HERD HEALTH

CHAPTER CONTENT

HERD HEALTH

39 The Herd Health Initiative

42 Fertility

42 Mastitis

45 Johne's disease

46 Infectious bovine rhinotracheitis (IBR)

47 A detailed farm investigation

THE HERD HEALTH INITIATIVE

The Herd Health Initiative

Simon More, Liz Lane (UCD CVERA), Damien Barrett (DAFF)

Over the last 4 years, detailed discussions and briefings have been held with a wide range of bodies, including government, industry (organisations representing farmers, processors and international exporters), service providers (including veterinary organisations, Teagasc and the Irish Cattle Breeding Federation [ICBF]) and academia. There is broad acceptance of the need for Ireland to move towards a superior animal health status. There is also acceptance that this can only be achieved if all key players are willing to work cooperatively towards a shared vision.

The Herd Health Initiative (HHI) is a concept modelled on international examples of success in animal health, but adapted to Irish conditions. It aims to focus specifically on non-regulatory animal health issues, complementing existing government-led animal health programmes in Ireland. The HHI approach represents a substantial departure from the classical government-led model to animal health that currently operates in Ireland.

The HHI would focus on two key objectives, as follows:

- *Identifying what needs to be achieved over defined time-periods, in the area of non-regulatory animal health, to maximise the international competitiveness of Irish livestock and livestock products*. This would include an understanding of current practice and future trends in international best-practice, monitoring performance of Irish livestock and livestock products, consulting with all relevant stakeholders, through steering and consultative committees, and assisting in the generation of information (eg cost-benefit analyses) to assist with priority setting.
- *Developing national infrastructure necessary to enable industry, at all levels, to take appropriate and effective action in the area of non-regulatory animal health*. This would include developing and coordinating national disease control programmes (agreed rules, standard diagnostic procedures, computing infrastructure etc), leading national efforts in the delivery of coordinated, high-quality advice for farmers and industry, developing nationally-consistent resources for farmers and their advisors, supporting the development of tools for improved decision-making (benchmarking, detailed herd evaluation etc), identifying and prioritising critical research needs, and influencing relevant national decision-making (legislation, differential product pricing).

A national body is proposed, staffed by a CEO and several technical experts. It would be overseen by a small, competency-based steering committee with responsibility to formulate and monitor HHI's strategic direction and organisational management. The steering committee will report to a forum of founding stakeholders.

There is a clear interface, but no overlap, between HHI and on-farm operations. As indicated previously, the HHI will develop and coordinate the infrastructure that will be needed by industry to take appropriate and effective action. However, action-taking *per se* (that is, making use of this infrastructure with the aim to improve on-farm animal health status) will be the individual choice and direct responsibility of individual farmers, and not the HHI. It is envisaged that on-farm operations would be delivered as a routine commercial arrangement through existing advisory services (for example, Teagasc, veterinarians, etc). Participation in the various HHI programmes is expected to be voluntary. Therefore, farmers will only participate in the HHI if it makes commercial sense for them to do so, either as an individual or as part of a processor supply chain.

Negotiations are continuing.

"What needs to be done now to maximise the international competitiveness of Irish livestock and livestock products in 5, 10 or 15 years time?"

A case for increased private sector involvement in Ireland's national animal health services

Simon More (UCD CVERA)

Ireland may need to broaden the scope of its national animal health services, given the increasing importance of non-regulatory animal health issues in global markets in animals and animal products. However, there have been concerns about the respective roles and responsibilities (both financial and otherwise) of government and industry in any such moves. This study argues the case for increased private sector involvement in Ireland's national animal health services, based both on theoretical considerations and country case studies (the Netherlands and Australia).

Opportunities for Irish farmers to shape their future in a global trading environment

Simon More (UCD CVERA)

Irish Farmers Journal, 10 March 2007.

Globalisation is driving fundamental change in Irish agriculture. Irish farmers can no longer compete globally on price alone, but must re-focus their efforts towards the quality and safety of their products. Animal health, through its impact on product quality and safety, will play a central role in positioning Ireland as a serious global player. Further, animal health is an important contributor to on-farm profitability, with improvements in health status offering the potential for substantial financial gains. With increasing globalisation, the ability of Irish farmers to shape their own future in the longer-term will largely be determined by decisions they make now.

