, rice straw burning and cattle; carbon dioxide (CO2) from fossil fuel and soil organic carbon decline as well as nitrous oxide (N2O) from soil, rice straw burning and fertilizer use. To illustrate the approach of the spreadsheet model for comprehensive compilation of emissions, we applied TechnoGAS for an entire rice-wheat cropping cycle in the state of Haryana in northern India as a case study. Twenty technologies of rice production, which can be adopted by farmers, are analysed for their operation-specific emissions including their global warming potential (GWP). The technologies differ in terms of water regime, residue management/utilization, soil management and additives, which represent different mitigation options for GHG emissions. With the current farmers' practice in various districts in Haryana, soil-borne emissions are the major source of GHG contributing 53% of the average GWP (3288 kg CO2 equivalent ha-1) in rice followed by burning of rice straw (13% of the GWP). Cattle, farm operations, off-farm and inorganic fertilizer contributes 12%, 10%, 10% and 2% of the GWP, respectively. Emissions from wheat are relatively low (1204 kg CO2 equivalent ha-1) as there is no CH4 emission and wheat straw is not burnt. Different mitigation technologies show pronounced effects on the GWP of the rice crop and varied between 1715 kg CO2 equivalent ha-1 with continuous flooding, urea and rice straw used for building materials and

10,020 kg CO2 equivalent ha-1 with continuous flooding, and application of nutrients through organic manure. Compared to current farmers' practice, 13 technologies are found to have the potential to reduce the GWP by 8-51%, but they also reduce the net income of farmers. Upscaling of the estimates to the entire state of Haryana shows that the GWP with the current farmers' practice in rice is 2617 Gg CO2 equivalent. Modification of water management from continuous flooding to alternate flooding or application of urea alone instead of urea plus FYM will reduce the GWP by 15% and 29%, respectively, while feeding of rice straw to cattle and supplying N through urea will reduce it by 41% compared to the current practice of burning rice straw and use of FYM. The study shows that the TechnoGAS tool can be used for estimating GHG emission from various land-use types and for identifying promising mitigation options. A detailed cost/benefit analysis is supplied by Wassmann and Pathak [Wassmann, R., Pathak, H., this volume. Introducing greenhouse gas mitigation as a development objective in rice-based agriculture: II. Cost-benefit assessment for different technologies, regions and scales.].
Keywords: Carbon dioxide; Land-use planning; Methane; Nitrous oxide; Rice-wheat systems; Systems analysis

F. Barillet, Genetic improvement for dairy production in sheep and goats, Small Ruminant Research, Volume 70, Issue 1, The Outlook for Quantitative and Molecular Genetic Applications in Improving Sheep and Goats, June 2007, Pages 60-75, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2007.01.004.
(http://www.sciencedirect.com/science/article/B6TC5-4N1SJVN-1/2/f6e11eb74eeeb8f854d4e6b21de85c2c)
Abstract:
Functional traits have become important for efficient breeding schemes in the dairy goat and sheep industries, mainly in Mediterranean countries, due to increased costs of production relative to milk prices and consumers demand for safe, quality food and attention to animal welfare. The challenge facing the European dairy sheep and goat sector is to cost-effectively produce typical cheeses attractive to the consumer, i.e. of high quality and perceived to be safe, while maintaining production in less favoured rural regions. The emphasis for functional traits related to udder morphology and health, at the moment on a quantitative genetics basis, has resulted from the knowledge established during the last decade that selection on milk traits only, as practiced for several decades for breeds benefiting from efficient breeding schemes, would lead in the long term to 'baggy' udders that are more difficult to milk by machine and more susceptible to mastitis. At the same time another window has been opened based on new molecular tools allowing the detection and mapping of genes of economic importance in farm animals. To date, marker- or gene-assisted selection (MAS/GAS) has been applied in dairy small ruminants either for introgression of a major gene such as the Booroola mutation or for selection of major genes such as the polled mutation and [alpha]s1-casein gene in goats, or the PrP gene for scrapie resistance in sheep. These applications clearly showed the need for balance over time between selection for polygenes and the major gene for a given trait, or between increasing frequency of favorable alleles of a major gene while maintaining selection for other traits and the genetic variability within the breed. It showed that the selection for major genes will be more profitable at the breed level if an efficient breeding scheme is already running to be able to account for these optimizations over time. Moreover attention is also turning to the mapping of quantitative trait loci (QTL) for production and functional traits. Results are promising since numerous QTL have now been detected, mainly in dairy sheep, showing that cattle results can be partly transferred to dairy small ruminants. But QTL fine mapping is a crucial next step before any application of MAS/GAS because of the need to dramatically reduce genotyping costs for these species. Finally, given the large differences among existing breeding programmes for dairy sheep and goats, the ability to use these new technologies and molecular knowledge in the breeding schemes will probably be breed dependent at least in a near future.

Keywords: Dairy sheep; Dairy goats; Selection; Dairy traits; Functional traits; Polygenic variability; QTL; Major genes; Breeding schemes

Matthew R. Redding, Alan Skerman, John Ritchie, Kenneth D. Casey, How effective are broad-scale nutrient mass balances for determining the sustainability of lot-feed manure application?, Agriculture, Ecosystems & Environment, Volume 120, Issues 2-4, May 2007, Pages 166-178, ISSN 0167-8809, DOI: 10.1016/j.agee.2006.08.015.
(http://www.sciencedirect.com/science/article/B6T3Y-4M33VRK-2/2/7e486ce7d1bebb7e76817fe49b853751)
Abstract:
Nutrient mass balances have been used to assess a variety of land resource scenarios, at various scales. They are widely used as a simple basis for policy, planning, and regulatory decisions but it is not clear how accurately they reflect reality. This study provides a critique of broad-scale nutrient mass balances, with particular application to the fertiliser use of beef lot-feeding manure in Queensland.
Mass balances completed at the district and farm scale were found to misrepresent actual manure management behaviour and potentially the risk of nutrient contamination of water resources. The difficulties of handling stockpile manure and concerns about soil compaction mean that manure is spread thickly over a few paddocks at a time and not evenly across a whole farm. Consequently, higher nutrient loads were applied to a single paddock less frequently than annually. This resulted in years with excess nitrogen, phosphorus, and potassium remaining in the soil profile. This conclusion was supported by evidence of significant nutrient movement in several of the soil profiles studied.
Spreading manure is profitable, but maximum returns can be associated with increased risk of nutrient leaching relative to conventional inorganic fertiliser practices. Bio-economic simulations found this increased risk where manure was applied to supply crop nitrogen requirements (the practice of the case study farms, 200-5000 head lot-feeders).
Thus, the use of broad-scale mass balances can be misleading because paddock management is spatially heterogeneous and this leads to increased local potential for nutrient loss. In response to the effect of spatial heterogeneity policy makers who intend to use mass balance techniques to estimate potential for nutrient contamination should apply these techniques conservatively.
Keywords: Nutrient mass balance; Manure; Cattle; Waste re-use

