The role Co-ops play in encouraging viable dairy farming, in marginal areas

A report for

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Executive Summary

Profitability and a quality of life are the two key drivers that ensure the continuation of any farm business over time. You might persevere without one of these for a time, but failing to attain both leaves a farmer, his/her family and their business under too much pressure to ensure its long-term future.

Even with adequate scale, precipitation, sunshine and a market for milk, running a dairy farm business represents a real management challenge. The extra challenge of managing a dairy farm faced with a reduced margin through lack of scale, poor drainage, excessive or limited rainfall can be overwhelming, particularly in a time of increasing market and weather volatility. It takes a special breed of farmer with the requisite management skills to adopt and thrive in these marginal areas.

Historically strong dairying areas around the world have undergone immense change over the last 30 years. As part of my studies I travelled to some of these key areas to see how co-ops and farmer members have evolved in the intervening period. Travelling to the USA, Wales, Holland, England, South Africa and Japan I identify successful case studies which provide lessons on how high performing co-ops can encourage sustainable farming in marginal areas. Having engaged in the Nuffield GFP (Global Focus Programme) and CSC (Contemporary Scholars Conference) I also draw lessons in this report from travel to Brazil, Singapore, Indonesia, Israel and Washington DC.

The key objectives of this study include:

1. Identify the role of modern co-ops in rural communities and their significance for the rural economy?
2. Identify the specific challenges facing dairy farmers in marginal areas i.e. poor land quality, small scale, remoteness and climate.
3. Identify the particular advantages that a co-op can bring to farmers in marginal areas, and what can be done to promote these?
4. Suggest ways to improve farmer involvement and participation in co-ops.

Findings

1. Dairy farming around the world is an important contributor, economically and socially to rural areas and is a key player in ensuring the survival and prosperity of communities especially in marginal farming areas. Dairy farming becomes more important the less employment and economic alternatives there are for people in a community.
2. Marginal areas are more challenging and harder to farm, yet dairy farms in these areas can still be profitable and enjoyable to work on. Dairy farming in a marginal area requires skill and knowledge to achieve profitability and the co-op is an important partner in achieving these.
3. Effective and high performing co-ops are essential to ensure a viable income can be earned by its members in marginal farming areas. Awareness of demands around the world for various food products, and who is prepared to pay, will ensure greater value transferred back to the farmer members in the co-op.
4. Farmers are in control of their future. Through active participation in their co-op and clarity of their plans, they can achieve great things together. Honest and clear communications build's trust within the Co-op. When members understand the reasons why decisions are made, conversations become constructive and productive.

Main Recommendations

1. The many benefits that dairy farming brings to a rural community should be highlighted and promoted for the good of the industry and dairy products produced.
2. Dairy Farmers in marginal areas need to work together and support each other by active participation in their co-op, discussion group etc. Every area has unique problems and local farmers are best placed to address them.
3. Farmers need to communicate in a co-op by encouraging discussion and debate, reconnecting older farmers through new communication systems, and supporting the development of people skills among younger members.
4. Co-op members should receive better tangible rewards for active involvement. Ideas, such as loyalty cards or member participation benefits don't cost much, but can go a long way to encouraging involvement in a co-op.
5. Encourage co-op participation at a young age. It takes time to grow into the shoes of a dairy farmer, young members should be encouraged to use that time to interact with other members and create an understanding of the power of co-op. A module on the role of the co-op should be introduced to the curriculum for Agricultural Science in the Leaving Certificate and this should also be on the curriculum in agricultural colleges and Third level colleges.
6. There should be structures within the Co-op to identify and make use of the talents of the farmer members. Co-ops should take steps to ensure that their committees contain a range of skill sets and personalities, as required, to bring a balance to that committee or board in order to ensure the best outcome for the co-op members.
7. Value innovation, value added and product research needs to be recognised as a profitable investment for the future milk price, not an expense. If we keep doing what we did yesterday, we will get the same result tomorrow.
8. Co-ops need to provide support and clear advice to the farmer members to ensure the long-term benefits of land mobility and farmer collaboration are achieved to help maintain a viable size of milking platform into the future.

Contents

Abbreviations

AI	Artificial Insemination
CEO	Chief Executive Officer
CSO	Central Statics Office
CW	Contractor work, tractor work
EKO	EKO-Holland Co-op
FC	Friesland Campina Co-op
GFP	Global Focus Programme
Ha	Hectare
IFCN	International Farm Comparison Network
JA	Japanese Agricultural Co-op
KMY	Kilmaley Research Farm Co. Clare
MN	Moorepark Research Farm Co. Cork
OECD	Organisation for Economic Co-operation and Development
Veon	Veon Ltd Forestry consultancy company

Personal Introduction

My early career as a dairy farmer was influenced by the fact that my grandfather Sean O Neill was a pioneering dairy farmer, being among the first to use artificial fertiliser in Ireland and milk with a herringbone parlour in 1957.

After finishing school, I studied for my Green Certificate in Ballyhaise Agricultural College in Co Cavan, where I was awarded Farm Manager of the Year.

Subsequently, I gained experience on a pig farm for a year, after which I returned to the family farm. At the age of 21, I took over the farm from my parents. I developed and grew the dairy herd under EU quota restrictions.

About six years later I applied for a place in a Reciprocal Exchange Programme between Macra na Feirme and Rural Youth of Australia and spent 6 great months travelling from rural communities, villages and farms across South Australia and Victoria in Australia. This was a great learning opportunity and opened my eyes to new ideas, systems and personal capacity building.

Around the time that milk quotas were introduced, my mother began to make cheddar cheese from milk produced on our farm and sold it in markets in Dublin. In 1992, our family added to this by producing Boilie cheese which is a soft cream cheese rolled into balls and marinated in sunflower oil flavoured with herbs and garlic. I sold my share of this cheese business to my brother in 1999, and eight year later he sold the business to Fivemiletown Co-operative.

An opportunity arose in 2001 to set up and manage a large goat farm, from which milk was sold to private companies for production of cheese, yogurt and milk. I spent nine great years managing this farm along with my own dairy farm. With the abolition of quotas and the availability of more farmland to lease beside our dairy farm, the decision was made to concentrate my efforts in dairy farming.

I am married to Rose Mary and we have three teenage children Megan, Luke and Niamh. We run a grass-based spring calving dairy farm, milking 180 cows on 63ha in Munterconnaught along the shores of Lough Ramor near Virginia in Co. Cavan. We supply milk to Lakeland Dairies Co-op. Half of our milking block is leased from two neighbours and all heifers are reared under contract 16km away.

Aware of the need for self-improvement, I participated in a number of co-op leadership courses, other training and was actively involved in a dairy discussion group. In recent years I have completed the DCU Ryan Academy Farm Leadership and Entrepreneurship Programme, the ICOS and Macra Co-op leadership course 2013 and the UCD Smurfit Business College / Teagasc Course in strategic Management.