Globalisation presents Irish agriculture with both opportunities and challenges. On the positive side, Irish agricultural exports are a major contributor to the national economy. In 2004, for example, Ireland was the third largest global exporter of butter and cheese and the seventh largest exporter of beef, by value. On the negative side, declining returns from meat and milk can be directly linked to global trading pressures. In such a competitive international trading environment, exporting countries such as Ireland have the option to differentiate their products on the basis of price on the one hand and/or safety and quality on the other. As a result of the ongoing economic boom in this country, however, it will become increasingly difficult for Ireland to compete on price alone. Therefore, Irish agriculture has no choice but to focus on the issues of safety and quality, and to differentiate with competing countries on that basis.

Animal health is an important contributor to product safety and quality. In addition, animal health is afforded special (indeed, unique) consideration in global agricultural trade. Under the SPS (Sanitary and Phytosanitary) Agreement of the World Trade Organization, countries are fully-entitled (with reasonable checks and balances) to protect the superior health status of their own livestock. The recent outbreak of foot and mouth disease in the UK illustrates the damage that can be done following the introduction of an exotic disease, through legal trade or otherwise. For these reasons, Irish agriculture has much to gain from efforts towards a superior health status for the national herd. These efforts, in the longer term, would benefit on-farm profitability as well as contributing to the international competitiveness of Irish product.

To this point, animal health programmes have mainly been managed by the national Department of Agriculture, Fisheries and Food. As a result of these efforts, there has been substantial progress towards eradication of brucellosis and the resolution of the BSE issue. While there has been only limited progress towards eradication of bovine tuberculosis, Ireland is leading international efforts towards a practical solution to problems caused by an infected wildlife reservoir.

At this time, it is appropriate to re-evaluate the role of government in animal disease control programmes. BSE, tuberculosis and brucellosis are each diseases of public health significance, and a role for government has been appropriate. However, further efforts towards superior health status would likely focus on health conditions that are related to trade, production and welfare, including Johnes' disease, IBR, BVD, mastitis, lameness and fertility. Efforts to control these conditions will lead to substantial benefit to industry, but generally very limited benefit to the broader public. For this reason, new approaches to the national management of animal health should be considered, based on a genuine partnership between industry and government, but with industry providing the lead. Industry and government each bring their own strengths and perspectives, with industry contributing pragmatism, on-the-ground commitment and immediacy towards the problem-at-hand. Further, the separate financial contributions of industry and government ('cost-sharing') to animal disease control should genuinely reflect the relative benefits that separately flow to industry and the broader public. For animal diseases where there is a significant threat to the health of the general public, such as brucellosis, it is reasonable for government to contribute, say, 50% of the costs of disease control. For diseases such as IBR, however, where improved control would primarily benefit industry, this level of government financial support to control costs may not be justified. This approach has been widely adopted by key agricultural competitors, including the Netherlands and Australia. In these countries, industry is now the driving force in long-term planning, coordinated action and continuous improvement of animal health issues. The experience of these, and other, countries offers valuable lessons (both technical and non-technical) that may also be relevant to Ireland. In order for such partnerships to be effective, roles and responsibilities (both financial and otherwise) must be clear. In my view, it is the role of industry to lead, to transform and to innovate, and of government to create the environment to enable this to happen.

The international trading environment will create ongoing 'turbulence' and uncertainty for some time. Regardless, opportunities are certainly available to enable the Irish industry to shape its own future in terms of animal health. The current period offers a window of opportunity, and it is very important that industry and government each take the hard decisions to enable industry to transform into a confident and effective global player.

SHAPING OUR FUTURE: ANIMAL HEALTH IN A GLOBAL TRADING ENVIRONMENT

More, S.J.

Irish Veterinary Journal 60 (2007), 541-549.

Irish farming is facing a period of unprecedented change, in large part due to the increasing globalisation of agriculture. The long-term viability of Irish agriculture is dependent on the ability of industry to maximise on-farm profitability, and to effectively compete in a global trading environment. With increasing competition, particularly from low-cost countries, the quality and safety of Irish product will become increasingly important. Animal health is an important contributor to this, as a result of the impact (perceived or otherwise) of animal disease on product quality, and because of the special importance of animal health in international trade. This paper, based on a presentation to the Animal and Plant Health Annual Conference in Killenard on 12 September 2006, examines three related questions relevant to these issues, including:

- Whether Ireland is achieving international best-practice in key areas of animal health?
- If not, whether it matters?
- What can we learn from experiences elsewhere?

