



McDonald's Europe Flagship Farms Beef – Dempsey Farm, Ireland


An efficient and economically-successful business demonstrates high standards in animal welfare and environmental performance.

This case study shows how beef production in today's climate can be undertaken in an economically viable manner, whilst maintaining the welfare of the animals and controlling the impact on the environment.

In particular it highlights good practice in animal welfare, waste management and species conservation.

The McDonald's Flagship Farms scheme has been developed in co-operation with the Food Animal Initiative to showcase good agricultural practices which are environmentally sound, economically valuable and ethically acceptable. A limited number of 'flagship' farms have been selected from within the McDonald's supply chain to represent progressive agricultural practice.

The following matrix has been developed by McDonald's to help assess sustainability within the agricultural supply chain. Farms selected demonstrate good practice in at least one of the matrix key areas, whilst also operating to generally high standards in all other areas.

Symbols    are used to highlight good practice in environmental, economical and ethical issues.

McDonald's Good Practice Matrix

Ethical (acceptable practices)

Human health & welfare ✓
i Employee health & welfare ✓
ii Food safety

Animal health & welfare ✓
i Nutrition
ii Medication & growth promoters
iii Genetic selection
iv Animal cloning
v Husbandry ✓
vi Transport
vii Slaughter

Business ethics & supplier relationships
Rural landscape preservation

Environment (protecting the planet)

Climate change
i Greenhouse gas emissions
ii Energy efficiency & renewables

Natural resources – soil ✓
i Soil fertility & health ✓
ii Soil erosion, desertification & salinisation
iii Soil contamination

Natural resources – water ✓
i Water pollution ✓
ii Water usage efficiency

Natural resources – air
i Air emissions

Agrotechnology
i Agrochemical usage
ii Bioconcentration & persistent organic pollutants
iii Genetically modified organisms

Ecosystem protection ✓
i High conservation Value Land (HCVL)
ii Habitat & species preservation ✓

Waste
i Production waste
ii Hazardous waste
iii Waste to landfill

Economics (long-term economic viability)

Sufficient high quality production
i Producer income security & access to market
ii Agricultural input costs ✓
iii Crop & livestock disease

Community investment
i Local employment & sourcing
ii Support for community programmes



Good practices demonstrated in this case study

Executive summary

Key areas of good practice:



MANAGEMENT

All cattle are reared under the requirements of The Beef Quality Assurance Scheme. The farm agrees to abide by a code of practice covering issues such as stockmanship, welfare, nutrition, use of veterinary medicines, animal traceability and environmental controls. This is independently audited by Bord Bia.



INPUTS & OPERATIONS

A reed bed has been established on the farm to clean the water which runs off of the farms concrete yards.

Rubber slat covers have been fitted into the winter housing of finishing cattle to improve welfare conditions.

Straw bedded calving pens and calf creep areas are provided during the winter housing.

Good handling facilities allow routine health checks to be undertaken in a timely and cost-effective manner, with reduced incidence of worker and animal injury.

Additional areas of good practice:



MANAGEMENT

One hectare of habitat and one hectare of Linnet have been planted. These areas provide winter feeding and foraging zones to the wild bird populations.



INPUTS & OPERATIONS

Soil testing is conducted in grassland to improve fertiliser use and efficiency, and clover is grown to reduce the requirement of nitrogen applications.






MANAGEMENT

The farm is a member of the Rural Environmental Protection Scheme (REPS), which encourages simple and effective environmental management on the farm.

The farm is a participant of the Suckler Cow Welfare scheme which requires 7 compulsory measures to be implemented to improve the welfare of stock.

Summary of actions and benefits

Action		Benefits		
		Environment 	Economics 	Ethics 
Management	The farm is independently inspected under The Beef Quality Assurance Scheme	Ensures the farm complies with environmental legislation	Allows the farm to market the cattle as 'assured'	Ensures the farm meets certain welfare standards
	The farm is a member of the Rural Environmental Protection Scheme (REPS)	Farming activities are carried out in an environmentally sound manner and bring about environmental improvement	Farm receives a payment for undertaking specific environmental practices	
	The suckler cow welfare scheme		Payment received for each suckler cow on the unit	Targeted welfare requirements must be met for cows and calves
Inputs & Operations	A reed bed has been planted	Yard water run-off is diverted through a reed bed which filters out any pollution prior to release into the local river		Reduces diffuse pollution from the farm's concrete yards
	Rubber slats are fitted in winter housing for finishing cattle		Improved profitability achieved through higher daily liveweight gains and reduced incidence of lameness	Cattle are provided with a floor surface which improves comfort levels
	Straw bedded calving boxes and calf creep area			Calving cows and calves are provided with a comfortable and warm lying area
	Easy calving stock bull selected for heifers		Improved calf survival rates, reduced mortality	Reduced incidence of calving problems
	Laboratory analysed soil samples for nutrients in grassland	Prevents over application of fertilisers	Targeted use of fertilisers maximises yields and reduces nutrient losses	
	Clover planted in grassland	Reduces the risk of pollution from man-made fertilisers	Reduced need to purchase nitrogen fertilisers	
	Good handling facilities		All stock procedures can be undertaken in a timely and cost effective manner	Safer environment for animal handling