My application for the Nuffield scholarship is a further step in this quest to improve our own farm, my co-op and contribute to our local community. In the course of my Nuffield scholarship I travelled to South Africa, UK, USA and the Netherlands to research my study topic, and also used the opportunity on my Global Focus Programme travels to add to my research.

Rationale for my study Topic

The dairy industry in Ireland is an important contributor to the local and national economy and has seen the development of a number of global food businesses which began as farmer co-operatives.

Dairy farming is a key activity in parts of the country which have smaller farm sizes, a soil type which is poor and not well drained, and where alternative enterprises such as arable farming or extensive livestock production are not viable due to lack of scale. Such areas are known as marginal areas.

Farming in marginal areas poses severe challenges and the only viable farming activities are those which produce high output from a small land area, such as dairy, pig, poultry and mushroom production. Often this requires a high level of inputs imported to the farm, and they must compete for these inputs with farms, in Ireland or abroad, which are closer to ports or the source of production of such inputs.

Areas such as my own part of the country in Cavan, are the backbone of the Irish dairy industry, supplying a large volume of milk from many small and medium sized dairy farms. They have been able to generate incomes which feed into the local economy in terms of services, education and reduce the flow of people from rural areas. However, there has been a significant fall in the number of dairy farmers in my region, and across the EU over the past 30 years.

I want to understand what will happen in the future to places like Cavan, much of which is marginal land, and identify what we can do to enable the local co-op to help make areas with small milking platforms and difficult soils good to dairy farm in?

From an early stage in my farming career, I was very aware of the impact that decisions taken by our co-op would have on our farm, and on thousands of other farms in our region, in terms of milk prices, farm inputs and other services. I was keen to participate in co-op leadership courses which were organised by our co-op and Macra na Feirme (our young farmers organisation) and have done several courses over the years.

My experience in setting up and managing the goat farm and selling the milk to three private processors demonstrated to me the difference between dealing with private processors and being part of a co-op that had the farmer's interest in mind.

Is there a need for dairy farmers in marginal areas and can they work together in a co-op in the 21st century? All these questions push at the main objectives I have set out in undertaking a Nuffield Study on the topic "The role Co-ops play in encouraging viable dairy farming in marginal areas."

On my Nuffield journey I hoped that I would find systems and procedures that will enhance the relationship between the dairy farmer and their co-op, for the benefit of both over time.

Typical Marginal Dairy farming area in Ireland, cows grazing grass summer 2018

My Nuffield Travels

The two years of my scholarship has involved 15 weeks of travel, over 50 meetings and interviews, along with countless discussions with fellow farmers from which I gained perspective on the variety of challenges facing marginal areas around the world.

Travelling commenced in November 2016 with a visit to a dairy farming area in South Africa where there is a recently established co-op Dairy Day. Here I visited dairy farm members and non-members to hear about their experiences.

In March 2017 I travelled to Brazil and saw first-hand how co-ops are helping small vegetable growers (Cooperatriva Cootaquara) and large crop farmers to make a better living (Cooperfibra Cooperative and Agraria Cooperative).

I also participated in the Nuffield Global Focus Programme GFP which travelled to: Singapore, to see the huge importance that global trade plays in having a market for our food; Indonesia, to see the palm oil business and how the land structure works in an informal co-op way for the benefit of the smaller farmer; Japan and its giant JA agricultural co-op structure that has become outdated and irrelevant to the market.

As part of the GFP we also visited Israel to see its Kubutz's, where farm numbers are down to 280 from a high of more than 500. The ones that have prospered have done so through innovation and clarity of vision alongside good communications and education.

In England I visited farms and Board members of co-ops, such as Arla UK, First Milk and South Caernarfon Dairies to see what they are planning for post Brexit UK. While in the USA, I got to spend time with Organic Valley Co-op suppliers in the State of Virginia and attend many discussions about the future of dairying in Wisconsin.

On a key trip to Holland I had the opportunity to study the experience of Dutch co-ops, who have a long and successful history across agriculture and horticulture. Here I met with farmers, board members and executives of several successful co-ops.

I would sincerely like to thank Nuffield Ireland for awarding me the opportunity to undertake this study and especially my sponsor the Golden Jubilee Trust.

Objectives

There were four main objectives in preparing this report.

1. Identify the role of modern co-ops in rural communities and their significance for the rural economy?
2. Identify the specific challenges facing dairy farmers in marginal areas i.e. poor land quality, small scale, remoteness and climate.
3. Identify the particular advantages that a co-op can bring to farmers in marginal areas, and what can be done to promote these?
4. Suggest ways to improve farmer involvement, communication and participation in co-ops.

Introduction

Over time, the dairy industry in Ireland and elsewhere in the world has been evolving. The number of dairy farmers has been declining in the main dairy producing areas of the world.

For example, in Ireland the number of specialist dairy farms has fallen from 26,292 in 2000 to 16,100 in 2016, according to the CSO. In England & Wales the number of dairy farms has fallen from 18,867 in April 2002 to 8,859 in April 2019, according to AHDB. At the same time, the average dairy farm size has grown, particularly in regions with large areas of good land.

There were over 2,000 dairy farmers in Co Cavan in 1988. Thirty years later, there are only 740 dairy farms remaining, with a sharp increase in the average age of the dairy farmer and increase in the average size of dairy farm. This trend has an impact on the area in terms of social fabric, fewer people living in rural areas and consequently reduced demand for services, schools and sports clubs.

Over the past 10 years dairy support measures in the EU have changed in preparation for the ending of quotas and we have seen the virtual elimination of product supports, such as heavy use of intervention, export and internal market subsidies.

There has also been a trend across the world of consolidation among processors. As the processing co-ops and companies grow, how did this affect their relationship with the farmer suppliers? Is there a change in what the processor or farmer expects from the relationship? How do communications between dairy farmers and their processor adjust to the change in business scale? Has the investment in innovation and added value products resulted in a better milk price for milk producers?

These structural changes for dairy farms and processors are a worldwide phenomenon.

At the same time, demand for milk and dairy products is increasing annually across the world, due to population growth and changing dietary preferences of the growing, affluent, middle class cohort in in emerging markets, Asia, Africa, and Latin America. The OECD Agricultural Outlook 2017 to 2026 expects that growth in these emerging markets will contribute to growth in global milk consumption in the order to 1.5 to 2 per cent per annum.

During Ireland's most recent economic recession agriculture came to the fore in stabilising the economy, providing much needed stimulus to help kick start the economy through a greatly increased growth in milk output and capital investment in farm buildings, farm and dairy processing infrastructure.

The Bio economy Input Output model (BIO) (Grealis and O'Donoghue, 2015) was developed to analyse the socio-economic contribution of the agri-food sectors to the national economy. It also identifies the linkages between agricultural sectors and the wider Irish economy. It emphasises how the agri-food sectors purchase many of their inputs locally, resulting in a higher impact in terms of national and regional development compared to other sectors that rely on imported inputs (for example, as evident in other chemical and material manufacturing sectors).