RM. Kathiresan, Integration of elements of a farming system for sustainable weed and pest management in the tropics, Crop Protection, Volume 26, Issue 3, Weed Science in Time of Transition, March 2007, Pages 424-429, ISSN 0261-2194, DOI: 10.1016/j.cropro.2005.11.015.
(http://www.sciencedirect.com/science/article/B6T5T-4M93NY3-1/2/3d82812598544c7d2de489f65d95af5f)
Abstract:
Diversification of agricultural activities that links farm-based enterprises with cultivation of field crops helps the resource-poor farmers in tropics to generate additional income, gainful employment and improve their dietary standards. A farming system approach has been found to be a resource management strategy for achieving economic and sustainable agricultural production, catering to the diverse needs of tropical farm household while preserving the resource base and ensuring high environmental quality. A judicious combination of any one or more of the farming enterprises like poultry rearing, duckery, fish culture, cattle rearing, green manuring and culture of bio-fertilizers contribute significantly for weed and pest management in field crops. Cropping system strategies like rotation of crops in sequence, intercropping and mulching do influence the weed-pest complex of crops. All these elements alter the weed flora in cropped fields through their feeding habits, allelopathic or allelomediatory principles in their excreta, suppression through physical interference like shading and altered ecology. Some of these elements also

supplement pest management directly by virtue of their predatory behaviour or indirectly through suppression of weeds that serve as alternate hosts and by inducing fast and robust crop growth. Field experiments in Faculty of Agriculture, Annamalai University, India have revealed such beneficial interactions among component elements of different farming systems, viz., rice+fish+poultry, rice+azolla+fish, greenmanure-rice, rice-pulse, goat rearing+sorghum and cotton intercropped with pulse. All these approaches along with similar strategies involving other farming elements are discussed here.
Keywords: Farm components; Animal; Agro-forestry; Integrated weed and pest management

S. Zingore, H.K. Murwira, R.J. Delve, K.E. Giller, Influence of nutrient management strategies on variability of soil fertility, crop yields and nutrient balances on smallholder farms in Zimbabwe, Agriculture, Ecosystems & Environment, Volume 119, Issues 1-2, February 2007, Pages 112-126, ISSN 0167-8809, DOI: 10.1016/j.agee.2006.06.019.
(http://www.sciencedirect.com/science/article/B6T3Y-4KST3B8-1/2/8e563cdd240d4f7f319908cc54388dd2)
Abstract:
An improved understanding of soil fertility variability and farmers' resource use strategies is required for targeting soil fertility improving technologies to different niches within farms. We measured the variability of soil fertility with distance from homesteads on smallholder farms of different socio-economic groups on two soil types, a granite sand and a red clay, in Murewa, northeast Zimbabwe. Soil organic matter, available P and CEC decreased with distance from homestead on most farms. Soil available P was particularly responsive to management, irrespective of soil type, as it was more concentrated on the plots closest to homesteads on wealthy farms (8-13 mg kg-1), compared with plots further from homesteads and all plots on poor farms (2-6 mg kg-1). There was a large gap in amounts of mineral fertilizers used by the wealthiest farmers (>100 kg N and >15 kg P per farm; 39 kg N ha-1 and 7 kg P ha-1) and the poorest farmers (<20 kg N and <10 kg P per farm; 19 kg N ha-1 and 4 kg P ha-1). The wealthy farmers who owned cattle also used large amounts of manure, which provided at least 90 kg N and 25 kg P per farm per year (36 kg N ha-1 and 10 kg P ha-1). The poor farmers used little or no organic sources of nutrients. The wealthiest farmers distributed mineral fertilizers evenly across their farms, but preferentially targeted manure to the plots closest to the homesteads, which received about 70 kg N and 18 kg P per plot (76 kg N ha-1 and 21 kg P ha-1) from manure compared with 23 kg N and 9 kg P per plot on the mid-fields (26 kg N ha-1 and 10 kg P ha-1), and 10 kg N and 1 kg P per plot (and ha-1) on the outfields. Crop allocation on the homefields was most diversified on the wealthiest farms where maize was allocated 41% of the area followed by grain legumes (24%) and paprika (21%). Maize was allocated at least 83% of the homefields on farms with less access to resources. All the farmers invariably applied nutrients to maize but little to groundnut. Maize grain yields were largest on the homefields on the wealthy farms (2.7-5.0 t ha-1), but poor across all fields on the poor farms (0.3-1.9 t ha-1). Groundnut grain yields showed little difference between farms and plots. N and P partial balances were largest on the wealthy farms, although these fluctuated from season to season (-20 to +80 kg N per farm and 15-30 kg P per farm; average 21 kg N ha-1 and 8 kg P ha-1). The partial balances on the wealthy farms were largest on the homefield (20-30 kg N and 13 kg P per plot; >26 kg N ha-1 and >13 kg P ha-1), but decreased to 10-20 N and 6-9 kg P per plot (<20 kg N ha-1 and 13 kg P ha-1) in mid-fields and -7 to +10 kg N and -1 to +1 kg P per plot (<10 kg N ha-1 and <2 kg P ha-1) in the outfields. N and P balances differed little across plots on the poor farms (-2 to +4 kg per plot; -5 to +4 kg ha-1) due to limited nutrients applied and small off-take from small harvests. This study highlights the need to consider soil fertility gradients and the crop and nutrient management patterns creating them when designing options to improve resource use efficiency on smallholder farms.
Keywords: Soil fertility gradients; Resource allocation; Farmer decision making; Nutrient use efficiencies

Mario Gellrich, Priska Baur, Barbara Koch, Niklaus E. Zimmermann, Agricultural land abandonment and natural forest re-growth in the Swiss mountains: A spatially explicit economic analysis, Agriculture, Ecosystems & Environment, Volume 118, Issues 1-4, January 2007, Pages 93-108, ISSN 0167-8809, DOI: 10.1016/j.agee.2006.05.001.
(http://www.sciencedirect.com/science/article/B6T3Y-4K719NV-2/2/19d2c53839c60731f9e5ec9178d82d30)
Abstract:
Natural forest re-growth reflects a decline in traditional agricultural practices that can be observed worldwide. Over the last few decades, natural forest re-growth has replaced much of the agricultural land in the Swiss mountains. This is a region where forms of traditional cultivation have preserved unique landscapes and habitats of high ecological value. This study aimed to characterise the locations in the Swiss mountains where agricultural land has been abandoned and overgrown by trees and bushes. Therefore, multivariate statistical models based on geo-physical and socio-economic variables were developed. Land-use change data were taken from two nationwide land-use surveys carried out in the 1980s and 1990s. In order to obtain reliable models, neighbourhood effects and the group structure in our data were accounted for. For the latter a robust estimation technique known as cluster-adjustment was used.
Results show that forest re-growth is largely restricted to former alpine pastures, land with grass and scrub vegetation and agricultural land with groups of trees at mid to high altitudes, steep slopes, stony ground and a low temperature sum. Some relationships were not as expected, e.g. many of the new forest areas were found to be relatively close to roads. A new finding from this study was that forest re-growth is largely restricted to regions with immigration, higher proportions of part-time farms as opposed to full-time farms and high farm abandonment rates. By accounting for neighbourhood effects, the model fit was improved. The considerable residual deviance of the models was interpreted as the result of undetected local characteristics, such as poor water availability, small-scaled topographic peculiarities (e.g. small trenches, stonewalls, soil damages by cattle) and the individual's motivation to abandon or maintain cultivation. The conclusion made was that general policy measures for the whole mountain area are not suitable for the prevention of land abandonment and forest re-growth, and that policy measures must pay more attention to local characteristics and needs.
Keywords: Cluster-adjustment; Land-use change; Logistic regression; Marginalisation; Multilevel data; Reforestation

