



# **OPINION ON THE WELFARE OF THE DAIRY COW**

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Policy instruments for protecting and improving farm animal welfare, 2008

## **OPINION ON THE WELFARE OF THE DAIRY COW**

### **Scope**

1. This Opinion provides advice on the welfare of the dairy cow and reviews developments since FAWC's previous report in 1997<sup>1</sup>. It shows whether the welfare of dairy cows has improved, shown no change or deteriorated over the intervening period.
2. The objectives of the Opinion are:
  - i. to review developments in the dairy industry that have affected dairy cow welfare since 1997;
  - ii. to quantify trends in the incidence and prevalence of the main causes of involuntary culling, i.e. lameness, mastitis, metabolic diseases and infertility;
  - iii. to determine the suitability of lifespan as an indirect indicator of cow welfare, particularly in relation to the rate of involuntary culling;
  - iv. to investigate trends in the lifespan of dairy cows and the reasons for these and to suggest a target for lifespan; and
  - v. to recommend means by which an acceptable standard of cow welfare can be maintained and improvements made.
3. The Opinion covers dairy cows from their first calving and excludes calves.

### **Background**

#### Extent and nature of the topic covered in the opinion

4. Our previous report on the welfare of dairy cattle made a number of recommendations to improve the welfare of the dairy cow through changes in management, breeding, housing, infrastructure, stockmanship and training. Partially in response to this report, Defra (formerly MAFF) and the devolved administrations sponsored research to investigate dairy cow welfare and revised the Code of Recommendations for the Welfare of Dairy Cattle. Defra has also funded advisory campaigns by ADAS on farm animal welfare, which includes topics relating to the dairy cow.
5. Economic pressures on the dairy industry over the past decade have forced British farmers to seek greater efficiencies, resulting in significant changes in dairy husbandry. Some believe that these developments have compromised the cow's welfare. Certainly, the low profitability of dairy farming has compromised investment and maintenance on many farms which, in turn, may have hindered progress in reducing the incidence of lameness, mastitis and metabolic diseases. These trends, coupled with a shortage of stockmen, are a cause for concern. Furthermore, there has been a decline in rural veterinary services, even though the contribution of the veterinarian to the prosperity of a modern dairy farm and to the welfare of the dairy cow is well known.

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<sup>1</sup> FAWC 1997. Report on the Welfare of Dairy Cattle.

## Welfare concerns or contentious issues and/or opportunities to improve welfare

6. In our previous report, our main concerns about the welfare of dairy cows were in relation to endemic diseases, infrastructure and stockmanship. These concerns still persist today and are covered in this Opinion. They can be amalgamated into one question; does the modern dairy cow have an acceptable standard of welfare?

## Number of animals involved, duration and extent of welfare issues

7. According to industry data, there were 1.9 million dairy cows on 16,200 farms in the UK in 2008, with an average herd size of 126 cows and an average yield of 6,908 l per cow per lactation. Compared with 1997, this represents a 20% decline in cow numbers, a 43% decline in the number of dairy farms, a 26% increase in herd size and a 28% increase in milk yield per cow.

8. In 1997, dairy cows were kept on average for about 3.3 lactations, giving an average lifespan of about 5½ years for a cow entering a herd as a heifer at 2 years of age. This lifespan is relatively short in terms of the potential lifespan of cows, which can live to 12 years or older.

9. Clearly, a long lifespan can indicate good welfare. However, there are also cases to the contrary where it can reflect poor welfare if unhealthy cows are not culled promptly. By itself therefore, lifespan is a crude indicator of welfare. Lifespan has a substantial impact on a farm's financial performance, due to depreciation of the cost of the cow.

## Legal context

10. The responsibility to ensure satisfactory welfare rests with the dairy farmer. He has legal obligations under the Animal Welfare Act 2006 in England and Wales and the Animal Health and Welfare Act 2006 in Scotland. It is an offence to cause unnecessary suffering to any animal and reasonable steps must be taken to ensure that the needs of animals under the farmer's care are met.