Introduction

Ireland consists of 6.9 million hectares of land, 4.4 million of which is used for agriculture (about 64% of total land area). Of this agricultural land, 80% is devoted to grass production and only 9% to crop production. Agriculture is responsible for around 3% of Ireland's GDP and in 2007 Gross Agricultural Output (GAO) was valued at €5.67 billion (figures from DAF). Milk accounts for the largest share of GAO at 29% while cattle and beef account for 26%, pork 5%, sheep 3%, cereals 5%, and forage plants 16%.

In 2007, Ireland exported an estimated 523,000 tonnes of beef worth approximately €1.57 billion, making it the largest exporter in this sector within the EU.

The average size of a farm in Ireland is 32 hectares with 50% of the farms less than 20 hectares. 35% of farmers combine farming with an off-the-farm job.

Ray and Mary Dempsey took over the 105-hectare sheep and beef farm from Ray's father in 1977, with Ray working full-time on the farm and Mary helping out as required. At times of high labour demand Ray uses the services of a local agency to provide experienced farm labour.

With varying economic changes over the intervening years, Ray reduced the size of his sheep flock whilst increasing the number of cattle on the farm. He now has a suckler herd of 70 cows with all the calves being finished on farm. The finished cattle are marketed directly to Dawn Meats and are achieving grades of U and R. There are still 200 breeding ewes on the farm which supply lambs into the local domestic market, and 13 hectares of spring barley is grown and traded with a local feed mill in return for feed for the beef herd.

"We have established a good suckler herd capable of producing good beef cattle. We are finishing and selling our steers at under 30 months of age and aim to finish heifers at less than 24 months of age. We run a Charolais bull with the cows and a Limousin bull with the replacement heifers. The heifers are purchased from known herds of good husbandry and health status and are mainly Limousin crosses.

We endeavour to make the best possible use of grass over a 230-day grazing period. Our winter housing and cattle handling facilities are good. Animal welfare and health and safety are priorities on the farm.

A vibrant beef industry is highly important to both agriculture and our national economy - being an island we have to export almost 90% of our cattle. Our climate provides excellent grass production which allows us to produce high-quality beef from grass or grass silage plus grain produced on Irish farms.

We feel privileged that Dawn Meats nominated our farm, and to be selected by McDonald's to participate in their Flagship Farm Project is an honour. There is also a personal sense of achievement as over the years we have worked hard in our farming business to achieve and maintain a good standard of beef production, recognising the requirements of the consumer and their expectations of traceability and animal welfare."

Ray Dempsey

Management

Assurance schemes

The farm is a member The Beef Quality Assurance Scheme operated by Bord Bia. This scheme is designed to enable the beef industry to meet the ever-increasing demands of consumers. The scheme is kept under review to ensure that it continues to reflect the emerging requirements of the marketplace, and involves the farmer, the beef plant and participating customers. Participating farmers must abide by a code of practice covering issues such as stockmanship, welfare, nutrition, use of veterinary medicines, animal traceability and environmental controls. Compliance with the scheme is inspected on a random basis by Bord Bia.

Ray is a strong advocate of farm assurance schemes and his was one of the first farms to be inspected under the requirements of the AFAB (Avonmore Farm Assured Beef) assurance scheme.

The Farm joined the Animal Welfare, Recording and Breeding Scheme for Suckler Herds in early 2008. This requires the strict compliance with seven compulsory measures to be eligible to receive the annual payments for each cow registered under the scheme.