Abdellah Zinedine, Jose Miguel Soriano, Juan Carlos Molto, Jordi Manes, Review on the toxicity, occurrence, metabolism, detoxification, regulations and intake of zearalenone: An oestrogenic mycotoxin, Food and Chemical Toxicology, Volume 45, Issue 1, January 2007, Pages 1-18, ISSN 0278-6915, DOI: 10.1016/j.fct.2006.07.030.
(http://www.sciencedirect.com/science/article/B6T6P-4PNJ1NF-2/2/7e0ab7eabaef67e35ef29c5eea6454f0)
Abstract:
Zearalenone (ZEA) is a mycotoxin produced mainly by fungi belonging to the genus Fusarium in foods and feeds. It is frequently implicated in reproductive disorders of farm animals and occasionally in hyperoestrogenic syndromes in humans. There is evidence that ZEA and its metabolites possess oestrogenic activity in pigs, cattle and sheep. However, ZEA is of a relatively low acute toxicity after oral or interperitoneal administration in mice, rat and pig. The biotransformation for ZEA in animals involves the formation of two metabolites [alpha]-zearalenol ([alpha]-ZEA) and [beta]-zearalenol ([beta]-ZEA) which are subsequently conjugated with glucuronic acid. Moreover, ZEA has also been shown to be hepatotoxic, haematotoxic, immunotoxic and genotoxic. The exact mechanism of ZEA toxicity is not completely established. This paper gives an overview about the acute, subacute and chronic toxicity, reproductive and

developmental toxicity, carcinogenicity, genotoxicity and immunotoxicity of ZEA and its metabolites. ZEA is commonly found on several foods and feeds in the temperate regions of Europe, Africa, Asia, America and Oceania. Recent data about the worldwide contamination of foods and feeds by ZEA are considered in this review. Due to economic losses engendered by ZEA and its impact on human and animal health, several strategies for detoxifying contaminated foods and feeds have been described in the literature including physical, chemical and biological process. Dietary intakes of ZEA were reported from few countries from the world. The mean dietary intakes for ZEA have been estimated at 20 ng/kg b.w./day for Canada, Denmark and Norway and at 30 ng/kg b.w./day for the USA. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) established a provisional maximum tolerable daily intake (PMTDI) for ZEA of 0.5 [mu]g/kg of body weight.
Keywords: Zearalenone; Toxicity; Occurrence; Food; Metabolism; Detoxification

C. Devendra, Perspectives on animal production systems in Asia, Livestock Science, Volume 106, Issue 1, January 2007, Pages 1-18, ISSN 1871-1413, DOI: 10.1016/j.livsci.2006.05.005.
(http://www.sciencedirect.com/science/article/B7XNX-4KPFM00-1/2/793fbce61f13c403dcad309b93a9eb39)
Abstract:
Asian animal production systems are discussed in the context of their relevance, types, trends, opportunities for productivity enhancement, and the implications for natural resource management (NRM). These include a variety of systems in agro-ecological zones which can be grouped broadly into one of three categories: landless, crop-based and, and rangeland-based. The landless production systems are of two types: (i) highly industrialised pig and poultry production, and (ii) extensive systems involving small ruminants, cattle and camels and resource-poor nomads, transhumants or agricultural laborers and seasonal migrations. Within crop-based systems, animals are found in both irrigated and rainfed areas. The genesis of these systems is illustrated, and includes two broad categories: systems combining animals with annual or perennial cropping. The significance of crop-animal interactions and economic benefits from 31 case studies in 11 countries highlight the importance of animals in crop-based systems. Animal production trends are influenced by strong demand-led factors such as population growth, urbanisation, income growth and changing consumer preferences These are of two categories: (i) modern, demand-driven and capital intensive non-ruminant (pig and poultry) sector which is dominant, growing, and supplies the major share of animal proteins,which however is unable to meet current and projected human requirements, and (ii) traditional resource-driven and labour intensive ruminant (buffaloes, cattle, goats and sheep) sector which mainly involve small farms and small farmers and are lagging. The disparity questions efficiencies of prevailing animal production systems and NRM. Integrated animals-tree crop production systems are underestimated and are potentially very important. Two possible scenarios for the future of crop-animal systems are increased size and specialisation, and the other disintegration due to population pressure. It is suggested that crop-animal systems and small farms will continue to be predominant in Asia, in which intensification, growth and increased contribution are likely in the future. Major issues to be addressed across systems include inter alia nutrient flows, waste disposal, overgrazing, all year round feeding systems, zoonosis, and policy issues. The less-favored and more constrained rainfed areas can be made more productive through increased public and private sector investments, interdisciplinary research and development, and improved technology application. The challenges and benefits for the future include improved efficiency of NRM, agricultural growth, reduced poverty, improved livelihoods of the poor and environmental sustainability.
Keywords: Animal production systems; Crop-animal systems; Types; Trends; Economic benefits; Productivity enhancement; Interdisciplinary research; Asia

Marie Wolfova, Miloslava Stipkova, Jochen Wolf, Incidence and economics of clinical mastitis in five Holstein herds in the Czech Republic, Preventive Veterinary Medicine, Volume 77, Issues 1-2, 17 November 2006, Pages 48-64, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2006.06.002.
(http://www.sciencedirect.com/science/article/B6TBK-4KGG1HM-1/2/85fc3d6c35797a4404bc72a0101c7821)
Abstract:
Data on clinical mastitis (CM) collected between 1996 and 2003 on five Holstein dairy farms in the Czech Republic were analyzed. Lactational incidences of CM, averaged across farms and calculated only from cows with complete lactations, were 0.35, 0.45 and 0.57 for the first, second and third plus subsequent lactations, respectively. The mean numbers of CM cases per cow and lactation were 0.63, 0.94 and 1.22, and the incidence of CM cases per cow-year at risk were 0.68, 1.00 and 1.27 for the first, second and third plus subsequent lactations, respectively. Longitudinal analysis of CM prevalence based on daily records showed the highest proportion of infected cows in the first 10 days of lactation. The within-farm incidence of CM cases per cow per year, averaged over lactations, ranged from 0.53 to 1.56 with a mean value of 0.94 in the whole data set. Direct financial losses from CM per cow per year within farm ranged from [euro]43.63 to 84.84. They included losses from discarded milk, cost for drugs, veterinary service, herdsman's time, cost for an extra milking machine and cost for antibiotic drying of cows. The economic value of CM incidence (change in direct losses per cow per year when increasing CM incidence by one case above the average value) ranged from [euro]58.3 to 80.1 per CM case per cow per year with the mean value of [euro]62.6 per CM case per cow per year in the total data set. Daily prevalence rate of CM was shown to be the best among various indicators of CM susceptibility, because it accounted for the censored character of the data and for repeated cases of CM within lactations. In order to reduce the incidence of clinical mastitis for dairy cattle in the Czech Republic, we recommend that it should be included as a goal in the breeding program.
Keywords: Dairy cattle; Mastitis incidence; Longitudinal study; Economics; Economic value