11. In addition, farmed animals are protected by the Welfare of Farmed Animals (England) Regulations 2007 and similar legislation in Scotland and Wales. These regulations translate EU directives that set down minimum standards for the protection of all farmed livestock. Schedule 1 contains specific requirements, relating to inspections, record keeping, freedom of movement, buildings and equipment and feeding and watering. Cattle are subject to additional provisions in Schedule 7.

12. Welfare Codes set out statutory requirements and provide interpretation of these. They also communicate best practice. Livestock farmers and employers are required by law to ensure that all those attending livestock are familiar with, and have access to, the relevant Codes.

13. The Conventions of the Council of Europe relating to the protection of animals provide additional safeguards for the welfare of animals. The underlying

principles of the Convention on the Protection of Animals Kept for Farming Purposes and of its recommendations on welfare set out conditions to avoid any unnecessary suffering or injury, and the requirement to take physiological and behavioural needs into account.

### National and international considerations

14. The financial pressures facing the British dairy industry are similar to those found elsewhere within Europe and North America and have generated similar concerns. For example, dairy farming in the United States is mainly intensive with an emphasis on milk yield to the near exclusion of other criteria with a result that the lifespan of the cow is only about 5 years and is associated with low fertility<sup>2</sup>. Conversely, Swedish dairy farmers have placed greater emphasis on the robustness of their dairy cows with benefits in terms of a lower incidence of metabolic and endemic diseases and a higher fertility than in British herds.

15. Importation of animals and animal products poses a risk to the welfare of the national dairy herd through the potential introduction of exotic diseases such as Bluetongue. Expansion of the European Union in the past decade has increased the risk of exotic disease, which may be exacerbated by climate change.

16. Recently, the European Food Safety Authority has published five scientific opinions on the welfare of dairy cows. They cover: metabolic and reproductive disorders; udder disorders; leg and locomotion problems; and behaviour, fear and pain. The fifth opinion integrates the conclusions and recommendations of the preceding opinions<sup>3</sup>. Together, they represent a comprehensive review of current risks to the welfare of dairy cows.

### Commercial interests and developments

17. The profitability of dairying has been in steady decline for the past decade. In 1997, the average gross margin on dairy farms was £933 per cow; this had fallen to £696 per cow in 2007. The reasons for the decline in profitability are complex but include sterling's exchange rate, the milk quota system, the price paid by milk buyers and processors and the greater exposure to commodity markets. The net result is that many dairy farmers have been unable to invest in facilities to improve cow welfare or have trimmed expenditure on preventative medicine, for example.

18. Several retailers reward farmers financially for improvements in dairy cow welfare. Some best practice schemes also cover the costs of continuing professional development for veterinarians to provide specialist advice to their dairy clients. Some retailers also facilitate the rearing of bull calves that might otherwise be killed at birth, as well as supporting schemes for cull cows. All such initiatives are welcome.

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<sup>2</sup> Hare, Norman and Wright. 2006. Survival rates and productive herd life of dairy cattle in the United States. *Journal of Dairy Science*, 89: 3713–3720.

<sup>3</sup> [http://www.efsa.europa.eu/EFSA/efsa\\_locale-1178620753812\\_1211902630995.htm](http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1211902630995.htm)

19. The preparation of a herd health plan is a common requirement of farm assurance schemes, and some retailers encourage both dairy farmers and veterinarian surgeons to implement these plans, using them as management tools to prevent disease, improve welfare and lengthen lifespan. However, there is a shortage of veterinarians specialising in dairy cattle medicine, probably because of the declining cow numbers and profitability of British dairy farming. Demanding routine work, such as tuberculosis testing, has caused staffing issues in some veterinary practices, which, in turn, is not conducive to preventative veterinary care.

20. On-farm collection of data about cow health is a useful development that allows herd performance to be benchmarked. Commercial schemes include National Milk Record's Herd Companion software that enables farmers to monitor all aspects of herd performance including disease, nutrition and fertility. Regional discussion groups are particularly effective at dealing with local issues, e.g. as operated by DairyCo and Farming Connect in Wales.