The paper highlights a range of issues associated with international best-practice in animal health. A national Herd Health Initiative (HHI) is proposed, to provide focus, leadership and coordination of all non-regulatory animal health issues in Ireland, through a cooperative partnership between all relevant stakeholders.

Printed with permission from the Irish Veterinary Journal.

"The long-term viability of Irish agriculture is dependent on the ability of industry to maximise on-farm profitability, and to effectively compete in a global trading environment."

Ewes with lambs for the Spring market

FERTILITY

Making fertility records talk

Liz Lane (UCD CVERA)

Featured in the 'Selected reports' section

The analysis of herd management records allows for accurate assessment of the current status of the herd, a crucial decision making tool to implement effective change. Monitoring of such changes to ensure their effectiveness is essential to the success of any programme, while participation in discussion groups allows for peer comparisons, a key factor in motivating herd management change. The aim of this review is to evaluate the effectiveness of fertility reports to improve dairy herd performance.

Key factors affecting dairy cow fertility in Ireland

Liz Lane (UCD CVERA), Mark Crowe (UCD Agriculture, Food Science and Veterinary Medicine), Brian Wickham (ICBF), Simon More (UCD CVERA)

Intensively managed dairy herds must achieve fertility targets to ensure long-term economic viability. The costs associated with poor fertility have been highlighted in many studies. Integrated computerised programmes for fertility, health and production facilitate herd management. The analysis of herd management records is critical to efforts by farmers and their advisers to assess current herd status, to identify opportunities for improvement and to monitor change. This programme of work aims:

- to optimise the fertility reports of the Irish Cattle Breeder Federation's (ICBF) database to ensure their usefulness to farmers as a herd management decision making tool,
- to evaluate the reproductive efficiency of the national dairy herd utilizing this database and to determine the key drivers of lowered fertility in the national herd,
- to correlate production and management strategies with reproductive performance, and
- to monitor the impact of changes in herd management on the reproductive performance of Irish dairy herds.

MASTITIS

A study of dry cow therapy and effects on SCC in 10 Irish dairy herds

Barrett, D.J., Clegg, T.A., Healy, A.M., Doherty, M.L.

Journal of Veterinary Medicine Series A 53 (2006), 140-144.

Somatic cell count (SCC) data for 480 cows in 10 Irish dairy herds from January 2001 to June 2002 were analysed. Herds were selected on the basis of a recent or ongoing history of clinical or subclinical mastitis. An individual cow SCC of 200,000 cells per ml was used as the threshold for elevation of SCC. The duration of elevated SCC prior to drying-off and the magnitude of the elevation in SCC were found to have an impact on the response to dry cow therapy (DCT). A trend also emerged indicating that increasing parity had a negative influence on the response to DCT.

Printed with permission from Blackwell Publishing.

