



"The time is now to address Climate Change As the future of the industry share your vision of what a sustainable dairy operation should look like."

Introduction

We can't deny it. The climate in the UK is already changing. According to 'The UK Climate 2020 Report' Last year was the UK's third-warmest, fifth wettest and eighth-sunniest year since records began. And whilst it's easy to mistake climate change as a problem for the future, it would be naïve to pretend that it's not happening now. Whilst many feel the media exaggerates the dairy industries contribution to this crisis, we still have a responsibility to aim for a sustainable dairy operation. Therefore, the time is now for British dairy farmers to address this and minimize their impact on this ever-growing problem. To tackle this multi-faceted issue, a multi-faceted approach must be taken.

Soil Management

Soil is one of the worlds most valuable assets, and healthy soil is essential for a sustainable dairy enterprise. At least quarter of the farm should be soil tested annually, in order to write a Nutrient Management Plan which will detail crop nutrient requirements based on the soil health and fertility. Low emission slurry spreading equipment should also be used, which will maximise the efficiency of slurry use on farm. Both these aspects will increase the environmental and economical sustainability of a farm. In order to reduce Nitrogen Fertiliser requirements on farm, nitrogen fixing legumes including clover should be used. This will improve grass utilisation without increasing fertiliser inputs. There are more than 700 different types of soil within the UK. The more a farmer knows about the soil they have on the farm, the more efficiently they can manage this resource. With this variation within the industry, farmers will have to take an individual approach to the farm. Widespread approaches would be ensuring adequate farm tracks and multiple gateways to fields to decrease poaching when grazing cattle and avoiding out wintering as well. As well as this, cover crops should be utilised to ensure minimum exposure for bare soil. Whilst grazing is not common practice for all dairy farms in the United Kingdom, grazing livestock is a great way of increasing organic matter levels within soil, therefore grazing stock when possible is a great way of improving soil health.

Genetics

The role of genetics in the sustainability of a dairy farm should not be underestimated. There are several industry led and genetic company indexes now being incorporated highlighting environmental benefits. AHDB for example has launched one of the first environmental led breeding indexes in the world, Enviro-cow. Expressed on a scale of about -3 to +3, the highest positive figures are achieved by bulls which transmit the best environmentally friendly traits to their daughters. The index is based on a combination of lifespan, milk production, fertility and the new Feed Advantage index. Cows bred from these indexes are predicted to create the least greenhouse gas emissions in their lifetimes for each kilogram of solids-corrected milk they produce. Feed Advantage another new AHDB index allows dairy farmers to choose bulls with the greatest tendency to transmit efficient conversion of feed on to their daughters. Based on over 30 years of research and data, the index is expressed as a PTA in kilograms of dry matter intake saved during each lactation. On the pilot farm, the most efficient cows on the index consume as much as 400kg less in one lactation compared with the least efficient cows, this is a potential huge saving on feed making businesses more sustainable economically and environmentally. St Genetics newly released Eco-Feed is an index that measures feed conversion, permitting genetic gains for the next generation, it's been show that high ecofeed progeny consume up to 4.7 kg of feed a day (24% less).



However, with genetic indexes such as Envirocow and Eco-Feed paving the way for genetic sustainability, it would still be prudent for farmers to consider their current breeding goals alongside these traits. Whilst these indexes will become more and more relevant in the future, healthy, fertile cows with a desirable type profile is still vital in producing milk sustainably and should not be ignored in pursuit of these new traits. Therefore, indexes such as Semex's Immunity Plus, general health and fertility indexes and a correct balanced linear should also be considered within a mating decision.

The use of a specialised mating programme and genomic testing should also be used on farm, to ensure that sexed semen is being used on the most suitable cows to produce the most profitable and efficient replacements, with the remainder of the herd being put to beef semen and being utilised in an integrated supply chain initiative.