Furthermore, these sectors employ relatively more people per unit of output, further supporting employment in rural regions. The higher levels of national sourcing and employment per unit of output means that "when these sectors increase their sales and in particular their exports, they generate a greater impact on the economy".

The sectors with the higher output multipliers are those Agri food sectors including the milk and `cattle' sectors. These sectors have fewer leakages and have a higher multiplier. As such they are sectors which are more embedded into the national economy. The output multiplier for the dairy sector post milk quota is 2.494; so, for each euro of output produced by the dairy sector, €1.494 of indirect and induced output is generated in other sectors in the economy.

Worthwhile long-term investments at farm level lead to a productive farm that supports its local community through the generation of economic outputs and local jobs, essential to sustain rural communities. These investments are particularly impactful in marginal areas (such as remote areas, challenging soil and weather conditions and dispersed population) where schools and sports clubs are only viable if there are growing families in the area.

A **viable dairy farm business** is defined as one where the farm income can remunerate family labour at the minimum agricultural wage and provide a 5% return on the capital invested in non-land assets. Given the extra cost of producing milk in marginal areas, dairy farmers need to work with their Co-op to look further up the chain of processing to help recoup some of the lost margin.

1. The role the dairy farmer plays in a rural community.

Throughout this chapter the role that the dairy farmer takes in providing financial, social and community benefits to marginal rural areas is addressed.

There is something special about living and working in a vibrant productive and prosperous community that will resonate with most farmers across the world. It brings positivity and enjoyment to a sometimes-solitary profession. It helps to give a purpose to farmers' lives and fulfils the balance between work and social interactions.

A prosperous community ensures that schools and services are available in the area, a vibrant community ensures that these services will be needed in the future and there are enough people to fill the school and have full teams on the local sports grounds. A productive community attracts more people to come and live there.

While travelling through Japan, on the Global Focus Programme it was obvious that rural communities are struggling to survive. The younger people have migrated to the urban areas, leaving the old generation to farm the land. The average age of a Japanese farmer is now 74. According to the National Population Census of Japan1990-2010 and NIPSSR report 2011, rural decline is severe in some areas and the death rate is far exceeding births due to an aging, infertile rural population and migration of young people to urban areas.

In contrast, whilst travelling through New Zealand (on a farm study tour in 2012) it was clear that rural communities have flourished over the last 23 years as cow numbers have greatly increased (Dairy New Zealand 1994 v 2017) and money is circulating in the locality and work is easily available on the many well-structured dairy farms. From 1916 through to 2001 the rural population of New Zealand remained constant at 500,000 people, according to the CSO in New Zealand. Between the 2001 and 2013 census, the rural population has grown to over 650,000 people. According to the New Zealand local population database the intensive growth of the dairy industry is the major contributor to this growth of rural population.

A dairy farm provides a large amount of economic value to a community which in turn provides an even larger multiplier when spent and re-spent through the community. Every 100 cows can provide direct employment for 1.4 people directly on the farm along with another 3 people in the locality, servicing the business from contract work, vet and animal breeding, banking, transport, milk processing, repairs and maintenance etc. (ref: Proposal for loan scheme for dairy industry IFA).

In marginal farming areas, where for example the soil is heavy, or the holding size is restricting, or there is excessive rain, there is a greater challenge for dairy farming in these areas, due to limited scale, lower output or increased cost.

The value of the dairy farm in a marginal area is enhanced due to the lack of other viable farming options. There is no tillage enterprise or scalable beef operation to provide possible viable options. Often, the alternative is to plant forestry on the land as this provides a low maintenance, long term, tax-free income.

Dairy cows in a marginal area will generate income, employment, investment, infrastructure, families and social capital.

Example

Comparing 100 cows on 120 acres v 120 acres forestry.

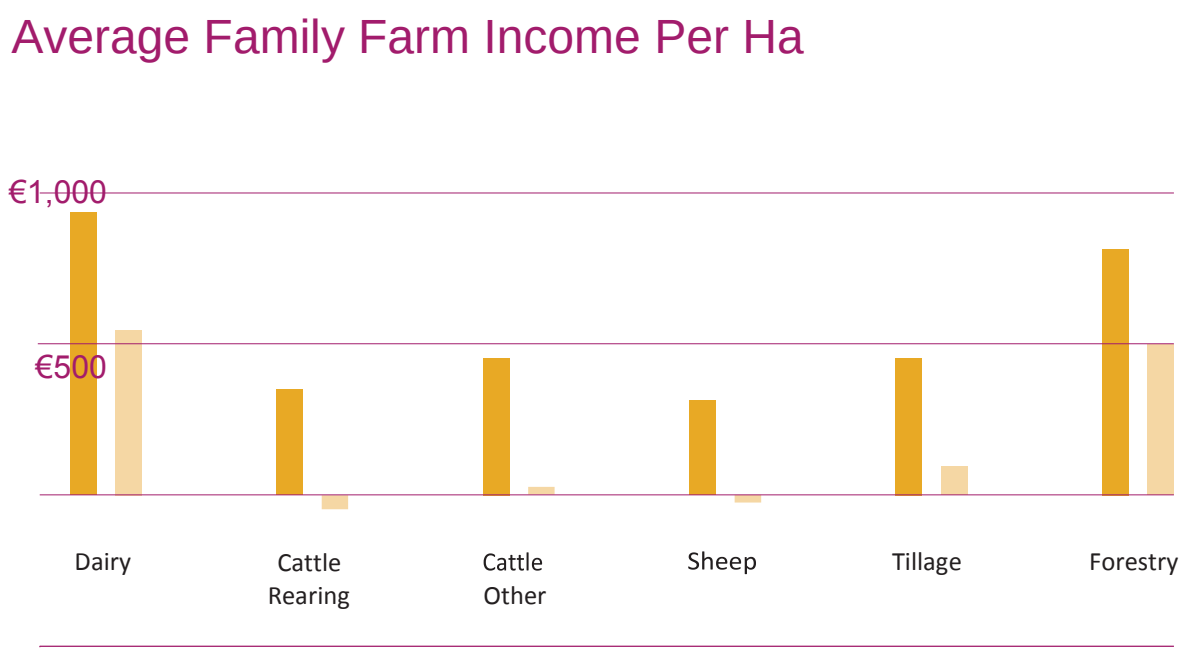

Figure 1 Farm income with and without Basic Payments

(National Farm Survey Estimate]

As can be seen in the above comparison on farm profitability by Veon, a 120-acre forest can return €48,000 per year over a 30-year period with a lot of the profit accruing in the last 10 years. It is very attractive for a part time or retiring farmer to consider this option as it requires limited effort and tax free return. There is a smaller amount of capital invested than for dairying, (particularly as there are 100% state capital grants for establishment) apart from the land value itself.

On the other hand, a hundred cow dairy farm run efficiently on 120 acres, annually can potentially generate total sales in excess of €150,000, and consume inputs greater than €85,000. The investment in stock and infrastructure is high with planning and work to achieve an annual income which at €65,000 per year is higher than that of the forestry.