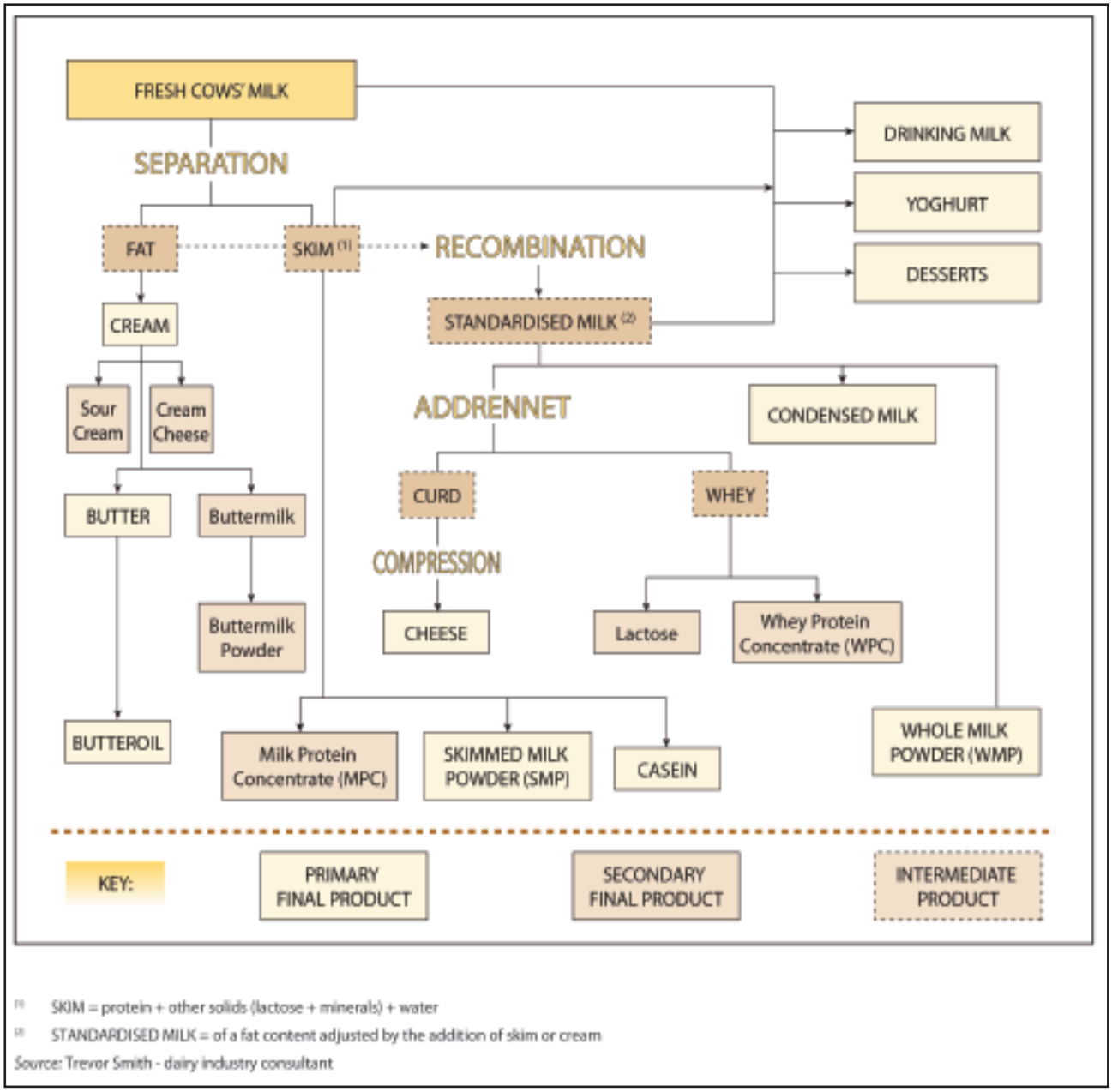
"Response to dry cow therapy was reduced by both the duration and extent of infection, as measured by SCC."

Global trends in milk quality: implications for the Irish dairy industry

Simon More (UCD CVERA)

Featured in the 'Selected reports' section

The quality of Irish agricultural products will become increasingly important, with the ongoing liberalisation of international trade. This study presents a review of the global and Irish dairy industries, considers the impact of milk quality on farm profitability, food processing and human health, examines global trends in quality and explores several models that are successfully being used to tackle milk quality concerns.



The conversion of milk, by a range of processes, into a variety of dairy products and food ingredients. From Anon., 2006a

A STUDY OF FACTORS AFFECTING BULK MILK SOMATIC CELL COUNT ON IRISH DAIRY FARMS

Paddy Kelly, Bernadette O'Brien, Donagh Berry (Teagasc Moorepark), Simon More (UCD CVERA)

Ireland is a major exporter of dairy products, and the quality of this product is very important. Based on recent analysis of bulk tank SCC samples from dairy suppliers, there has been an annual increase of 6,000 cells/mL since 2000. This study will examine the impact of farm management factors on national milk quality and individual Irish dairy farm profitability.

A CRITICAL EVALUATION OF FARM-LEVEL MILK QUALITY, BASED ON MILK RECORDING DATA

Tracy Clegg, Simon More (UCD CVERA), Luke O'Grady (UCD Agriculture, Food Science and Veterinary Medicine)

Milk recording is conducted on approximately 6,000 Irish dairy herds, on a regular basis. This represents approximately 30% of dairy herds but 50% of dairy cows. Using this resource, which is managed by ICBF, this study seeks to quantify milk quality parameters and to identify factors associated with high, and low, milk quality performance.

Within-parlour transmission is a common source of infection leading to new cases of mastitis on Irish dairy farms

JOHNE'S DISEASE

The economic impact of Johne's disease in an Irish dairy herd: A case study

Barrett, D.J., Good, M., Hayes, M., More, S.J.

Irish Veterinary Journal 59 (2006), 282-288.