#### Advice by FAWC relating to the topic

21. Our last FAWC Report on the Welfare of Dairy Cattle (1997) made over 190 recommendations to improve dairy cow welfare. The greatest concerns arose from the level of endemic disease, particularly lameness and mastitis, and infertility. Whereas the incidence of mastitis had fallen in the years prior to 1997, the prevalence of lameness was unacceptably high. Infertility was the greatest cause of premature, involuntary culling in the national herd and reduced rates of reproductive success were considered indicative of poor welfare.

### **Evidence**

#### Breeding

22. At the time of our last report, farmers in the UK and elsewhere in Europe mainly bred cows for high milk yields. Since then, breeding programmes have changed significantly and now incorporate a wider set of goals, in particular recognising the importance of bull selection for health and welfare traits. The current emphasis in the UK is on the inclusion of non-production traits in breeding programmes and screening breeding stock for undesirable characteristics. Lifespan, health and fertility now have a relative weighting of about 45% in genetic indices, though they were ignored in the 1990s. Breeding values<sup>4</sup> for lifespan, mastitis, lameness, fertility (calving interval and non-return rate) are now available and research is underway to include dystocia. However, the maximum progress per generation is only around 1-2% for each trait, so rapid improvements cannot be expected. In the long term, and given these broader criteria, dairy cows can be anticipated to have better health and welfare.

23. Although the more recent breeding schemes include non-production traits alongside performance traits for milk production, this is mainly to halt further deterioration of the former, due to largely antagonistic genetic associations between

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<sup>4</sup> Breeding values measure the genetic worth of an animal and are estimated from the performance of the animal and its relatives, and in relation to the population within which it is compared.

performance and traits such as fertility and disease. This is, in part, because the component traits in breeding indices are weighted by their relative financial contribution to overall profitability, rather than their contribution to welfare, and because in general, non-production traits are inherited less readily than production traits. Greater emphasis still needs to be placed on non-production traits in genetic indices to improve welfare.

24. The breeding programmes used to select high genetic merit bulls in some countries are not the same as in the UK. For example, Norwegian breeders have traditionally placed greater emphasis on non-production traits in breeding programmes and their ratio of non-production to production traits is higher (~65:35).

#### Endemic disease: Lameness

25. Lameness is a major reason for premature culling of dairy cows, typically accounting for about 10% of culls. It causes considerable pain and distress to the cow, increases veterinary costs, takes much staff time, reduces milk yield and can also impair fertility. A recent UK study of mobility in 29,760 cows during 200 farm visits showed that the average prevalence of lameness was 17% though this varied greatly between seasons and farms, ranging from 1.4 to 49%<sup>5</sup>. Prevalence today is largely similar to that in 1990 (20.6%)<sup>6</sup>.

26. In consultation, it was pointed out that good progress has been made in controlling traditional forms of lameness, such as sole ulcers and foul-in-the-foot, helped by the growing use of licensed foot trimmers. However, digital dermatitis infection has now become a major cause of lameness.

27. The aetiology of lameness in dairy cows is complex, which explains, in part, why lameness is such an intractable problem for the dairy industry. Older cows tend to be more prone to lameness. Some lameness can be alleviated by improvements in farm infrastructure. For example, the construction, design and suitability of cow tracks have been tested at Gelli Aur Agricultural College in Wales. Cow tracks, coupled with electric fencing, allow alternative access to grazing, minimise poaching, reduce lameness and facilitate grazing in inclement weather.

28. Other types of lameness such as sole ulcers are better dealt with by improving the cow's environment - and her comfort - through cubicle design and regular hoof paring. Infectious causes of lameness, such as digital dermatitis, are treated using topical antibiotic preparations and footbaths.

29. One reason for the slow progress in dealing with lameness is the farmer's perception of the problem. Work at the University of Bristol has shown that in-

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<sup>5</sup> Rutherford, Langford, Jack, Sherwood, Lawrence and Haskell. 2009. Lameness prevalence and risk factors in organic and non-organic dairy herds in the United Kingdom. *The Veterinary Journal*, 180: 95-105.