The real benefit is in the amount of other money and employment the compared two business models will generate in the local community. Most of the forestry money will be kept by one person and limited amounts spent employing some contractors establishing the forest and thinning and eventually cutting the forest for timber.

The forest will have limited employment once established for the first fifteen years, then a few weeks work with first and second thinnings a few years later. Forestry requires far less management intervention and labour input unlike pasture based systems with their seasonal

pattern of operations. On the other hand, the dairy farm has the capacity to create full and part-time employment annually. 100 cows will give a consistent income to a farmer and support the community.

There will be indirect employment with contractors and many service industries relating to the dairy industry and the multiplier effect of the money generated, over €150,000 from the farm per year will be spent seven-fold in the local area.

When dairy farming is compared against cattle and sheep the income is substantially greater from the average performing dairy farm. The 120-acre cattle or sheep farm will only generate an income of €19,500, including basic payment v dairy farm making €65,000 annually.

Unlike the forestry premium the basic payment is not guaranteed and without it the cattle and sheep farm won't be a viable alternative to dairy farming in marginal areas.

Social Capital

Another crucial point to appreciate when comparing other farm systems with dairy farming is the major difference all options carry with social capital. This is the network of relationships among people who live and work in a society or community, enabling that society or community to function effectively.

The Irish census is compiled by the Central Statistics Office and in doing so they highlight areas of deprivation on an electoral division basis. There are various indicators use to determine the level of well-being in an electoral area, unemployment, age of population, level of social welfare, lack of education etc.

Dairying provides a significant amount of social capital to a rural community through supporting employment, income generation and the provision of local services and becomes more important where there are fewer alternatives available for people in a community. By helping the dairy farmer remain productive in a marginal area it will lead to reduced levels of deprivation and help to combat many social issues in rural areas.

Community Benefits

The report 'Creating a New Future for Dairy Farm Households: A Key Element of Rural Renewal', which was carried out as part of the County Clare partnership Dairy Action-Research Programme 1999 (Kinsella J, Mannion J, Bogue P, Slattery P. 1999), highlighted the benefits dairy farming brings to a rural community.

The authors make the point that a diversified rural economy is needed for viable rural communities. According to the report, "the viability of dairy farm businesses results from the combination of farmers' confidence in their future as well as highly efficient management by the farmer coupled with policy measures at the local (co-op), national and EU levels which support these businesses".

The report clearly outlines the importance of dairy to a marginal farming County like Clare "Income from milk is the most important contributor to a viable rural community."

According to the report, the direct financial contribution of dairy farming to the local economy of rural areas is frequently undervalued. The research work undertaken in Co. Clare has shown the significant contribution that small scale dairy enterprises in marginal areas can make in providing viable family farm incomes while contributing significantly to the local economy each year.

Dr. Laurence Shalloo, a researcher at the Animal and Grassland Research and Innovation Centre at Teagasc in Moorepark, extrapolated this to the position of my home county of Cavan in 2018. He concluded that the average size of the 750 dairy farms in Cavan in 2018 is 55 cows. They had a gross income €46,375 and 65 percent of this income returns to the local economy each year. Dairying in Cavan was estimated to be contributing €22.6million per annum to the economy of the county.

The Monaghan Macra na Feirme milk study conducted in 1994 ran a case study of 5 townlands that made up a community. The conclusions from the case study included;

- Income from milk remains the most important contributor to the income of this rural community;
- Dependence on state support directly and indirectly increases as the number of milking cows reduce in a given rural area;
- The percentage of the rural community working in agriculture is declining but their importance for sustaining the rural communities is increasing.

2. Quantifying the dairy farmers extra costs in a marginal area.

In marginal farming areas the cost of producing a litre of milk or kg of milk solids will inevitably be higher. The most efficient farmer with the best skills in the world will still end up spending more on a marginal farm to produce the same amount milk as from a more favourable farm.

In this report references to a marginal farming area are intended to refer to an area that is handicapped by soil type (through poor drainage or a later growth in spring and or early finishing in autumn), experiences an excess or lack of rainfall, and land fragmentation (particularly the milking platform area) which has a major impact on a viability of a dairy farm in a grass based farming system.

Volatility times two

Dairy farmers in marginal areas are typically more vulnerable to the dual threat posed by increased market volatility and simultaneously increasing weather volatility and extreme weather events within the natural constraints of their farm environment.

Milk price volatility is linked to changes in supply and demand in markets. The world demand for milk is growing at an average of 2% to 2.5% year (OECD Report). World dairy production grows sporadically (for reasons of good or bad weather, changes in grain prices, trade and policy changes and other economic factors such as movement in oil prices and currency changes) causing fluctuations on world milk markets leading to volatility in milk price.

The second area of volatility comes from having to carry and produce extra winter feed which must be stored in reserve for possible weather issues. In normal weather, grass grows well and can be consumed efficiently by the cow or conserved in the form of high-quality silage for winter feed. The output of grass grown and utilised can match many good dairy farm areas across the country in normal weather.

However, when there is excessive rainfall, or late Spring or early Winter, growth rates and utilisation rates drop dramatically in marginal areas. Recorded growth rates on marginal land in the dairy unit at Ballyhaise Research College Teagasc has showed up to half of the annual growth rate lost due to poor weather conditions or flooding issues delaying grazing or harvesting of the grass.

Two studies, Patton (2012) and Shalloo et al (2004) compared the biological and economic efficiency of a seasonal pasture-based spring calving system of milk production.

Patton et al (2012) compared Ballyhaise in Cavan that has a typical mix of dry, wet and heavy soil with Moorepark in Co. Cork that is all dry and fertile soil. Shalloo et al (2004) compared a high-rainfall, heavy-clay soil [Kilmaley (KMY)] to that on a lower-rainfall free-draining soil [Moorepark (MPN)] in Ireland.

Analysis of the system of milk production at the two sites was undertaken using Teagasc's Moorepark Dairy System Model. Herbage dry-matter production was greater at the MPN site with a greater proportion being produced between 1 September and 1 May.

On average, over the 3 years, the system of milk production at the MPN site had a higher stocking rate (2·34 vs. 1·89 cowha^{-1}), higher milk production per cow (6421 vs. 5781kg per cow), longer grazing season (250 vs. 149 days) and a higher proportion of the diet of the herd from grazed grass (0·70 vs. 0·40) than at KMY.

Economic analysis showed that, the cumulative loss of output and increased winter feeding resulted in a 3 to 5 cent extra cost of producing a litre of milk from the Marginal land in Ballyhaise Co. Cavan and Kilmaley in Co. Clare. The results also indicated that milk production in the future may not be sustainable economically on high-rainfall, heavy-clay soils in Ireland.

Extra costs will arise from lower production of grass in Spring and Autumn, lower grass utilisation, higher feed costs and with a longer winter of up to 100 days associated with a dairy farm in a marginal area there are higher capital costs for extra slurry storage required and larger silage storage areas.

The repairs and maintenance are higher per hectare as there are more roadways, open and underground drains and hedges to upkeep. The cows spend longer in winter accommodation which leads to a high maintenance cost on the farm.