Pedro Banales, Leandro Fernandez, Maria V. Repiso, Andres Gil, David A. Dargatz, Takeshi Osawa, A nationwide survey on seroprevalence of Neospora caninum infection in beef cattle in Uruguay, Veterinary Parasitology, Volume 139, Issues 1-3, 30 June 2006, Pages 15-20, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2006.03.004.
(http://www.sciencedirect.com/science/article/B6TD7-4JRVD9P-5/2/99d08316b5ca46c1ded3ef78e1b9285c)
Abstract:
Bovine abortions due to Neospora caninum infection have been reported worldwide and its economic impact on the beef industry has been acknowledged as a problem. Uruguay has the largest export value of beef per acre in South America. However, no data on the prevalence of N. caninum infection have been available in this country. The objective of this study was to estimate the prevalence and distribution of N. caninum infection in beef cattle in Uruguay through a nationwide survey. A two stage sampling design was used with farms being selected in stage one and animals being selected in stage two. A brief questionnaire was administered on each farm. Seroprevalence of N. caninum in 4444 beef cattle from 229 farms in all the counties, except Montevideo, of Uruguay was determined by an ELISA. The data were then analyzed to identify associations between infection and variables such as type of animal (cow or heifer), herd size, use of veterinary advice, productivity of the soil in relation to the national average, use of improved grass, use of mineral salts, use of supplemental feed, and presence of a dog(s) on the farm. The estimated proportion of positive farms for all the beef cattle operations was 69.2% (95% confidence interval [CI], 53.7-84.7). The overall cattle seroprevalence was estimated as 13.9% (95% CI, 11.6-16.3). The prevalence estimation by animal category was 14.3% (95% CI, 11.4-17.2) for beef cows and 12.9% (95% CI, 10.0-15.8) for beef heifers. There was no significant difference in the estimated prevalence between the two animal types. There was no significant

difference in the animal level prevalence of N. caninum infection among different herd sizes. None of the herd demographic or management variables was significantly associated with the seropositivity to N. caninum infection. In conclusion, these results show that N. caninum infection is common among beef herds across Uruguay. Since the beef industry is one of the key industries in Uruguay, the economic effect and risk factors of N. caninum infection among beef cattle in this country should be further evaluated in the near future.
Keywords: Neospora caninum; ELISA; Uruguay; Seroprevalence

C.J. Ward, Mathematical models to assess strategies for the control of gastrointestinal roundworms in cattle: 1. Construction, Veterinary Parasitology, Volume 138, Issues 3-4, 15 June 2006, Pages 247-267, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2006.01.054.
(http://www.sciencedirect.com/science/article/B6TD7-4JDMVCD-2/2/171faaa4462d350ed442605ef311c1a4)
Abstract:
Mathematical models were constructed to simulate the effect of Ostertagia ostertagi infections on the growth of young cattle. The equations are based on System Dynamics using the DYSMAP 2 software package in their construction. A pasture and animal growth model simulates the growth of pasture and the influences of management and climate on it; cattle feed intake and conversion into energy for maintenance and liveweight gain; the effect of the parasite burden on feed intake and utilization of energy. This model was then combined with one of the life cycle of O. ostertagi in order to determine the effect of worm burdens on animal growth rate in a range of farm conditions, such as stocking rate, grazing history of the pasture, and rainfall. By converting the resultant liveweight gain into a monetary value, an economic assessment of alternative worm control strategies can be made. In this paper the construction of the models with equations and assumptions is given in detail.
Keywords: Ostertagia ostertagi; Cattle-Nematoda; Control methods-Nematoda; Growth performance; Mathematical model

Paulo Henrique Silva Guimaraes, Fernando Enrique Madalena, Ivo Martins Cezar, Comparative economics of Holstein/Gir F1 dairy female production and conventional beef cattle suckler herds - A simulation study, Agricultural Systems, Volume 88, Issues 2-3, June 2006, Pages 111-124, ISSN 0308-521X, DOI: 10.1016/j.agsy.2005.02.004.
(http://www.sciencedirect.com/science/article/B6T3W-4FV41XX-1/2/47dd701cdbd8c495e9447690804b68ba)
Abstract:
Three cow-calf production systems were compared using simulation: N (straightbred Nelore), AN (Nelore cows producing Angus by Nelore calves) and HG (Gir cows producing Holstein by Gir calves). All three systems produced their own straightbred replacement females. Male calves were sold at weaning and female calves in excess of those required to keep the herd size constant were sold at one year of age. In the base situation, F1 HG females were priced at twice as much as the price per kg of the beef male calves, according to present market values. Typical 1000 ha beef cattle farms were simulated for each system, based on Brachiaria brizantha pastures managed according to recommended practices. Herd dynamics were controlled by reproduction and survival. Literature figures on monthly pasture nutrient production, live weights and milk yield were used to estimate nutrient requirements to match stocking rate to nutrient availability in each system. For calving rate set to 0.8 in all three systems, the total numbers of cows for the N, AN and HG systems were, respectively, 803, 795 and 885 and the total live weight sold annually was 129,070, 133,120 and 127,680 kg. The annual economic return on investment was 5.21%, 5.81% and 10.84%, respectively, for the N, AN and HG systems. Reducing the relative price of the HG heifers diminished the economic superiority of this system over N and AN. The difference was zero

when the price of HG heifers was reduced to approximately 1.2 times the beef calf price. This also happened when the calving rate of the Gir cows was set to 0.6 keeping N cows at 0.8 or higher.
Keywords: Beef cattle; F1 Holstein x Gir; F1 Angus x Nelore; Nelore; Economic performance