<sup>6</sup> Clarkson, Downham, Faull, Hughes, Manson, Merritt, Murray, Russell, Sutherst and Ward. 1996. Incidence and prevalence of lameness in dairy cattle. *The Veterinary Record*, 138: 563-567.

forming farmers about the prevalence of lameness within their herd and providing external advice often fails to stimulate the farmer to take preventive action.

30. The dairy industry is encouraging farmers to score their cows' mobility using a standard method. Some retail buyers now provide a financial incentive by demanding that farmers score mobility as part of their supply contract.

31. Penalising farmers financially for cow lameness is a more radical approach that is used in Holland. There, the national quality assurance programme requires that milk from severely lame cows is kept out of the milk tank. The penalty is based on an interpretation of an EC regulation (EC 853/2004) that requires milk to come from cows in a "*good state of health*". In Britain, the Government or farm assurance bodies could also interpret legislation in a similar fashion.

#### Endemic disease: Mastitis

32. Mastitis can be a painful disease of dairy cows and its current incidence and prevalence in the UK still give cause for great concern. It is the most common disease and is a major reason for premature culling (~9% of culls). At the University of Edinburgh (Dairy Herd Health and Productivity Service), farmers report that between 20% and 40% of their cows have had mastitis in the past year. Our consultation showed that there is wide variation in somatic cell count (SCC) with an average of between 100,000 and 250,000 cells/ml. SCCs have risen by 30% since 1998, so the problem of sub-clinical mastitis has clearly worsened over the past decade. However, the level of clinical cases of mastitis in a study of 250 monitored herds at Edinburgh University has remained static, despite a significant increase in milk yields.

33. There are a large number of bacteria, both contagious and environmental, that are capable of causing mastitis. Quarters showing signs of infection are typically treated with intra-mammary antibiotic infusions for three days consecutively. Severe cases of mastitis are also treated with parenteral antibiotics and supportive therapy as necessary.

34. We were told that the cost of a mild case of mastitis is about £169 per cow, and a severe case is £469. A fatality due to mastitis costs about £1709 per cow.

35. In our previous report, we called for monitoring and control of mastitis to be part of routine veterinary visits. In some European countries, records of the incidence of clinical and sub-clinical mastitis for individual cows are collected regularly as part of disease surveillance. We recommend the introduction of a similar scheme in Great Britain so that progress can be measured.

#### Endemic disease: Other diseases

36. Nearly all diseases affect the welfare of dairy cows to some degree. Examples of other endemic diseases that may lead to premature culling are bovine tuberculosis (bTB), bovine viral diarrhoea, infectious bovine rhinotracheitis, leptospirosis and Johne's disease, although some of these can be controlled by vaccination.

37. Of particular concern is the incidence of bTB, which has risen sharply over the past decade and affects not only the cow but also the farmer. We are very supportive of various plans by Government and the industry to control this important disease, which can compromise the cow's welfare significantly.

38. We are also aware of discussions between the Government and the dairy industry about sharing responsibility and costs for controlling these and other diseases and look forward to a successful, equitable outcome that protects the welfare of dairy cattle, and also the interests of the farmer and the public purse.

39. The risk of Bluetongue and Foot and Mouth disease becoming endemic is increasing with changes in climate and importation of livestock and meat products from affected areas, respectively. Their potential to devastate the livestock industry should be at the forefront of the industry and Government joint responsibility to keep stringent bio-security measures in place.

### Metabolic diseases

40. Metabolic diseases of dairy cows are important in terms of lost production and poor welfare and include ketosis, milk fever, left displaced abomasum (LDA) and acidosis. The prevalence of these diseases is low, typically about 1%, and has not changed substantially since 1987. Despite their low prevalence, they are nevertheless a cause for concern because of their effects on welfare.

41. We were told that the average cost of milk fever is about £210 per cow. The costs of ketosis, LDA and acidosis are not known but are likely to be similar. Surgical correction of LDA would incur additional veterinary costs of between £80 and £150.