So, we can conclude that it costs from 3 to 5 cents more to produce a litre of milk in a marginal area as opposed to a dry grass based dairy farm.

On a farm with 80 cows producing 5000 litres per cow annually, this amounts to an additional cost of between €12,000 and €20,000.

On this basis, for a region or county with 750 dairy farmers in these circumstances, the added cost amounts to between €9 m and €15 m per year.

South African example of marginal area

In South Africa Brian and his son Simon Greene run Excelsior Farm. They run 900 milking cows on 155ha irrigated pasture, 90 ha of dry land and 400ha of hilly native land called veldt. There is also a 240ha support block where 110 ha of maize is grown for the dairy cows and replacements are reared. Thirty percent of the herd is autumn calving and the spring calving herd calves over 4 months, which helps to keep an even milk supply.

Brian and Simon Greene on their Excelsior farm near Howick in South Africa.

In addition, water needs to be stored on the farm after spring rains and saved for irrigation. The farm is high in the hills, three hours north of Durban. They struggle to get intakes of grass dry matter above 12kg per cow because every year the local kikuyu grass grows more vigorously than the more palatable perennial ryegrass. They must spray off large areas that get overtaken by the kikuyu grass and sow new grass seeds every year. The soil has a natural pH of 4.5 to 5 and needs lime at the rate of 2 ton annually.

This all adds to their costs of production. The irrigation storage, pumping costs repairs and depreciation add up to 20c ZAR per litre which equates to 1.3 cent(€) per litre of milk produced. The seed and lime etc adds up to 2.2 cent(€) per litre (giving a total additional cost of 3.5 cent(€) per litre.

3. The importance of the co-op to the farmer

Given the extra cost of producing milk in marginal areas, dairy farmers need to work with their co-op to look further up the chain of processing to help recoup some of the lost margin.

Wisconsin, USA

The author had the opportunity to attend the Wisconsin Dairy Summit at the end of his six weeks Global Focus Programme, in July 2017.

Wisconsin is America's dairy state. In 1950 there were 143,000 dairy farmers, 4% of US dairy farmers. Today there are 9,106 dairy farms in Wisconsin which is 20% of the dairy farmers of the US.

The State has many private processors and some co-ops. In the USA Department of Agriculture's directory for milk processing sites in Wisconsin, there are over 220 private or incorporated listings and a variety of some 14 small co-ops.

The private processors predominately process cheese and are slow to expand their production plants, as they also struggle to see value in seeking out new markets. This would require them to market their products overseas. They have a genuine fear of the impact of free trade around the world with the actions of the present US administration.

The news of difficulties arising in this great dairy state due to an oversupply of milk and changes in business relations with its neighbour, Canada, made news in the local and international press in April 2017.

Without prior warning, 58 dairy farmers received a letter from their processing company, Grassland Dairy Products, informing them that it would cease taking their milk, three weeks later. The farmers were told that they would have to find a new purchaser for their milk.

The reason for cancelling their supply contract was due to a reduction in demand from Canada for ultra-filtered milk used in the production of cheese. This had occurred because five Canadian provinces had increased their milk quotas, which stimulated local supply in Canada, at the expense of imported product from the USA. In retaliation for this, President Trump slapped tariffs on Canadian lumber. This added to uncertainties about the risk of further escalation, and the impact on dairy exports.

The suppliers to Grassland Dairy Products should have been made aware by the company several months earlier that this change to their supply contract was a possibility. There was unease among farmers about the manner of selection of farmers whose contracts were to be cancelled, with suggestions that the processor wanted to get rid of farmers further from the processing plant in order to reduce costs.

Fortunately, due to a mix of State and Federal government pressure, along with some hard bargaining by the Wisconsin Farm Bureau, 56 of the 58 dairy farms found a new home for their milk, most of them with contracts of longer than six months duration. Each of these farm families went through the turmoil and stress of not knowing who would take their milk and what future the farm business would hold for them. The other two farmers had to reluctantly

sell their dairy cows, and change their farming business, and are now rearing cattle for other farmers.

When one gets to experience at first-hand the issues and emotions that these farm families went through, one can appreciate what is often taken for granted in a co-op, where market signals are shared, and there is security of supply for members of a co-op.

While in Wisconsin there was no stand-out Co-op or processing company holding out for the farmers. It was very much a case of trading milk through a national standardised payment system, receiving the current price as the milk is sold.

When the milk price is good, the larger farmers look to expand more, and processors tend to cherry pick the easier accessed farms that are economically rewarding for the processor's business.

This experience in Wisconsin brought home the advantage of having the co-op to share key market information in a timely manner and a commitment to ensure the collection of the dairy farmers' milk, and is an important business connection between farmer and co-op.

Dairy-Day Co-operative– South Africa

The South African dairy industry is the 5th largest part of the agricultural sector in the country. It went through a steep decline after the end of Apartheid, from 40,000 dairy farm holdings to 1,300 larger dairy farms currently. South Africa operates a free and open market, where imports (with very low tariffs) can compete easily with home produced product.

Dairy processing is carried out by five large and 163 smaller processors. In the past there was strong government influence on the industry, in some cases leading to factories being located in the wrong areas, and excessive price falls when there was over-supply.

The author visited the KwaZulu-Natal region, which produces 28% of the countries milk supply. It is a marginal region. Dairy farms in this region are a long way from markets in the main cities. They all require irrigation to produce feed and have historically taken the lowest milk price due to distance from market. This is compounded by the difficulty keeping good staff, due to their preference to live closer to cities.

In early 2016, three business entities were set up by 30 dairy farmers in KwaZulu-Natal. One of the entities was a co-op, and each farmer took a shareholding in Dairy Day Co-op in proportion to the milk that they supply. The other business entities were operating entities and a holding company. The co-op had an 85% share in the holding company, with the 1,200 employees having the remaining shares. The operating business had two processing plants, with capacity to handle 600,000 litres per day, producing sterilised milk, yogurt, cream, juices, dairy blends, butter and powdered milk.

The aim of the business was to address fluctuations in producers' price, provide security of supply to retailers and thereby create more demand for their product. The bank supported this venture, because they saw the benefit of the farmers move up the value chain.

The motivation for this venture was to take steps to minimise volatility caused by private processors exaggerating the downturn in the market and ensure that farmers get a market price from an integrated business. Farmers agreed to produce a flat monthly supply to reduce risk of surplus, and a reliable supply for the fresh market.

Unfortunately, the business was unable to meet it's loan repayments, and had cashflow difficulties due to payment delays from retailer customers. It began to lose farmer suppliers, and less than two years after setting up the business, the bank got a court order on the movable assets of the business.

The take home message of this was that the ambition of the farmers to move up the value chain was correct. However, they were naïve in their knowledge and understanding of the realities of the market, and the practices that retailers adopt towards their suppliers. It was a tough lesson for a group of farmers who were trying to get a reliable outlet for their farm produce, and they had to revert to supplying private processors.

Value Innovation.