Mohamed Gharbi, Limam Sassi, Philippe Dorchies, Mohamed Aziz Darghouth, Infection of calves with Theileria annulata in Tunisia: Economic analysis and evaluation of the potential benefit of vaccination, Veterinary Parasitology, Volume 137, Issues 3-4, 30 April 2006, Pages 231-241, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2006.01.015.
(http://www.sciencedirect.com/science/article/B6TD7-4J8D97P-1/2/7d794b328886d4736d7e74193cec4c57)
Abstract:
A field study aiming to estimate the costs of tropical theileriosis was carried out in an endemic region of the North of Tunisia. Three farms were monitored for two successive summer seasons. A total number of 56 calves and 12 sentinel cows were monitored. Calves were ranked into four groups: non infected animals, diseased animals with clinical tropical theileriosis, sub-clinical Theileria annulata infected animals with anaemia and sub-clinical T. annulata infected animals without anaemia. The total costs due to disease and infection were estimated to be 15,115.058 TD ([euro]9388.20). A high proportion of these costs (50.81%) is accounted for by asymptomatic infection. Sub-clinical infections with anaemia showed the highest losses in live weight, while disease cases (prevalence 42.86%) are responsible for 23.64% of the losses with death as the most important element. A cost-benefit analysis of vaccination using a Tunisian attenuated cell line vaccine was also undertaken. Considering that the vaccine would cost 5 TD ([euro]3.10), the cost-benefit ratio of vaccination is 23.7. Sensitivity analysis of the vaccination costs shows that the indifference decision point is around 118 TD ([euro]73.29).
Keywords: Tropical theileriosis; Economics; Cattle; Tunisia; Epidemiology; Vaccination; Cost-benefit analysis

C.J.M. Bartels, J.I. Arnaiz-Seco, A. Ruiz-Santa-Quitera, C. Bjorkman, J. Frossling, D. von Blumroder, F.J. Conraths, G. Schares, C. van Maanen, W. Wouda, L.M. Ortega-Mora, Supranational comparison of Neospora caninum seroprevalences in cattle in Germany, The Netherlands, Spain and Sweden, Veterinary Parasitology, Volume 137, Issues 1-2, 15 April 2006, Pages 17-27, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2005.12.016.
(http://www.sciencedirect.com/science/article/B6TD7-4J2M5KX-B/2/de0a2e57c15f3cd41d3c0335cc4c599d)
Abstract:
Herd, within-herd and animal prevalences for Neospora caninum in beef and dairy cattle were compared between four countries. In randomly selected herds from regions of Germany, The Netherlands, Spain and Sweden that were representative for the cattle production of these countries, all animals >=2 years were examined serologically by enzyme-linked immunosorbent assays (ELISAs) with high test specificity (>98.0%). In a previous study, the ELISAs had been validated against each other. Single reacting animals within a herd were confirmed by immunobloting. At the time of sampling, animal (age, breed, herdtype, sex, lactation stage) and herd data (region) were collected.
Considerable differences in N. caninum herd, within-herd, and overall animal prevalence estimations were observed between countries, regions, herdtype, age categories and breeds. Herd prevalences, based on confirmation of single reactors, for dairy herds were estimated to be 16% (95%CI: 10-24%) in Sweden, 49% (95%CI: 39-59%) in Germany, 63% (95%CI: 57-69%) in Spain and 76% (95%CI: 67-84%) in The Netherlands and for beef herds 41% (95%CI: 31-50%) in Germany, 46% (95%CI: 41-51%) in Spain and 61% (95%CI: 50-72%) in The Netherlands. No beef herds were examined in Sweden. The lowest animal true prevalence was estimated in dairy cattle in Sweden (0.5% (95%CI: 0.1-0.8%)) while the highest animal true prevalence was estimated for

dairy cattle in Spain (16.2% (95%CI: 14.9-17.5%)). Within-herd prevalences varied greatly, with very few farms in Sweden having more than 10% seropositive animals while in Spain more than 10% of the herds had within-herd prevalences between 50 and 100%. Seropositivity was significantly associated with herdtype (beef versus dairy), age, breed and region within countries. The results of this supranational comparative study showed that the importance of N. caninum infection varied greatly within in Europe. Estimates of prevalence can be used to calculate the economic impact of N. caninum infection as well as to evaluate the effect of prevention and control strategies over time.
Keywords: Neospora caninum; Herd prevalence; Within-herd prevalence; Animal prevalence; Potential risk factors

C. Papachristoforou, M. Markou, Overview of the economic and social importance of the livestock sector in Cyprus with particular reference to sheep and goats, Small Ruminant Research, Volume 62, Issue 3, The future of sheep and goat production in Europe: prospects within the framework of new support regimes and market conditions, April 2006, Pages 193-199, ISSN 0921-4488, DOI: 10.1016/j.smallrumres.2005.08.014.
(http://www.sciencedirect.com/science/article/B6TC5-4H6PKR6-1/2/13c532e3cb7ae7b1dcc17ee5b9e654d1)
Abstract:
The value, in current prices, of livestock production in Cyprus exceeds the amount of CY[pound sign] 160 million and accounts for about 42% of the value of total agricultural production. The country is self-sufficient in milk and milk products, eggs, pig and poultry meat, while production covers the demand for beef by 70-75% and for sheep and goat meat by 90%. Over the last 40 years, the production of meat increased more than 10-fold, of milk 6-fold and of eggs doubled. These achievements were the result of the gradual transformation from low to high input production systems in an effort to improve productivity to satisfy the increasing demand, to reduce production risks associated with frequent droughts, to decrease pressure on the environment from overgrazing, and to lower production costs. Today, in dairy cattle, pigs and poultry, the production is based on a small number of high input and medium to large size commercial farms using employed labour force, while in sheep and goats, farms are smaller and rely on family labour. In cattle and sheep, one predominant breed in each species is utilized for production, while in goats, two breeds and their crosses are used. Pig and poultry farms rely on imported breeds and hybrids. The per capita consumption of livestock products is among the highest in Europe leaving little room for further increases. The present trends relate to quality aspects of livestock products, introduction of new technology, improved production management, reduced costs and production methods friendly to the environment.
Keywords: Cyprus livestock production; Present situation; Future prospects

G. von Samson-Himmelstjerna, C. Epe, N. Wirtherle, V. von der Heyden, C. Welz, I. Radeloff, J. Beening, D. Carr, K. Hellmann, T. Schnieder, K. Krieger, Clinical and epidemiological characteristics of Eimeria infections in first-year grazing cattle, Veterinary Parasitology, Volume 136, Issues 3-4, 31 March 2006, Pages 215-221, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2005.11.022.
(http://www.sciencedirect.com/science/article/B6TD7-4J2M70S-4/2/00b9a124ed4f676e06d9ce833ceca904)
Abstract:
Infections with Eimeria parasites can lead to severe diarrhoea with considerable clinical and economic consequences in first-year grazing stock. To identify and characterise the cause of diarrhoea observed during previous years, 164 animals on 14 dairy farms in northwestern Germany were included in this study. The calves were physically and parasitologically examined prior to turnout and until 21 days post turnout (d.p.t.). Mean animal weights decreased from 194.9

kg at the start to 189.3 kg bodyweight at the end of the study. In all herds, oocyst counts were very low prior to turnout and increased after the calves had been kept on pasture for at least 7 days. On Day 9 post turnout, 90% and at the end of the study (21 d.p.t.) 70% of all animals showed Eimeria-positive faecal samples. During the course of the study, 79 (48.2%) animals passed faecal samples with more than 100,000 oocysts per gram. The predominant species identified was Eimeria alabamensis, which accounted for more than 83% of the oocysts counted. These parasitological findings matched the clinical observations. Diarrhoea was found in 130 (79.3%) of the study animals. At 5 d.p.t. and thus prior to the rise of faecal oocyst counts, a significant increase in diarrhoea was recorded. Calves showing diarrhoea excreted statistically significantly more often over 100,000 E. alabamensis oocysts per gram faeces (0.28; p = 0.0002) than calves without diarrhoea. Diarrhoea was also found during significantly more study days in animals with high oocyst counts (0.39; p = 0.0001). These data indicate that in endemic areas first-year grazing calves must be considered at risk to develop clinical coccidiosis due to E. alabamensis infection during the first 2-3 weeks post turnout.
Keywords: Eimeria alabamensis; Cattle; Diarrhoea; Epidemiology; Coccidiosis