### Injuries

42. The common injuries to dairy cows are hock abrasions and swollen hocks, neck calluses, calluses on the back, injuries to the wings of the ilium (hook bone), and skeletal injuries after slipping, e.g. fractured or dislocated hips. In a recent study<sup>7</sup> at the Scottish Agricultural College (SAC) of 10,870 cows in autumn and 12,100 cows in spring from 200 herds in the UK, the prevalence of hock damage was 8.8% and 40% in autumn and spring, respectively, and of hock swellings was 1.4% and 2.3 % in autumn and spring, respectively. Unsuitable designs of cubicles are commonly implicated in hock, back and hook bone lesions; feed barrier design and access to feed are implicated in neck and shoulder calluses. Risk factors for the more severe injuries associated with slipping and falling include the floor surface, loafing space/overcrowding, shed design (cow flow), poor stockmanship (rushing cows, herding with dogs and quad bikes), social group size, care of high risk, recently-calved animals in the herd, and bulling cows. On some farms, the incidence of limb injuries resulting in casualty slaughter is up to 3% a year, while they are a rare occurrence on other farms.

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<sup>7</sup> Rutherford, Langford, Jack, Sherwood, Lawrence and Haskell, 2008. Hock injury prevalence and associated risk factors on organic and non-organic dairy farms in the United Kingdom. *Journal of Dairy Science*. 91: 2265–2274

## Infertility

43. Infertility is a main reason for premature, involuntary culling of dairy cattle. It is not, in itself, a welfare problem but can be an indirect indicator of poor welfare. In the UK, the conception rate has declined about 1% every three years and is now around 40%<sup>8</sup>; it is lower today than it was 40 years ago<sup>9</sup>. Recent research<sup>10,11</sup> has shown that body condition affects both health and fertility. The cow with high genetic merit for milk production produces more milk partly because of a greater propensity for losing body condition to support milk production. This leads to a greater negative energy balance in early lactation, with more rapid loss and a slower recovery of body condition that, in turn, affects her ability to conceive. The immune resistance of high yielding cows in negative energy balance during early lactation is weak, raising susceptibility to some diseases. Cows of high genetic merit for milk production need a high level of management to ensure good nutrition, avoid extremes of body tissue loss and hence be fertile.

44. Infertility is also influenced by concurrent disease, such as lameness and mastitis. Inappropriate phenotype for the system, poor management, inadequate feeding, breeding immature heifers and using inappropriate bulls that exacerbate dystocia, all contribute to infertility. Management of the dry cow is also critical to fertility, particularly to ensure that she is neither too thin nor too fat at calving. Appropriate nutrition is clearly important to avoid metabolic diseases. In addition, observing cows for heat and timing of insemination is crucial to good management. In our previous report, we stressed the importance of allowing stockmen sufficient time to monitor herd fertility. With higher numbers of cows per stockman, even more time is needed for this task today.

45. Management of the heifer during rearing and admission to the herd also affects her subsequent performance and ability to conceive; failure to conceive as a first lactation heifer is a major fertility problem in UK herds<sup>12</sup>. First lactation heifers are adjusting to a new environment but are still expected to breed, grow and milk successfully. Milking heifers, when fed in competition with cows, produce less milk in their first lactation and are more likely to be culled before their second lactation than heifers fed separately. Measures to minimise the stress on the first lactation heifer include separate housing and feeding from the main herd, allowing heifers to settle into the milking herd and avoiding bullying by older cows. Mixing heifers into new groups is a major stress, particularly now that herd sizes are larger, and the ratio of cows to stockmen has increased.

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<sup>8</sup> Royal, Darwash, Flint, Webb, Woolliams and Lamming. 2000. Declining fertility in dairy cattle: changes in traditional and endocrine parameters of fertility. *Animal Science*, 70: 487-501.

<sup>9</sup> Bulman and Wood. 1980. Abnormal patterns of ovarian activity in dairy cows and their relationships with reproductive performance. *Animal Production*, 30: 177-188.