Innovation comes about from pursuing a point of difference or differentiating one product over another. Good branding is achieved through communicating the real value of a product once you know what the market is looking for.

Like many things in business the appetite for value innovation comes about from having the right culture in place in the organisation to grasp the concept and the energy needed to find the product to enable value innovation to occur.

The world through which items, including food are bought and sold is changing in a disruptive manner. The way it was sold yesterday will not be the same tomorrow.

"Value Innovation is about cutting production costs at the same time as adding value by giving the consumer something different" - Quote from Blue Ocean Strategy W. Chan Kim and Renee Mauborgne.

Processing a quality product efficiently, while at the same time creating a strong demand for the product will ensure a better return can be achieved when selling the product range.

The study and research of the innovative dairy processing sector led the author to Holland to see how their dairy farmers benefit from their added value products and consumer focus. In an interview with the Chairman of FrieslandCampina Co-op Frans Keurentjes, he put the importance of value innovation simply…." the closer the dairy farmer gets to the hand of the consumer the greater the profit for the dairy farmer."

There are two elements to the milk price paid to farmer members of FrieslandCampina.

The first part is a "guaranteed price" which is the weighted average milk price paid by 16 of its main competitors in the Netherlands, Germany, Denmark and Belgium which account for 54 bn litres of milk.

The second part is the performance bonus, which amounts to 35% of the distributable profit for the year. Payments above the "guaranteed price" amounted to 2.6 c/litre in 2018, and was almost 3.9 c/litre in 2017 at 3.47% protein and 4.41% butterfat. The performance bonus is a reflection of the operational efficiency and added value.

This premium is paid shortly after the year end to FrieslandCampina member farmers. It is a transparent for farmers and an indicator of the performance of the business relative to comparable dairy companies in the region. Board and management have this measure to drive them to innovate, add value and improve operational efficiency.

Business to business selling of milk and milk products will achieve a reasonable return to the co-op for milk, but to achieve the higher rewards for the dairy farmer the connection to the consumer needs to be close.

Over the past 30 years, with the power of the supermarket, dairy farmers have had little opportunity to build a direct connection with the ultimate consumer. The relationship was firmly controlled by the supermarket, restaurant chain or business who made sure to keep the farmer out of the picture.

With Society changing through digital disruption and consumer interest in where their food comes from, it will become even more important to have a clearer fingerprint of the farmer/co-op on the food product, when handled by the consumer. There are many other competing voices in social media.

Friesland Campina Co-op are in the process of educating the farmer members about the value of innovation and new ideas along with the importance of adding value to the co-ops products. Part of this strategy is to improve the farmers understanding of what the consumer is looking for and the benefits this will bring to the co-op when its members understand the consumer. FC has 20,000 dairy farmer members and through this strategy the co-op is "hopping to connect the emotion and passion of the food producer with the consumer who has passion for good food and is willing to pay for it".

Frans Keurentjes admits that this is a big connection. He is very clear that it must happen or there will be no co-op in the future and good employees will go elsewhere and farmers will leave the co-op or look elsewhere.

The author also experienced a simple example of this working at co-op level when he visited Co-op fibre Brazil, where they have gone on this journey.

Co-op fibre Brazil

Based in the state of Mato Grosso do Sul, central-west Brazil, a relatively new farming area along way from any large market or port. Its members are very reliant on world commodity prices for their farm produce.

This co-op has transformed its business by separating the farm inputs and advice section of the co-op into a separate standalone co-op. The remaining business of Cooperfibra as the name might suggest specialises in processing cotton and storing soya bean to sell for its farmer members.

The Co-op has invested heavily in modern technology, spending US$45m on modern Cotton Gins to weave and process the poorest quality 20% of cotton that all members produce, to a fine and reliable standard.

Before this, the poorest quality cotton was sold for small money and at times given away. This had the effect of greatly reducing the overall price of the better quality 80%. Now it sells this processed branded cotton onto the domestic Brazilian market where it is valued and sought after.

The 80% higher quality cotton is shipped on to China where it is obtaining a premium price for the members of the co-op. The co-op takes 1.5% of turnover for profit. This allows farmer growers to make a good profit on **all** the cotton they grow.

The farmer members have gone along this route to set up and separate the two business structures to ensure **clarity in the cost of processing** the cotton. By upping the value of the poorer quality 20% **through quality processing** it has had a positive effect on the remaining 80% of quality produce they export.

Market for milk

In South Africa, Wisconsin, Scotland, England and Wales the author visited farmers in co-ops, farmers processing themselves and farmers selling to private processing sites.

What became very clear was that the farmers supplying to the co-op over time might not have always got the very best milk price but always got his milk collected and was sure to get paid for it.

In Ireland, Holland, New Zealand Denmark and Brazil where there is a strong history and culture of cooperatives. Milk is collected and paid for by the co-ops.

In England there is little loyalty to a given co-op/processor and dairy farmers seem to move around if contracts can be improved or bargained out. Currently there are more than 58 different contracts at play in the English milk purchasing market. If you are out of contract at a time of oversupply, you will do well to get your milk sold.

The importance of the co-op to the dairy farmer cannot be emphasised enough. In an interview with Pete Boer former chairman of Friesland Campina he put it in simple language as only Pete can.

“On my own I am small, together we stand strong”, he went on to explain that for the co-op to work well for the farmer the farmer needs to be involved with and understand what their co-op is doing.

Advice and Support

A good co-op always has a network of support services available to its farmer members dealing with an enormous range of subjects from simple milk quality issues to regulations, trends, research, business and farm support.

Who pays for these services should come down to how relevant they are to most farmer members and how best the value can be achieved for either the co-op or individual farmer member.

In areas where specific challenges face members like, for example how to achieve good milk solids or achieve a viable area to dairy farm, there needs to be support to educate the farmers about how to set a plan in place and ways to implement the plan through to a successful completion, while working with the co-op or suggested advisory bodies.

Research

The co-ops around the world that have a research programme of significant importance are usually the ones that are willing to reinvest in research time and time again. It must be an asset to the co-op and a much-needed investment for the longer-term reward of a strong milk price for the dairy farmer.

When striving to achieve a good milk price, a balance between market knowledge, quality produced product, scale of processing and product research enable it to happen.

Processing Efficiencies

In the Nuffield report "Co-ops for 21st Century" by David Murphy a 2011 scholar explains and quantifies the savings that can be made from co-ops working closer together. He concluded that it is possible to have up to 3 cent per litre of a saving in efficiencies of processing through managing the collection and processing of milk to the most efficient sites.

4. The Importance of farmers and cooperatives working together.

The best performing co-ops around the world such as FrieslandCampina have members actively involved in the running of the co-op and are investing in the education of future leaders of their co-op.

The Netherlands has a rich history of cooperation amongst its farming and business community. The Culture of the farming community in the Netherlands towards production and practical solutions "to make it happen" have long been admired and respected around the world.