Johannes Charlier, Edwin Claerebout, Etienne De Muelenaere, Jozef Vercruysse, Associations between dairy herd management factors and bulk tank milk antibody levels against Ostertagia ostertagi, Veterinary Parasitology, Volume 133, Issue 1, 10 October 2005, Pages 91-100, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2005.05.030.
(http://www.sciencedirect.com/science/article/B6TD7-4GDSF61-3/2/640c8f96c04df7cd9bc0e56caa97b35e)
Abstract:
A cross-sectional questionnaire survey was performed on dairy herds in Flanders (Belgium) to detect management factors that are associated with an increased gastrointestinal parasite infection level of adult dairy cows. At the end of the grazing season, information concerning general herd factors, pasture management and anthelmintic treatment strategy was obtained from 956 herds. A bulk tank milk sample was obtained from 779 out of the 956 herds and the antibody levels (ODR) against Ostertagia ostertagi were determined. The associations between ODR and herd management factors were studied by two linear regression models. The first model evaluated the effect of general herd factors and the level of the cows' exposure to pasture. Large sized herds had significantly lower ODRs as compared to medium (P = 0.001) or small sized herds (P = 0.03). Herds with only dairy cows had lower ODRs than herds with both dairy and beef cows (P = 0.02). An increased exposure to pasture of the cows was associated with higher ODRs (P < 0.001). The second model was built to evaluate the effect of pasture management factors and anthelmintic treatment strategy. Later turn-out on pasture (P < 0.001) and mowing (P = 0.002) were both significantly associated with lower ODRs. Cows that had a restricted grazing time per day tended to have lower ODR than cows that grazed 24 h per day (P = 0.07). An increased exposure to pasture of the heifers was significantly associated with higher ODRs (P = 0.001). No associations were found between ODR and calf related management factors, anthelmintic treatment strategy, time of turn-in, rotational grazing type or stocking rate. Later turn-out on pasture, mowing and restricting the grazing time per day are factors that can be applied immediately on dairy farms to reduce economical losses due to gastrointestinal nematodes.
Keywords: Cattle-nematoda; Ostertagia ostertagi; ELISA; Management; Alternative control strategy

S. Dogliotti, M.K. van Ittersum, W.A.H. Rossing, A method for exploring sustainable development options at farm scale: a case study for vegetable farms in South Uruguay, Agricultural Systems, Volume 86, Issue 1, October 2005, Pages 29-51, ISSN 0308-521X, DOI: 10.1016/j.agsy.2004.08.002.

(http://www.sciencedirect.com/science/article/B6T3W-4DD8HHD-1/2/2bb25e09681b4a4fd83205d216948f9a)
Abstract:
The methodology presented in this paper aims at analysing whether there is room for improvement of vegetable farmers' income in Canelon Grande (Uruguay), while reducing soil erosion and improving physical and biological soil fertility, and to gain insight in the influence of farmers' resource availability on the opportunities for sustainable development. The (generic) approach we developed to support re-design of farming systems in this region is unique in dealing with complex temporal interactions in crop rotations and spatial heterogeneity on farms in one integrated method, while revealing trade-off between economic and environmental objectives. Rather than an arbitrary sub-set, all feasible crop rotations were generated, using a tool named ROTAT. The crop rotations were combined with a range of production techniques according to pre-defined design criteria to create a wide variety of alternative production activities at the field scale. We used process-based simulation models supplemented with empirical data and expert knowledge to quantify inputs and outputs of production activities. We developed a mixed integer linear programming model (MILP), named Farm Images, to allocate production activities to a farm with land units differing in soil quality, while maximising or minimising socio-economic and environmental objectives, subject to constraints at the farm level. Production activities comprised current practices as well as activities new to the area. We used Farm Images to design farm systems for seven existing farms in Canelon Grande with different resource availability. The farm systems designed by the model had higher family income than current systems for six of the seven farms studied. The estimated average soil erosion per ha decreased by a factor of 2-4 in the farm systems proposed compared to the current systems, while the rate of change of soil organic matter increased from negative in the current systems to +130 to +280 kg ha-1 yr-1 in the proposed farm systems. The degree to which the objectives could be achieved was strongly affected by farm resource endowment, i.e., particularly by the fraction of the area irrigated, soil quality and labour availability per ha. The study suggests that decreasing the area of vegetable crops by introducing long crop rotations with pastures and green manure during the inter-crop periods and integrating beef cattle production into the farm systems would often be a better strategy than the actual farmers' practice.
Keywords: Sustainable development; Multiple goal linear programming; Farming systems; Modelling

Z. Henkin, M. Gutman, Hava Aharon, A. Perevolotsky, E.D. Ungar, N.G. Seligman, Suitability of Mediterranean oak woodland for beef herd husbandry, Agriculture, Ecosystems & Environment, Volume 109, Issues 3-4, 1 September 2005, Pages 255-261, ISSN 0167-8809, DOI: 10.1016/j.agee.2005.03.004.
(http://www.sciencedirect.com/science/article/B6T3Y-4G4MM9B-1/2/cd26714ec2b7ceea18fd006650e931f7)
Abstract:
Traditionally, the evergreen Mediterranean woodland dominated by dense Kermes oak thickets has been grazed mainly by multi-species herds dominated by goats. With the continuing decline of goat husbandry, commercial beef husbandry in such woodland was considered as a possible alternative. A case study to determine the feasibility of this option was conducted over a period of 20 years on oak woodland in the Galilee region in Israel. The woodland was initially thinned manually to enable better access for cattle. For the first 11 years (1982-1992), the study site was grazed by a beef herd managed by a nearby communal settlement (Hatal1); it was consequently subject to the advantages and limitations of integration into a larger beef ranching operation and a complex socio-economic organization. During the following 10 years, the range was grazed by a beef herd belonging to a family in a nearby village (Hatal2) and subject to the accompanying limited manpower and economic constraints of a family farm. During both periods, one paddock

was grazed at a heavier stocking rate than the other. Under heavy grazing (175-206 cow grazing days ha-1 yr-1), the basal regrowth of the oaks was closely cropped and the vegetation was maintained as predominantly open woodland. In the paddock that was grazed more moderately (122-148 cow grazing days ha-1 yr-1), the vegetation tended to return to dense thicket. It was concluded that after initial thinning, the relatively dense Mediterranean oak woodland sustained a viable beef herd with moderate supplementation, especially when grazing pressure was maintained at a relatively high level. In addition, the open woodland contributed to landscape diversity and increased the amenity value of the area for hiking and recreation.
Keywords: Animal performance; Cattle; Farming system; Feed supplementation; Landscape ecology; Quercus calliprinos