Feeding

The World demand for soya beans is growing annually due to the increasing human demand for soya oil to meet population growth. Approximately 80% of soya oil is used for human food, and 20% for industry, pharmaceuticals and biodiesel. Soya has proved to be an invaluable source in feeding dairy cows across the world. Whilst zero deforestation soya does tackle some degree sustainability problems, it's apparent that it's easy to mix zero deforestation soya with conventional soya. Therefore, to ensure sustainable feeding of cows it would be prudent to avoid feeding soya at all, a suggested alternative would be rapeseed meal. Nutritionally is a superior source of protein for dairy cows and is also a non-GM crop. Having lower protein levels in the diet down towards around 16.0% of overall diet dry matter would reduce emissions including ammonia, nitrous oxide and manure nitrogen emissions off farms and would in turn reduce the need for purchased protein. In Great Britain, many dairy areas have the benefit of being able to grow high quality silage and UK farmers in a bid for increased sustainable need to utilize the protein in grass silage more. Whilst it would be foolish to deny that there are challenges with lower protein diets, Reading University already have conducted a trial showing that this is possible, alongside this Kite Consultants have numerous high yielding herds who have already made the change.

Renewable Energy

Nearly 40% of farmers and growers in the United Kingdom are already hosting some sort of renewable energy initiative on their holding, this equates to at least 10% of UK electricity needs, which is equivalent to roughly the electricity use of 10 million households. Some initiatives that could be adapted by UK dairy farmers are solar panels either on land or agricultural buildings, wind turbines and Anaerobic Digestors. Slurry only anaerobic digestors are becoming more popular on UK farms, these anaerobic digesters use only the manure and slurry available on the farm. Each tonne of organic dry matter in slurry can produce 300-400cu m of biogas meaning a 300-cow unit can collect enough slurry to support a 50kW plant, whilst avoiding the input cost of energy crops and better matching the electricity requirement of the farm. Whilst it would not suit every dairy farmer, it can offer operational, economic and environmental benefits to many. It would offer lower electricity bills, payments from excess energy from the RHI tariff, as well as this passing slurry through a fermenter suppresses bacteria such as E Coli, resulting in a reduction of farm-based pathogen released therefore benefitting animal health and farm biosecurity. Another benefit is processing slurry by AD and spreading the digestate increase the nitrogen level taken by plants, decreasing the amount lost to the environment. AD plants also could play a big part in cutting emissions on UK dairy farmers, as capturing methane from slurry and using it to generate energy reduces emission from farm.



Water

On farms, the necessity of water for animal welfare and dairy hygiene cannot be underplayed, and farmers over the past ten years have taken positive steps and there has been a phenomenal rise in the number of dairy farmers monitoring water use. Simple and effective steps used widely on farms include rainwater collection, reusing water from plate coolers, and diversifying water supplies e.g. through using a borehole or pumping water from a local water source. There are now talks for dairy producers to be able to benchmark water use in the future to judge not only the effectiveness of water conserving practices against their own past performance but their performance against other dairy farms.

The industry led Dairy Roadmap noted slurry as a valuable resource through effective management returns vital nutrients and organic matter back to the soil, this should be done through a nutrient management plan. Effective nutrient management reduces water pollution. Tried & Tested an industry initiative is set up with support from Catchment Sensitive Farming, which helps farmers improve nutrient management planning using a toolkit. This toolkit enables farmers to practically plan and record nutrient use and offers advice to enable farmers to meet regulatory requirements.

Waste and Recycling

Since the 2006 Waste Management Regulations meaning that agricultural and horticultural wastes are now classified as 'controlled wastes' there has been an increase in the number of recycling companies operating on farms to remove and recycle waste materials. Plastic wastage is a hot topic not only in our industry, but globally and on dairy operations, single used plastic is widely used. There are several schemes across the country, to help combat this problem. Getting started simply requires farmers to separate and bag up farm waste according to the type of plastic. Farmers can then deliver to a local Environmental Agency (EA) regulated collector site or arrange for collection. As well as recycling steps can be taken to reduce plastic use to start such as buying in bulk especially feed and fertiliser and switching to big square bales, currently net wrap cannot be recycled. Switching to big square bales lessens this problem.

Conclusion

Alongside producing the nation's food, farmers have a vital role in protecting the environment, safeguarding watercourses, reducing greenhouse gas and ammonia emissions. British dairy farmers are already working hard to reduce their environmental footprint and, as a result, greenhouse gas emissions from UK dairy farms have declined sharply over the last 20 years. Lowering greenhouse gas emissions is a responsibility that lies with us all, and I believe that the suggestions outlined in this essay would allow British Dairy farmers to operate in an environmentally sustainable way, whilst still being profitable and progressive.