The Netherlands is an Agricultural powerhouse, an area half the size of Ireland producing over €68 bn of food for export versus Ireland's €12 bn. They have come to a point in time where they now must reduce production due to over intensification and are under scrutiny from their urban neighbours, who are cohabitating in a heavily populated country of 17 million people.

In the Netherlands, co-operatives dominate many sectors of agriculture and horticulture with examples being FrieslandCampina (dairy), Royal Cosun (sugar beet), Royal Flora Holland (flowers & ornamental plants), Coforta/The Greenery (fruit and vegetables) and ForFarmers (feed, fertilizer, farm supplies)

Even the country's main financial provider, Rabobank, is a co-op.

One farmer run co-op that I visited was EKO Holland-Melk op Maat co-op based in the peatland area of the older more traditional Dutch dairy farming region, south of Utrecht.

EKO stands for the ecological production of milk that the consumer needs. It is an organic milk co-op that started from the growing demand for organic milk in 2002 by 23 farmers. Fifteen years later it has grown to 180 dairy farmer members selling over 100 m litres of organic milk, the market is growing by 4 to 6% annually.

It organises the collection, processing and selling of its organic milk and dairy products through contracts and joint ventures, with 13 processing partners, while owning very little processing equipment itself. More recently it has formed an alliance with the Organic Milk Suppliers Co-operative in Somerset and Organic Valley Co-op in America.

Rene Cruijsen is the Chairman of EKO-Holland co-op. He is an organic dairy farmer operating near the village of Dreumel in Gelderland. He farms 100 dairy cows with his wife Petra and son Tom. He has a strong and positive vision for the future of the co-op and organic milk. The organic farmers are doing a lot better working together in the co-op than outside of it.

Under Rene's leadership the farmers have discussed in detail the importance of the co-op for the benefit of the farmer member. There are clear internal communications between the farmer members and Board members with an emphasis on trust and transparency.

Rene Crujsen Chairman EKO Milk co-op.

The co-op is there to benefit the farmer members, through a good milk price, long term customers for their milk, markets and product lines for their milk, support for organic farming methods and research at farm level.

The co-op is taking on 15 to 20 dairy farm conversions to organic each year. New farmer members must be of benefit to existing members and an interview process will happen between 2 or 3 existing members and a potential new member across the applicant farmer's kitchen table. When the new member joins he/she must commit to attending co-op meetings and help with the running of the co-op for the benefit of the fellow farmer members.

The members meet as one group twice per year, once to "eat and meet" and get to know each other, the other time to discuss the more serious side of the business. The Co-op also holds a family day once a year where all the family of the members and staff are encouraged to attend for a fun day with the aim to increase the awareness of the importance of the co-op to the dairy farm families.

Rene is clear that a co-op this small must have very clear communications both to the members and from the members back to the board. The board of the co-op needs to listen to members and members need to understand why the board does what it does. He sees this as a major strength to EKO Holland co-op," It is about doing things together and how we can do it together and why we do it together, the importance of these words can be lost in the larger co-ops of today".

The successful working of this 2-way communication system is achieved in EKO through honesty and trust and a good understanding of the importance of the co-op in achieving a very healthy milk price and many different routes to market for the farmers' organic milk.

To date a lot of the administration, Logistics and accountants are overseen by the dairy farmer members who provide different expertise to different areas and get compensated for their time at an expense rate of €25 per hour. As the co-op grows there is an increasing pressure to employ senior Management to oversee these roles.

Jaco de Groot is milking 200 Ayrshire x Red Friesian cows organically and delighted with the performance of EKO Holland co-op and the price he is getting for his milk. Along with Lisbeth, his wife, they find it exciting and an enjoyable challenge to be part of a co-op that is working for them to achieve new valuable markets for their organic milk.

They are farming in the centre of the peatland and manages to get their cows grazing by day for most of the summer and by night when the weather allows. Jaco cuts all his silage into round bales for best quality and to have grass coming recovering for the milking herd.

Most of the co-ops I met had a clear purpose for their members and did not get involved in activities not directly connected to that purpose. The co-ops do not put a market value on the shareholding or membership in the co-op, as this is not what the co-op is there for. Once there is clarity in the communications inside the co-op as to what the co-op is there for, it makes it very easy for the board and members to focus on that area and achieve great rewards and results for the members of the co-op.

The author Owen Brodie with Jaco De Groot on a viewing platform overlooking the winter accommodation for the dairy herd.

5. The Importance of good communications within the cooperative for the benefit of both the farmer and co-op.

To achieve trust requires good communications between the dairy farmer, regional committee, board member and management of the co-op. The dairy farmer needs to know why the co-op does what it does. The regional committee should support the board in its role and provide help and ideas through having a knowledge about what needs to happen. The board members need to communicate well with each other and back to the regional committee and ultimately back to the farmer.

Without this clarity of internal communications, the chances of having farmer involvement is greatly reduced. The interest and pride of ownership of the co-op is lost.

Piet Boer former chairman of FrieslandCampina, says "the farmer member needs to understand the business sense and direction of the co-op. There needs to be clarity in the **why** we do what we do, and members need to know what is expected of them and what they expect of the co-op"

Piet further went on to emphasise the importance of clarity and proper governance, and that there needs to be clear separation in roles between farmer board members and management roles in the business.

Clarity of who is responsible for various jobs a co-op and how they are controlled and supervised through good governance is covered in detail by Tom Mason, New Zealand 2005 scholar, on his study titled 'Corporate Governance in Agricultural Co-operatives', which was published 31st January 2006, particularly within co-ops.

Arla Co-op

Joe Delves UK Nuffield scholar and UK board member for Arla Co-op outlined the improved system of communication being rolled out by the co-op to connect the farmer members closer to the co-op.

The Co-op has 12,000 farm members in seven different countries speaking 6 languages.

Through its **Global Community** and **Arla Farmer App** it has developed simple two-way communication systems that are connecting the farmer members around the world and ensuring everyone can have the opportunity to improve farmer involvement and share information across borders. This improves farmer satisfaction through understanding why things are happening and creates a community to enable communication and dialogue.

Transparency builds trust

Friesland Campina (FC) Co-op since its merger in 2009 has invested heavily on systems and structures for internal communication with its 19,000 dairy farmer shareholders. The web based **Melkweb** site is for members only and allows discussion to happen in both directions. They have also invested in research and innovation for new dairy products every year.

FC is on a journey to add significant value to all the milk it assembles from its farmer members. FC current aim is to achieve a return greater than 15% on the capital invested in milk processing, one of its best investments is returning 50% plus on the capital invested.

One of Frans Keurentjes drivers as chairman of the co-op is to communicate and be honest, "trust comes by foot and goes by horse". For trust to work there needs to be a clear and structured system of communicating in a co-op between the farmer member and the regional committees and the farmer board of the co-op.

Two-way communications

When managed properly internal communications can prevent misunderstandings, avoid overlapping of work, provide clarity and harmony in the workforce and most importantly the nurturing of great ideas and improved ways of performing tasks in the business.

The structure of farmer representation in the co-op has an important role in ensuring successful two-way communications. The more structured and effective the representation the faster the ideas and suggestions will flow with a conversation working both directions.