1. **Calf tagging and registration:** Farmers must register calves under the Animal Events system operated by ICBF. All details of calves born, along with a calving survey for every calf born must be provided.
2. **Disbudding within 3 weeks:** A local anaesthetic must be used if undertaken over 2 weeks of age (late eruptors and polled animals are exceptions)
3. **Castration:** Not compulsory, but must avoid weaning time (not within 4 weeks prior to, or two weeks after, weaning)
4. **Minimum calving age:** Must be 24 months of age for heifers

5. **Weaning procedure:** Feed must be offered 4 weeks before, and 2 weeks after weaning (at least 1kg per calf per day), with graduated weaning. Herds over ten cows must wean at least two calves together and calves cannot be sold until two weeks after weaning.
6. **Animal Events Applicants:** Must complete and submit all information as required in the Animal Events system through ICBF.
7. **Training:**
 - covers paperwork elements
 - practical demonstrations on topics relevant to suckler cow production and breeding
 - aspects of animal welfare
 - ICBF services and breeding indexes

The aim of the scheme is to improve the welfare of the suckler cows and calves and to identify bulls and replacement cows that have good maternal calving characteristics including docility, with good growth characteristics.

The farm has adopted all of the seven requirements of the scheme and in some areas exceed the requirements. With dis-budding of calves, an anaesthetic is used at all times and not just after the obligatory two weeks of age, as scientific research shows the procedure of disbudding with a hot iron is painful, and the use of appropriate anaesthetic is necessary to reduce pain and stress levels.

"Horns are removed from cattle in order to minimise the risk of animals causing injury to each other. Young animals can be disbudded to prevent the growth of horns but once the horns are well established, dehorning is the only option.

Disbudding and dehorning are painful and stressful procedures and effective anaesthesia is essential. A heated disbudding iron applied over the horn buds in young calves aged up to about two months (the age being determined by the size of the horn bud) is much less painful than dehorning, where the horns are cut off with a saw, horn shears or cutting wire and the exposed blood vessels cauterised to prevent haemorrhage. Recent scientific work at Massey University, New Zealand concludes that disbudding with a hot iron is preferable to dehorning."

(Exert from the FAWC Disbudding and Dehorning Recommendations)

Environmental management schemes

The farm is also a member of the Rural Environmental Protection Scheme (REPS), whose objectives are to find ways of using agricultural land which is compatible with the protection and improvement of the environment, biodiversity, the landscape and its features. The scheme also aims to reduce the impact of climate change and protect natural resources, water quality, the soil and genetic diversity. REPS also promotes environmentally-favourable farming systems along with the conservation of high-nature-value farmed environments which are under threat.

Ray has planted one hectare of 'Linnet' (Land Invested in Nature, Natural Eco-Tillage). This is a habitat which has been sown in 4 metre wide strips, with oats and kale (oats sown annually and kale alternate years). Once planted this area is left in a completely natural state with no application of chemicals or fertilisers and no harvesting carried out. These areas provide important food sources for birds and other wildlife, especially in areas dominated by grassland. Ray has noted that the area is used by a great number and variety of birds throughout the season.

The farm also has another one hectare listed under REPS habitats. This area includes field margins, hedgerows and watercourses, and is particularly important for birds and wildlife. These are all marked on the farm's REPS map

and there are severe penalties for interfering with these habitats.

"An analysis of 124 of Europe's common birds has revealed that over a 26-year period 56 species (45 percent) have declined across 20 European countries. This alarming rate of decline has fuelled fears for the future of many of the continent's birds, including the Grey Partridge.

Five of the ten common European species showing the greatest declines are birds of farmland habitats. And worryingly, a comparison of new and old EU Member states shows that the declines of farmland birds of the newest members appears to be mimicking those of longer-established EU states, where the increasing intensification of farming has been the main cause of the declines."

(Common bird study reveals further decline of Europe's farmland birds (Bird Life International): 21-12-2007)



Both environmental and ethical good practice is achieved through careful farm management and participation in recognised farm assurance and environmental management schemes. The farm goes beyond the 'minimum requirements' in a variety of areas, resulting, in particular, in a very high standard of animal welfare and improved wildlife management within the farm.



Inputs & Operations

Reed bed water treatment

A reed bed has been established to the rear of the farm buildings. The rain water which falls onto the farm's concrete yards is diverted through the reed bed, cleaning the water prior to discharge into a local river. The reed bed treatment systems are based upon natural wetland ecosystems, but are artificially engineered and self-contained to optimise the chemical, physical and microbiological processes that occur naturally.

In farming situations reed beds are a useful way to treat dirty yard water. When installed they can control the Biological Oxygen Demand (BOD) of the waste water and offer a sustainable alternative to chemical-based wastewater treatments. Reed beds work via three main elements; soil dwelling microbes, the physical and chemical properties of the sand/gravel base material, and the action of the plants. The reeds transfer atmospheric oxygen down to their roots in order to survive waterlogged conditions. This creates both anaerobic and aerobic soil conditions, allowing an enormous diversity of microbial species to flourish. These organisms break down many types of compounds, and are particularly useful in the oxidation of ammonia to nitrate, which can then be used by the reeds as a natural fertiliser. Other farm waste that can be dealt with by reed beds includes phosphates, which have a high Chemical Oxygen Demand (COD).