E.A.J. Fischer, H.J.W. van Roermund, L. Hemerik, M.A.P.M. van Asseldonk, M.C.M. de Jong, Evaluation of surveillance strategies for bovine tuberculosis (Mycobacterium bovis) using an individual based epidemiological model, Preventive Veterinary Medicine, Volume 67, Issue 4, March 2005, Pages 283-301, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2004.12.002.
(http://www.sciencedirect.com/science/article/B6TBK-4FCSDDH-1/2/ceb9587e6974b4a0f388d8ca9dcb898d)
Abstract:
The Netherlands holds the bovine tuberculosis-free (BTB-free) status according to European Union standards, but in recent years small outbreaks of the infection have occurred. After the last outbreak in 1999 with 10 infected herds the question raised if the current surveillance system, visual inspection of carcasses at the slaughterhouse, is efficient enough to detect infected cattle in time and to maintain the official BTB-free status.
Through epidemiological modelling, the risk of a major outbreak is quantified, using one of six surveillance strategies. These are the currently used visual inspection of carcasses at the slaughterhouse (SL), the ELISA test on blood samples of carcasses at the slaughterhouse (ELISA-B), the [gamma]-interferon test on blood samples of carcasses at the slaughterhouse (GAMMA-B), comparative tuberculination of the herd (CT), the combined method of single and comparative tuberculination of the herd (ST + CT) and the ELISA test on samples of bulk milk (ELISA-M). Test frequency of the last three methods was varied as well.
A stochastic individual based model (IBM) was developed to simulate a chain of infected herds, where each individual animal is followed in time. The model mimics the nation-wide situation after the introduction of one infected animal into one herd. BTB-transmission is simulated with an S-E1-E2-I state transition model. Output is time until detection of the infection, prevalence in the detected herd and the number of infected herds at the time of detection. For the assessment 500 simulations were used, representing 500 BTB-introductions. Model robustness to parameter values was analysed with Monte Carlo elasticity analysis, for which 1000 simulations were used.
Results of median time until detection and median number of infected farms at detection for SL (302 weeks and seven farms) were in agreement with estimates from an outbreak in the Netherlands in 1999. ELISA-B and GAMMA-B performed better than SL with a much lower median time until detection (189 and 97 weeks, respectively). The results for the tuberculination methods (ST + CT and CT) and ELISA-M depended heavily on the frequency in which the tests were performed. The tuberculination methods ST + CT and CT yield comparable results and detect the infection sooner than SL, also at the lowest tested frequency of once in 5 years. ELISA-M is comparable with SL at frequencies of once in 4 or 5 years, and this test works well at frequencies of once a year or higher. Our study results are used for an economical optimisation analysis of the six surveillance strategies.
Keywords: Bovine tuberculosis; Mycobacterium bovis; Detection method; Stochastic simulation; Individual based model

P. Veysset, D. Bebin, M. Lherm, Adaptation to Agenda 2000 (CAP reform) and optimisation of the farming system of French suckler cattle farms in the Charolais area: a model-based study, Agricultural Systems, Volume 83, Issue 2, February 2005, Pages 179-202, ISSN 0308-521X, DOI: 10.1016/j.agsy.2004.03.006.
(http://www.sciencedirect.com/science/article/B6T3W-4CBW5HR-1/2/054ce4450149375d12bbe952cd752ace)
Abstract:
French suckler farmers need advice on the implications of the Agenda 2000 CAP reform for their farms and, in particular, on the incentives it offers for a more extensive mode of production. To support the dialogue between advisers and farmers, and thus help farmers with their decision-making, we constructed a linear programming (LP) model that optimises the farming system of the northern Massif Central Charolais suckler cattle farms, which may be either mixed (crop-livestock) or specialised (livestock). This model, called Opt'INRA, incorporated all of the production activities presently encountered in this zone, together with the constraints of the CAP premium attributions. We used it to study how, on the basis of their 1999 data, two farms, representing two situations frequently encountered in the Charolais area (a mixed crop-livestock farm and a specialised livestock farm), could best adapt to Agenda 2000.
According to the model, for both of the farms studied, the economic impact of Agenda 2000 is relatively low, albeit negative. The adaptation of the system when possible does not lead to a significant increase in the gross margin of this farms. Agenda 2000 did not encourage farmers to extensify their farming system. On the other hand, this CAP reform discourages them from intensifying.
Keywords: Suckler cattle; Farming system; Linear programming; Common agricultural policy

L. D. Foil, P. Coleman, M. Eisler, H. Fragoso-Sanchez, Z. Garcia-Vazquez, F. D. Guerrero, N. N. Jonsson, I. G. Langstaff, A. Y. Li, N. Machila, R. J. Miller, J. Morton, J. H. Pruett, S. Torr, Factors that influence the prevalence of acaricide resistance and tick-borne diseases, Veterinary Parasitology, Volume 125, Issues 1-2, Diversity and Progress of Veterinary Parasitology Research in the 21st Century. A selection of presentations given during the 19th international conference of the World Association for the Advancement of Veterinary Parasitology, 28 October 2004, Pages 163-181, ISSN 0304-4017, DOI: 10.1016/j.vetpar.2004.05.012.
(http://www.sciencedirect.com/science/article/B6TD7-4CYNWYN-1/2/3761dde7b42444595ce5382f2452516a)
Abstract:
This manuscript provides a summary of the results presented at a symposium organized to accumulate information on factors that influence the prevalence of acaricide resistance and tick-borne diseases. This symposium was part of the 19th International Conference of the World Association for the Advancement of Veterinary Parasitology (WAAVP), held in New Orleans, LA, USA, during August 10-14, 2003. Populations of southern cattle ticks, Boophilus microplus, from Mexico have developed resistance to many classes of acaricide including chlorinated hydrocarbons (DDT), pyrethroids, organophosphates, and formamidines (amitraz). Target site mutations are the most common resistance mechanism observed, but there are examples of metabolic mechanisms. In many pyrethroid resistant strains, a single target site mutation on the Na+ channel confers very high resistance (resistance ratios: >1000x) to both DDT and all pyrethroid acaricides. Acetylcholine esterase affinity for OPs is changed in resistant tick populations. A second mechanism of OP resistance is linked to cytochrome P450 monooxygenase activity. A PCR-based assay to detect a specific sodium channel gene mutation that is associated with resistance to permethrin has been developed. This assay can be performed on individual ticks at any life stage with results available in a few hours. A number of Mexican strains of B. microplus with varying profiles of pesticide resistance have been genotyped using this test. Additionally, a specific metabolic esterase with permethrin-hydrolyzing activity, CzEst9, has been purified and its