New Zealand 2010 Nuffield scholar Desiree Reid suggested good structures for working co-ops in her paper "How do Dairy Co-operatives Grow for farmers Benefit".

Internal Communications are the function for effective communications among participants within an organisation.

A good communication system will have all sectors from the farmer to the chairman connected in a simple line of communication with clarity from one end flowing right the way to the other and back again.

FC co-op structure encourages a two-way system of communication. There are nine board members with 200 council members below them and 20 districts below that. The 20 districts or regions meet board members two to three times per year. Board members are also contactable directly. Members are encouraged to bring ideas forward; they then get evaluated and dismissed or progressed up the line.

Plans are in place to improve this process by educating farmer members about the benefits of understanding the consumer. FC wants to open the eyes of its farmer members towards innovation and latest ideas. FC is hoping to connect the emotion and passion of food production with the consumer who has passion for good food and is willing to pay for it.

One way to gain a better understanding of members, was for board members to go and attend area meetings outside of their own area to understand problems in other areas and get to know members from other areas/regions.

There are different systems of communication depending on the age and capabilities of the member, younger member happy to engage on social media while older member probably more interested in hearing information at a meeting. It is most important for issues to be addressed and reasons why ideas where not good enough to implement to be communicated back down the line.

Rewards

Everybody likes to be recognised and appreciated for their efforts big and small. To keep people involved and engaged in the co-op there needs to be rewards, both tangible and intangible for the members' effort.

A positive experience needs to be celebrated, communicated around other members and congratulated on. For every tough meeting there needs to be a sociable one.

Any opportunity that comes should be used for the benefit of all members to celebrate and build on the involvement in the co-op of those members.

Organic Valley

Its name gives away its simple core values, organic milk from farm families in the rural valleys of America. It is a national co-op of farmer members spread across most of the states of America.

While travelling America the Author got to meet Philip Witmer from Dayton, Virginia. He is an organic dairy farmer with 200 cows. He is one of the 2,000 family farms and 900 employees that make organic valley what it is today. They all pool their passion and resources to bring organic food to the tables of people across America.

The Co-op was established in 1988 to help organic dairy farmers to help each other to make a better living and give its farmer members security over time with a market for their milk and a good milk price relative to the prevailing market price.

Philip is confident of his family's future in dairy farming, with two of his siblings pursuing further education in Agriculture. Presently times are tough for family dairy farms in America with lots of retirements and farm sales going on.

Philip sees the benefit of his family farms cooperative involvement. He knows where his milk is going, the staff processing his milk, the shops and businesses using his family's milk and most importantly the satisfied consumer who buys the milk.

This happens because there is a clear two-way system of communications within the co-op. Members must be involved in the co-op. Philip has experienced other co-ops before he converted to organic dairy farming. He believes Organic Valley excels at working together. The producers Board and Staff all work closely together as they have a clear vision and know they are stronger by working and communicating with each other well.

There is a Board of Seven members, all dairy farm members. Each member attends an annual meeting and two regional meetings minimum per year. Members are spread across the US, thus many sub-committee meetings are held using conference calls and Skype.

Over time the board members must rotate each regional meeting they attend for the farmer members to discuss issues and bring forward ideas to them. Philip finds this is beneficial for all as it gives the farmers a chance to get to know the different board members and it helps the board members to understand different issues in each region.

In connecting the board members directly with all farm members Philip also sees the board members bringing clarity and understanding into a discussion that the farmer members appreciate, instead of a polished presentation that blocks communication and discourages discussion.

Philip is currently getting $55c per litre for his milk (Co-op price is $29/cwt). This price is only 20% of the peak that Organic Valley paid out in 2014. Currently most American dairy farmers are getting $16/cwt.

The average farmer member in Organic Valley has 72 cows ranging in size from 20 to 500. The co-op has limited their members to 500 cows and due to the success of the co-op have had to implement a two-tiered pricing system. Last year's production level gets the good A price while any extra produced gets $20/cwt less than the market price.

Organic Valley farmers are 10 years younger than the national average; they have families who like Philip's have successors wanting to farm, as they know they are part of a strong organised co-op that has developed a profitable market for its dairy products. They are part of something that encourages them to have a say and rewards them well for being involved.

Even in a though trading environment Organic Valley has exceeded $1.1 bn sales figures for the third year in arrow. The co-op is spear-heading an innovative plan to promote a grass-fed Organic dairy standard and seal, it has also launched several new Grassmilk products.

Conclusions

1. Dairy farming around the world is a major contributor, economically and socially to rural areas and is a key player in ensuring the survival and prosperity of communities especially in marginal farming areas.

2. Dairying provides a significant amount of social capital to a rural community and becomes more important where there are fewer alternatives available for people in a community.

3. Marginal areas are more challenging and harder to farm, yet dairy farms in these areas can still be profitable and enjoyable to work on.

4. Farming in a marginal area requires skill, knowledge and profitability. The co-op is an important partner in achieving all of these.

5. Effective and good performing Co-ops will ensure a viable income can be earned by their members in marginal farming areas.

6. Awareness of demands around the world for various food products, and who is prepared to pay, will ensure greater value transferred back to the farmer members in the co-op.

7. Farmers are in control of their future. Through active participation in their co-op and clarity of their plans, they can achieve great things together.

8. Honest and clear communications will build trust within the Co-op. When all members understand "**Why**", conversations become constructive and productive within the co-op.

Recommendations

1. The benefits that dairy farming brings to a rural community should be highlighted and promoted for the good of the industry and dairy products produced.

2. Dairy Farmers in marginal areas need to work together and support each other by active participation in their co-op, discussion group etc. Every area has unique problems and local farmers are best placed to address them.

3. Farmers need to communicate in a co-op by encouraging discussion and debate, reconnecting older farmers through new communication systems, and supporting the development of people skills (such as public speaking, effective meetings, business etc) among younger members.

4. Co-op members should receive better tangible rewards for active involvement. Ideas, such as loyalty cards or member participation benefits don't cost much, but can go a long way to encouraging involvement in a co-op.

5. Encourage co-op participation at a young age. It takes time to grow into the shoes of a dairy farmer, therefore young members should be encouraged to use that time to interact with other members and create an understanding of the power of co-op. A module on the role of the co-op should be introduced to the curriculum for Agricultural Science in the Leaving Certificate and this should also be on the curriculum in agricultural colleges and Third level colleges.

6. There should be structures within the Co-op to identify and make use of the talents of the farmer members. Co-ops should take steps to ensure that their committees contain a range of skill sets and personalities, as required, to bring a balance to that committee or board in order to ensure the best outcome for the co-op members.

7. Value innovation, value added and product research needs to be recognised as a profitable investment for the future milk price, not an expense. If we keep doing what we did yesterday, we will get the same result tomorrow.

8. Co-ops should provide support and clear advice to the farmer members to ensure the long-term benefits of land mobility and farmer collaboration are achieved to help maintain a viable size of milking platform into the future.

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