A case study of the economic impact of Johne's disease in an Irish dairy herd is described. An epidemiological investigation concluded that the purchase of 20 heifers from the Netherlands in 1993 introduced Johne's disease to the herd. The practice of feeding pooled colostrum/milk was considered to have disseminated *Mycobacterium avium* subspecies *paratuberculosis* widely within the herd. Performance between 1993 and 2003 declined substantially, as a result of reduced milk yields, increased culling and reduced cull cow values. This in turn reduced the profit margin per litre of milk sold and per cow. The performance of this herd relative to peers also deteriorated over the study period. Performance had been superior to peers until the late 1990's, but had markedly worsened by 2002.

Printed with permission from the Irish Veterinary Journal.

"Herd performance was adversely affected by the presence of Johne's disease."

Post hoc assessment on external validity and precision of field samples used to survey the Irish cattle population for Johne's disease

Esther Richardson (Teagasc Moorepark), Margaret Good (DAFF), Guy McGrath, Simon More (UCD CVERA)

Featured in the 'Selected reports' section

We generally rely on a sample, rather than a census, to gain an understanding of characteristics of animal populations. The value of the sample as a reflection of the population of interest is measured in terms of external validity and precision. This study is being conducted to assess the external validity and precision of field data, following collection of serum samples from 1,000 herds to investigate the sero-prevalence of Johne's disease in Irish cattle.

Prevalence and distribution of paratuberculosis (Johne's disease) in cattle herds in Ireland

Margaret Good (DAFF), Simon More (UCD CVERA), Damien Barrett, Hazel Sheridan, Peter Mullowney (DAFF)

Johne's disease has been a scheduled and notifiable disease in the Republic of Ireland since 1955. It was uncommon prior to the mid 1990's, but has since increased with the introduction of the Single European Market, facilitating the free movement of goods and services within the EU. In this study, we are seeking to estimate the prevalence and distribution of paratuberculosis (Johne's disease) in cattle herds in Ireland.

Cattle movements into and out of Johne's infected suckler herds in Ireland

Peter Mullowney, Damien Barrett, John Egan (DAFF), Richie Fallon (Teagasc Grange), Martin Blake (DAFF), Simon More, Tracy Clegg (UCD CVERA), Margaret Good (DAFF)

In the period 2002 to 2006, a total of 96 beef suckler herds submitted faecal samples to the Central Veterinary Research Laboratory, which yielded a culture positive result for *Mycobacterium avium* subspecies *paratuberculosis* (MAP). Movements into and out of these herds are being analysed and compared with those from a control group of suckler herds.

A case-control study of risk factors for paratuberculosis (Johne's Disease) in Irish dairy herds

Damien Barrett (DAFF), John Mee (Teagasc Moorepark), Margaret Good (DAFF), Simon More, Guy McGrath, Tracy Clegg, Daniel Collins (UCD CVERA)

The increased prevalence of paratuberculosis in Ireland is linked, at least in part, to the introduction of the Single European Market. There is little published work on paratuberculosis in Ireland, and none examining risk factors for paratuberculosis incidence in Irish dairy herds. This work seeks to fill this gap in knowledge, and to contribute to a national response to paratuberculosis in the Irish dairy industry. Therefore, the objectives of this study are to identify risk factors associated with the occurrence of paratuberculosis in Irish dairy herds.

A study of cattle movement patterns in 200 Irish dairy herds

Damien Barrett (DAFF), Isabella Higgins, Tracy Clegg (UCD CVERA)

The trade and movement of cattle is one of the main mechanisms of introducing disease into cattle herds. Animal movement has the potential to bring infected animals in contact with non-infected animals, and in so doing facilitates the introduction of disease. At its peak, the bovine population of Ireland consisted of over 7.2 million animals in 121,000 herds. In 2004, there were over 1.5 million mart movements and 800,000 farm to farm movements recorded by the Cattle Movement Monitoring System (CMMS). The mart movements included 103,000 movements where the animal was unsold in the mart. The objective of this study is to characterise the animal demographics in the study herds.