gene coding region cloned. This esterase has been associated with high resistance to permethrin in one Mexican tick population. Work is continuing to clone specific acetylcholinesterase (AChE) and carboxylesterase genes that appear to be involved in resistance to organophosphates. Our ultimate goal is the design of a battery of DNA- or ELISA-based assays capable of rapidly genotyping individual ticks to obtain a comprehensive profile of their susceptibility to various pesticides. More outbreaks of clinical bovine babesisois and anaplasmosis have been associated with the presence of synthetic pyrethroid (SP) resistance when compared to OP and amidine resistance. This may be the result of differences in the temporal and geographic patterns of resistance development to the different acaricides. If acaricide resistance develops slowly, herd immunity may not be affected. The use of pesticides for the control of pests of cattle other than ticks can affect the incidence of tick resistance and tick-borne diseases. Simple analytical models of tick- and tsetse-borne diseases suggest that reducing the abundance of ticks, by treating cattle with pyrethroids for example, can have a variety of effects on tick-borne diseases. In the worst-case scenario, the models suggest that treating cattle might not only have no impact on trypanosomosis but could increase the incidence of tick-borne disease. In the best-case, treatment could reduce the incidence of both trypanosomosis and tick-borne diseases Surveys of beef and dairy properties in Queensland for which tick resistance to amitraz was known were intended to provide a clear understanding of the economic and management consequences resistance had on their properties. Farmers continued to use amitraz as the major acaricide for tick control after the diagnosis of resistance, although it was supplemented with moxidectin (dairy farms) or fluazuron, macrocyclic lactones or cypermethrin/chlorfenvinphos.
Keywords: Tick control; Boophilus microplus; Acaricide resistance; Bovine babesiosis; Tick-borne diseases

A. K. Kahi, G. Nitter, C. F. Gall, Developing breeding schemes for pasture based dairy production systems in Kenya: II. Evaluation of alternative objectives and schemes using a two-tier open nucleus and young bull system, Livestock Production Science, Volume 88, Issues 1-2, June 2004, Pages 179-192, ISSN 0301-6226, DOI: 10.1016/j.livprodsci.2003.07.015.
(http://www.sciencedirect.com/science/article/B6T9B-4BBHBM2-1/2/fa0cc0ac4781e991ce372d8582cd51f0)
Abstract:
A deterministic approach was used to evaluate alternative breeding objectives and schemes in a dairy cattle breed in Kenya. A two-tier open nucleus breeding scheme and a young bull system (YBS) were assumed with intensive recording and 100% artificial insemination (AI) in the nucleus and 35% AI in the commercial sector. The breeding objectives differed in the marketing scenario that each described and whether pasture feed for the cows was limited or not. Two marketing scenarios were distinguished; current (payment of milk is based on volume) and future (payment of milk would be based on volume and fat content). Therefore, four breeding objectives were considered: current no limitation (CUNL), current with limitation (CUWL), future no limitation (FUNL) and future with limitation (FUWL). The breeding schemes differed in the records available for use as selection criteria. The schemes ranged from one that only utilised fertility criteria (scheme 1) to one that incorporated fertility, weights, milk and fat yield (FY) criteria (scheme 5). The annual monetary genetic gain and profit per cow for all schemes varied within breeding objectives but were highest in CUNL. Within each marketing scenario, the annual monetary genetic gain and profit per cow was higher in a no limitation situation than in a situation with limitation on pastures. Within each breeding objective, the annual monetary genetic gain and profit per cow was highest for the breeding scheme with the highest level of investments. In all objectives, the difference in the profit per cow between a scheme that incorporated fertility, weights and milk yield (MY) criteria (scheme 4) and scheme 5 was small (0.4-1.2%) indicating that there is little benefit including FY as a selection criterion. Therefore, a breeding scheme that requires records on FY seems not to be reasonable from an economic point of view. This study showed

that a well-organised breeding programme utilising an open nucleus, YBS and the smallholder farms as the commercial sector could sustain itself. The practical implications of the results and how sustainable breeding programmes can be established are discussed.
Keywords: Breeding objectives; Breeding schemes; Dairy cattle; Selection; Tropics

Piran C. L. White, James K. A. Benhin, Factors influencing the incidence and scale of bovine tuberculosis in cattle in southwest England, Preventive Veterinary Medicine, Volume 63, Issues 1-2, 30 April 2004, Pages 1-7, ISSN 0167-5877, DOI: 10.1016/j.prevetmed.2004.02.003.
(http://www.sciencedirect.com/science/article/B6TBK-4C2FFW7-3/2/9feeb41355b5e13fc4da641bac295696)
Abstract:
Bovine tuberculosis (TB) in cattle is a major economic problem in Britain. In the past 25 years, the infection has been concentrated in the southwest region of England. We investigated the effects of agricultural and farm-management characteristics on the occurrence and scale of TB in cattle in the region (1988-1996) using logistic and linear regression. Factors relating to the existence of previous infection in cattle and the management of cattle and badgers are all linked to the incidence of the infection--but those related specifically to the management of cattle are of overriding importance in determining the scale of the problem. Although our analysis was conducted at a large spatial scale, the results suggest that improvements to the procedure for testing and managing TB in cattle, reductions in cattle stocking density, a greater human input in herd management and more-carefully targeted badger culling all might contribute to reducing the incidence and/or number of herd breakdowns.
Keywords: TB; Badgers; Environment; Husbandry; Logistic regression; Linear regression

L. Lezana, F. Campos, Preference for pelleted or ground cattle feed by Spotless Starlings (Sturnus unicolor), Livestock Production Science, Volume 86, Issues 1-3, March 2004, Pages 193-200, ISSN 0301-6226, DOI: 10.1016/S0301-6226(03)00163-5.
(http://www.sciencedirect.com/science/article/B6T9B-4B5JPG7-1/2/4acd581b608fe774b9f0a121633694c3)
Abstract:
The feeding behaviour of Spotless Starlings (Sturnus unicolor) on a cattle farm was analysed in terms of the choice and efficiency of consumption of two types of the same commercial feed (pelleted or ground). The starlings greatly preferred the pellets. During visits to the feeders, birds always consumed more pelleted feed than ground feed. The pelleted feed required less pecks and foraging time, while the ground feed was not easily handled due to its particle size. Yearling starlings consumed fewer pellets than adults (possibly due to competition) and their consumption was less efficient. Economic losses provoked by the starlings could be reduced by using ground feed and protecting the feeders in the pens during the winter season.
Keywords: Age classes; Bird pest; Cattle feed; Spotless Starling; Sturnus unicolor