<sup>10</sup> Wall, Coffey and Brotherstone. 2007. The relationship between body energy traits and production and functional traits in first lactation dairy cows. *Journal of Dairy Science*, 91: 1527-1537.

<sup>11</sup> Wathes, Fenwick, Cheng, Bourne, Llewellyn, Morris, Kenny, Murphy and Fitzpatrick. 2007. Influence of negative energy balance on cyclicity and fertility in the high producing dairy cow. *Theriogenology*, 68S: S232-S241.

<sup>12</sup> Brickell, Bourne, McGowan and Wathes. 2008 Effect of growth and development during the rearing period on the subsequent fertility of nulliparous Holstein-Friesian heifers. *Theriogenology*, 72: 408-416.

## Lifespan

46. Since our report in 1997, it is clear that cows are living slightly longer with a current lifespan of about 6 years, including a rearing period of 2 years. This is contrary to a commonly-expressed belief that lifespan has been getting shorter recently. We were told in our consultation that between 1991 and 2005, the average number of lactations has increased from 3.3 to 3.6 and, since the 1980s, average calving interval has extended from 384 to 410 days with the corollary that the number of lactations is no longer an adequate description of lifespan. This longer lifespan has occurred despite greater culling rates due to foot and mouth disease, bovine tuberculosis and bovine spongiform encephalopathy.

47. Under UK conditions, the theoretical economic optimum for the cow's lifespan in the absence of disease is between 4.3 and 4.9 lactations<sup>13</sup>. The main influences on a cow's lifespan are voluntary and involuntary culling strategies<sup>14</sup>. Economics usually drives voluntary culling rates, e.g. when cull cow prices are low, less culling takes place and *vice versa*. Involuntary culling is mainly due to endemic and metabolic diseases and infertility and accounts for about 57% of dairy herd culls. The reasons for culling are not recorded nationally, but anecdotal reports suggest that, in the past, most culling was voluntary whereas today more cows are culled involuntarily. The ratio of these two culling strategies is of concern, as the opportunities for voluntary culling for the improvement of the herd are reduced when involuntary culling rates are high. This may encourage some farmers to keep unhealthy cows to maintain herd size.

## Stockmanship

48. Good stockmanship is the key to good welfare and the quality of stockmanship is critical to the management of high yielding dairy cows. Sound education and up-to-date training of dairy farmers and stockmen are essential to promote and maintain good welfare in dairy herds.

49. A range of vocational qualifications and training courses are available in the dairy industry. However, there are many barriers to their uptake including cost, lack of funding, suitability, time spent away from the farm, a low perceived value, a lack of awareness of the benefits of training and little formal recognition of the competencies gained through informal learning.

50. As well as considering skills and training for those currently in the workforce, it is important that graduates and new entrants have practical skills and are competent. This can be achieved by ensuring that the National Occupational Standards for the dairy industry, upon which qualifications are based, meet industry needs and are up-to-date, reflecting new technologies and good agricultural practices.

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<sup>13</sup> Stott. 1994. The economic advantage of longevity in the dairy cow. *Journal of Agricultural Economics*, 45: 113-122.

<sup>14</sup> Involuntary culling is when an animal is culled because it has to be (usually there is a health or other physical problem with the cow). Voluntary culling is when an animal is culled because the farmer takes the decision to do so (for many different reasons, including economics).

51. Few had anticipated the unprecedented decline in the UK agricultural workforce with (livestock) farms heavily reliant on immigrant staff, who have had limited training and whose first language is often not English. DairyCo has produced a series of DVDs and booklets for immigrant workers in a number of Eastern European languages, covering health and safety and basic stockmanship.

52. Recruitment and retention of labour are issues for the dairy industry. Staff, whether permanent or temporary, British or foreign, should feel valued in the workplace. This requires good communication, investment in skills and personal development, clear progression routes within careers, and a professional image of the dairy industry.