Installation of a reed bed filter system for the treatment of water demonstrates good environmental practice. The system harnesses natural processes; ensuring that water quality is maximised at low cost and without associated negative environmental impact.

Rubber floor coverings

The farm has invested in rubber slat covers which fit over the concrete slats in winter housing in all finishing pens. The reason behind this investment is to improve the cattle welfare during the winter housing period, as it is widely accepted that cattle prefer to lie on a soft floor with low thermal conductivity when the ambient temperature is low (as it is in winter). The rubber slats provide a softer floor surface than concrete and the thermal conductivity of rubber is far lower than concrete.

Although there is a large initial investment to lay rubber slat covers, this could be counteracted by increased cattle growth rates and higher finishing weights which would deliver an increased financial return.

"Cattle rest either standing or lying down. Given the choice, lying down on a soft surface is preferred to standing and standing is preferred to lying on a rough cold surface. Cattle prefer to stay comfortable rather than staying clean.

Thermal qualities to the bedding are not an issue until outside temperatures cause heat loss to the ground from the resting animal. As outside temperatures drop and heat loss increases, the propensity to lie down decreases. Cattle prefer to stay warm before lying down.

Cattle don't like to lie on hard or wet surfaces but prefer dry, relatively soft locations for resting (Irps, 1983; Jensen et al., 1988)."

(Exert from: Technical Information for the Canadian Forage beef industry)



"Rubber slat-mats have the potential to increase farmer's profits on finishing cattle, according to results of a trial in Kildalton Agricultural College. The trial was carried out by David Doyle and David Hayes, third year Agricultural Science students in Waterford Institute of Technology. The rubber slat-mats at the time of purchase last September cost €40/square metre. The extra weight gained by the Friesians on the rubber slats is equivalent to €26.72 (equates to €10.90/square metre extra profit), which gives a payback period of 3.7 winters."

Straw bedding

The farm grows around 13 hectares of spring barley every year, providing sufficient straw to be used in the calving boxes for cows and within the calf creep areas. This provides an excellent bedding material for the cows at such an important time as calving. In addition, the guidelines set out for cattle housing in the Irish Beef Quality Assurance Scheme, state that "newborn suckler calves should have access to a designated, comfortable, solid floor, draught free calf creep".

"Straw is a cattle-appropriate resting substrate and should be used whenever possible."

(Krohn and Munksgaard, 1997)

"The groups of six bulls each with an average age of 9.8 months were kept over 1 year either on slatted concrete (concrete pen) or on slatted concrete covered completely (rubber pen) or partially covered (choice pen) with perforated rubber mats. At 12 and 18 months of age the rising time of the bulls was measured. At the beginning of the study and after slaughter claw dimensions were recorded. Bulls in the choice pen preferred the rubber coated area throughout the experiment. Animals in the rubber and choice pens showed more lying periods and had a lesser incidence of skin lesions compared to bulls in the concrete pen. Bulls in the choice pen required less time for rising than bulls in the concrete pen. In conclusion, the results of this study indicate that the rubber coated slatted flooring has a positive influence on the housing conditions of the beef cattle."

(Association between floor type and behaviour, skin lesions, and claw dimensions in group housed fattening bulls. Authors S Platz et al.)



Installation of rubber slats in winter housing improves cattle welfare.



Despite initial outlay of costs the improved conditions for the cattle results in increased growth rates and finishing weights, delivering increased financial returns to the farm.



Calving considerations

Heifers are not put to the bull until they are 20-22 months of age to calve down at 30 months plus, helping reduce the number of assisted calvings, as the most common cause of dystocia (calving difficulties) is that the foetus is too large and the cow is too small.

A significant selection factor for the farm's stock bull (a Limousin bull is used on the heifers) is the ease of calving. A Charolais bull is run with the cows, but again calving ease is still a consideration in its selection.

"Heifers mated to calve at two years of age are actively growing and have a large amount of pressure on them to meet economic needs and not necessarily their biological requirements. Two year old heifers have a pelvis that is growing at a rapid rate, and trial results show that the pelvic area can increase at the rate of nearly 2 cm squared per week at that age."