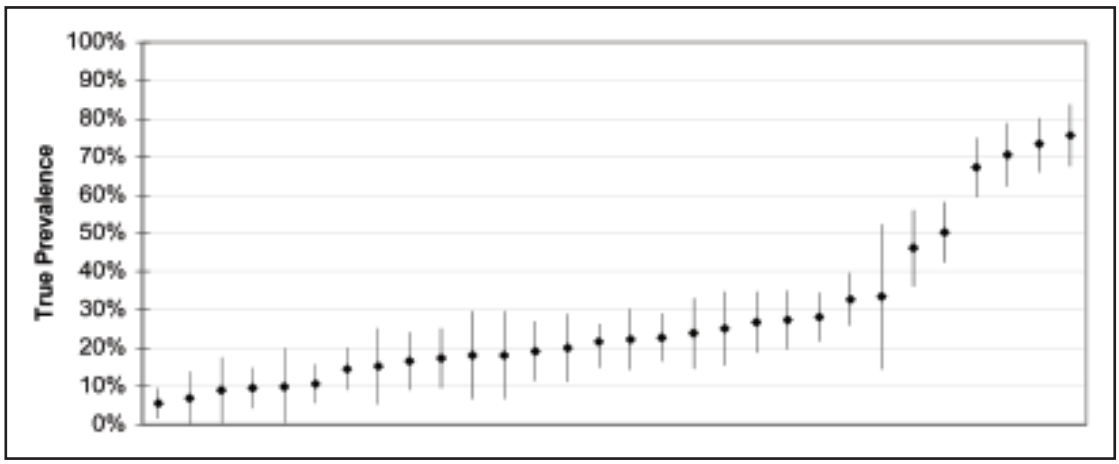
INFECTIOUS BOVINE RHINOTRACHEITIS (IBR)

Herd and within-herd IBR prevalence among herds that submitted bulls for entry to a performance testing station in Ireland

Luke O'Grady (UCD Agriculture, Food Science and Veterinary Medicine), Rónan O'Neill (DAFF), Simon More, Isabella Higgins, Daniel Collins, Tracy Clegg (UCD CVERA)

Featured in the 'Selected reports' section

Despite its increasing importance in the export of live cattle and semen, there is little information about the epidemiology of IBR in Ireland. In this study, we determine the herd and within-herd IBR prevalence among herds submitting bulls for entry to a performance testing station in Ireland.



The within-herd true IBR prevalence for 30 infected study herds in Ireland during November 2007. The prevalence estimate and 95% confidence limits for each herd are represented by a dot and vertical line, respectively

A DETAILED FARM INVESTIGATION

Shortfalls in production on an Irish dairy farm – an investigation during winter 2006 to 2007

Liz Lane, Mary Canty, Guy McGrath, Simon More (UCD CVERA)

Serious shortfalls in the performance of cattle on a dairy farm (index farm) have been identified. Milk production of dairy cows is between 30 to 50% less than expected when compared with the national average, while growth rates of young cattle on the index farm are much lower than expected, with animals achieving a significantly smaller stature and lower weights than expected for similar production systems. Young growing animals (up to 2 years of age) and cows are predominately affected. Growing cattle are expected to achieve an average growth rate of 0.75 kg per day; however, weight gains on the index farm vary dramatically throughout the growing period. Periods of time have been identified when the majority of young animals on the farm are reported to exhibit very poor or negative growth rates. Visits to a number of farms have indicated that at least two additional farmers, in the immediate area, believe they have experienced similar problems.

The aetiology of the poor performance on the index farm remains uncertain, despite intensive investigation. Disease, both clinical and sub-clinical, management and nutrition have each been suggested as potential causes or contributors to the problem. The aim of this project is to elucidate the underlying mechanisms of poor performance in growing animals on this farm, thereby providing clues about the cause of ongoing problems that are being observed. The project will critically examine the performance of cattle, and of underlying mechanisms of performance, including nutrition, disease, immunocompetence, and endocrinological control of growth and metabolism, during winter 2006 to 2007. These results will be compared, between farms (the index and another farm in the general locality), between cattle (animal raised on the index farm and animals purchased from an unaffected farm) and over time. Temporal relationships between animal performance and environmental conditions (weather, pollution) will be examined. A proportion of the animals from this trial will then be evaluated for growth rate, and blood parameters at intervals following on from the intensive period of the trial.

To broaden the scope of this programme of work, the location and identification of mineral deficiencies and excesses in soil and plants will be correlated with animal samples, as the prediction of herd mineral status using pasture and/or soil analysis without reference to prior animal testing can be unreliable. Soil and herbage sampling surveys will be conducted at two discrete time points, at the start and end of the 2007 grass growing season, using pre-determined sampling points from the national grid with the index farm as the centre of the grid. The aim is to:

- produce point maps of heavy metals, major elements and trace elements;
- determine if these parameters change over time; and
- establish their effects on animal nutrient requirements.