53. In addition to education and training programmes, there are other initiatives to encourage farmers to improve husbandry for their livestock. Facilitation, by the use of monitor farm networks for example, is a well established method that promotes sustainable behavioural change by ensuring that the participant has ownership of the ideas, rather than relying on an external advisor simply telling a farmer what to do.

#### Surveillance of dairy cow welfare

54. In our previous report, we called for farmers to record every case of lameness, mastitis, metabolic disorders and their treatments and recommended that data on somatic cell counts and clinical mastitis should be collected centrally.

55. The UK is one of the few EU countries that does not have a centralised recording scheme for cattle health and welfare. Good examples of such schemes can be found in Norway and Canada. In the UK, two private companies collect almost all the dairy industry data. There is no common analysis or publication of the results. This is a serious handicap, putting the UK at a distinct disadvantage and limiting welfare improvements on dairy farms.

#### **Critical Issues**

56. The evidence suggests that, whilst improvements to the welfare of dairy cows in the UK have been made since our last report in 1997, we believe that more can, and should, be done to ensure that a dairy cow has a life worth living.

The critical issues relate to:

- a. the supply of trained, skilled dairy farmers and stockmen;
- b. the incidence, prevalence and causes of lameness, mastitis, metabolic diseases and injuries in dairy cows;
- c. the level of infertility in both heifers and cows, though this is not itself a direct measure of welfare;
- d. the lack of centralised recording schemes yielding data at the national level;
- e. breeding policies for dairy cattle; and
- f. public surveillance of welfare.

## Ethical analysis

57. It is incumbent upon farmers to place animal health and welfare high on the list of their priorities, and to be able to demonstrate how they have discharged their obligations under the Animal Welfare Act 2006 (and similar legislation in Scotland).

58. Any poor welfare raises ethical concerns, particularly if that suffering could have been avoided in the first instance. In all dairy husbandry systems, some pain and distress are unavoidable yet necessary for an ultimate greater good (e.g. dehorning and vaccination). Suffering due to lameness, mastitis or injuries is clearly unwanted by the farmer; it also leads to involuntary culling and unnecessary expense. Unfortunately, some suffering arises from the poor profitability of dairying; economic stability and prosperity enable better planning and improvements in health and welfare through investment.

59. Lifespan *per se* is not necessarily an accurate indicator of good welfare or of a cow having had a good quality of life. A long life often implies that a cow has experienced a reasonable quality of life. A short life, terminated prematurely, suggests that there is likely to have been a previous welfare problem, such as endemic or metabolic disease or injury. Voluntary culling does not normally imply poor or good welfare but the ratio of the two culling rates (voluntary: involuntary) reflects the quality of life of animals in the herd, independently of lifespan. It could be used as a key welfare indicator on dairy farms.

60. Farmers are often faced with the choice of a veterinary treatment that incurs an immediate cost against a predicted gain that may not materialise. Some diseases or poor productivity may have little impact on welfare but be costly. In other cases, waiting while the animal recovers during treatment may result in poor welfare temporarily. In extreme cases, leaving an animal to suffer severe pain and distress in the unjustified hope that it will improve is clearly unlawful.

## Conclusions

61. The British dairy industry has weathered many economic storms and disease epidemics over the past decade. Undoubtedly, farm assurance schemes have done much to sustain the dairy industry, providing assurance to the consumer about the provenance of dairy products. The profitability of British dairy farming has fallen significantly over the past decade due to rising input costs and low prices for milk, sometimes below the costs of production. This has affected investment in education, recruitment and training, as well as farm infrastructure, with adverse consequences for the cow's welfare. Alongside breeding policies directed as much towards health and welfare as milk yield, restoring the profitability of dairying would do much to improve the welfare of the dairy cow.

62. The supply of trained, skilled dairy farmers and stockmen is of major concern and reflects trends elsewhere in livestock farming. It has been caused by an ageing population of farmers and stockmen that is not being replenished by a sufficient supply of new entrants. As part of recruitment and retention of staff, the

dairy industry should invest more in education and training to ensure its future prosperity.