**(Why Calving Heifers Have Problems?
by Robert Dent)**

"Studies at the University of Nebraska Meat Animal Research Centre and Colorado State University indicate that 2-year-old first-calf heifers are three to four times more likely to have calving difficulties (dystocia) than are 3-year-old cows. The two major causes of dystocia in heifers are small pelvic area in underdeveloped heifers and heavy calf birth weights. Heavy birth weights are most commonly attributed to genetics of the sire and can be reduced by using low birth-weight or calving-ease sires on heifers."

(Association between floor type and behaviour, skin lesions, and claw dimensions in group housed fattening bulls. Authors S Platz et al.)



The age of heifers put to the bull and the choice of stock bull contribute to the ease of calving. The farm waits till the heifers are 20-22 months (calving at 30 months) which results in reduced incidence of assisted calvings and other calving problems associated with calf size. Bulls are chosen to minimise risk to the cow due to heavy calf birth weight. These practices demonstrate good animal welfare in addition to economic results.

Fertiliser application

Careful attention to fertiliser decisions and accurate field application are important first steps towards achieving the right balance between profitable agricultural production and environmental protection. Good practice reduces the risk of applying more fertiliser nutrients than the farm's grassland needs and thereby minimise the risk of causing nutrient pollution of the environment.

To ensure the farm's fertiliser applications are based on good practice and sound data, routine soil testing for phosphate, potash, magnesium and acidity have been undertaken in 2007 and will be conducted every four years.

The farm plants clover in grassland, enabling nitrogen uptake from the atmosphere and conversion into soil nitrogen. Estimates suggest that a grass/clover sward containing about 35% clover (in dry matter) can yield as much as a grass sward receiving about 150 kg/hectare of nitrogen fertiliser. Clover also has the benefit of maintaining grassland digestibility, especially in mid season when grass tends to get stemmy. With these improvements it is hoped to be able to reduce the amount of purchased nitrogen fertiliser whilst still maintaining cattle performance from grazed forage.

"The use of phosphate and potash fertilisers should be based on regular soil sampling and laboratory analysis. Under most cropping systems, the soil nutrient status only changes slowly and it is safe to use soil analysis results as a basis for fertiliser recommendations for up to 4 years from the date of sampling. Soil sampling and analysis should therefore be carried out approximately every 4 years."

**(Fertiliser Recommendations (RB209)
7th Addition)**



Routine soil testing results in optimal fertiliser application to grasslands. Combined with the planting of nitrogen-fixing clover, the farm's grasslands provide optimal grazing conditions at low cost and low environmental impact.

Cattle handling

The farm has invested in good modern cattle handling facilities, which Ray feels is an important aspect due to less availability of labour on the farm. When working with cattle, the importance of safe working practices cannot be under estimated, with worker welfare being of utmost importance.

"An important factor which has been shown to increase the productivity of suckler herds is the provision of good handling systems. Cattle temperament and the reduced numbers of available staff are responsible for the increasing number of cattle related human injuries. Unless cattle handling is an easy and safe routine, procedures such as worming & fluke treatments, body condition scoring and pregnancy diagnosis are unlikely to be performed as often as they should be."

(Exert from the Three Rivers Veterinary Group, February newsletter)

"On average, two workers are killed and over 100 injured each year by cattle," says Mr. Mitchell. There are also large numbers of minor incidents and near misses that we do not hear about and many serious accidents are not reported to HSE. For example, there have been several studies into livestock accidents which suggest that up to 24% of livestock producers are injured every year. 'And what is more,' he explains, 'if you have had one injury you are three times more likely to have another.'

Working with cattle will always involve some risk, but sensible health and safety is about managing risks, not eliminating them. That is why every farm that handles cattle should have a decent handling system. HSE research indicates that 47% of injuries are due to inadequate facilities."

(Are you struggling with cattle handling? Health and Safety Executive (HSE))

"Ray has a fairly typical family-run farming business. What makes Ray different is his foresight and confidence in the future of the industry. A large amount of investment has been undertaken to upgrade animal housing and the handling facilities on the farm and this in turn will improve animal welfare and performance, resulting in an increase in profits. Ray has also looked at all areas of the business and is trying to reduce inputs while still maintaining/improving current production levels. Along with this, the farm is working in a more sustainable manner which will ensure the farm's future success into the next generation."

Karl Williams, Flagship Farms Programme Manager, FAI

Appendix

Dempsey Farm's production figures for 2008

Calving per/heifer put to the bull	94%
Calf mortality birth to weaning	4.8%
Calves reared	95%
Adult cows with assisted calvings	1%
Heifers with assisted calvings	9% (1 out of 11 calved)