63. There is no evidence that the incidence of lameness has improved over the past decade. While traditional causes of lameness are in decline, new ones have taken their place, such as digital dermatitis. Paying greater attention to the correct diagnosis of lameness will enable effective control. Dissemination of existing knowledge on lameness to many farmers and stockmen is also needed. Herds that fall below acceptable levels of lameness should target levels attained by the top 25% of herds, which have a prevalence of less than 5%.

64. The prevalence of sub-clinical mastitis is greater now than in 1997 though the level of clinical mastitis has remained static, despite a rise in milk yield. More emphasis should be placed on minimising mastitis through transfer of best practice, benchmarking, demonstration and research.

65. The greater emphasis on non-production traits in breeding programmes is most welcome and should do much to redress the balance in favour of the cow's welfare. However, although genetic improvements are cumulative they are slow; progress will depend much more on good management and financial incentives.

66. Many infectious diseases can be controlled by vaccination but many cannot. Bio-security must be an integral component of the herd's health plan, which should be rigidly enforced and regularly updated in consultation with the farmer's veterinary surgeon. The extra workload and psychological effects on dairy farmers of disease, e.g. bovine tuberculosis, compromise human welfare too.

67. Metabolic diseases occur at a relatively low incidence and can largely be controlled by careful dietary management and good husbandry. Those problems that do arise must be treated promptly to ensure rapid recovery and avoidance of secondary problems due to prolonged recumbency.

68. Infertility in dairy cows is a major problem that plagues the prosperity of many dairy farms. Its aetiology is complex but can be addressed through breeding as well as management. More attention should be paid to heifer rearing to minimise the wastage of young cattle early in their productive life.

69. The lifespan of the dairy cow is slightly longer today than in 1997. This achievement is to the credit of the dairy industry and has been made despite outbreaks of major exotic diseases and the continued spread of bovine tuberculosis. However, it is evident that farmers cull more cows because they have to rather than because they choose to.

70. In Great Britain, the dairy cow, if well looked after and irrespective of milk yield, ought to have a lifespan of at least eight years. This can be achieved by reducing the number of cows that are culled involuntarily with the aim of extending the overall productive life without compromising welfare. A lifespan of eight years – or about 5 to 6 lactations - gives a replacement rate of around 20%, which is currently achieved in the best performing herds within the UK.

71. The ability to monitor progress, both nationally and by farm, is only possible if there is surveillance of welfare on a suitable scale. Surveillance requires valid, reliable and repeatable indicators of welfare, including physical disease, with information collected consistently and analysed centrally. Surveillance should be carried out so that trends can be analysed and progress checked against goals.

72. There have been many improvements and initiatives in the dairy industry to address key welfare issues since our last report in 1997. In terms of our main question however, the evidence is that the welfare of dairy cows has not improved significantly over the past decade. There are still critical issues about the welfare of the dairy cow that should be addressed over the next few years.

## **Recommendations**

73. The British dairy industry should aim to raise the standard of welfare of dairy cows over the next five years. A target lifespan of eight years for the dairy cow should be an aspiration of the industry.

74. The British dairy industry should invest more in education, skills, training and professional development of farmers and stockmen.

75. Breeding programmes used by British dairy farmers should place more emphasis on welfare traits, resulting in a cow that is better able to deal with the demands of modern dairying. Breeding programmes should aim to improve health and welfare rather than merely to halt their decline.

76. The incidence of endemic diseases in dairy cows, particularly mastitis and lameness, should be reduced urgently. Government and industry should put every effort into agreeing and implementing an eradication plan for bovine tuberculosis. On-farm recording of disease and welfare by the farmer should be encouraged, perhaps as part of farm assurance schemes. Health and welfare plans are an important part of dairy husbandry and should be developed by the farmer with his veterinary surgeon.

77. The Government should ensure that public surveillance of cow welfare is carried out efficiently and effectively so that progress can be monitored. Findings should be given greater publicity and information about best practice should be disseminated. A national database of information about cow health and welfare, as well as production measures, should be developed.

## **APPENDIX**

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