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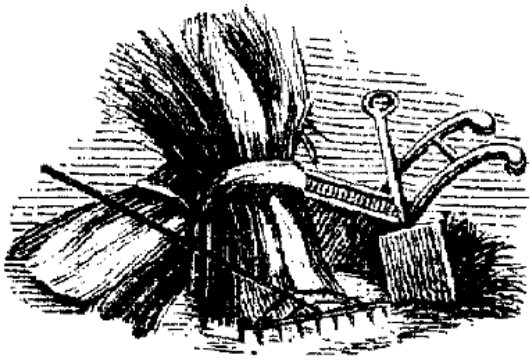

Setting up Secondary Dairy Units

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Executive Summary

- Efficiency is paramount, whether over one unit or multiple.
- Be aware of diseconomies of scale as you expand.
- Running multiple units is possible. Concentrate on the key areas of: People, Systems and Monitoring to help ensure success.
- Quick establishment of a second unit.
- The ideal herd size will be one that can be run by 2 or 3 people.
- Sharing of machinery and labour is difficult but possible.
- Fragmentation of land hinders future development of viable enterprises in Northern Ireland

DISCLAIMER

Introduction

I farm in the hills of Co.Down, Northern Ireland in partnership with my parents. We run a 200 cow medium input/output autumn and spring calving dairy herd. My aim in my farming business is to do a job that I really enjoy while providing adequate income and time for other things that are important to me. I am committed to the work and witness of my local church and believe that if a job is worth doing it is worth doing well because I do it to the glory of God. After leaving school I did a 3 year National Diploma in Agriculture at Greenmount College and then went home to the family farm. I have been very fortunate that my parents have been willing to let me make changes and try doing different things on the farm. Many young farmers in Ireland have not benefited from this opportunity and I am indebted to my parents for providing it for me.

I spent my first 5 years on the farm evaluating what system I would like to run and the next 5 years moving towards that system. While there is still room for improvement I felt this goal was in sight and the main requirement was time to allow everything to fall into place. I then started to consider "what next"?

Background

In Ireland there is great reluctance to part with the family farm. I am the 5th generation on our farm and hope some day to have the opportunity to pass it on to the next generation. One thing that has been true for the previous generations is that the business has had to progress or it would be left behind and would not have been a viable full time unit for the next generation. At some point in each generation cow numbers have been increased or extra land taken on. This served to both increase output and reduce costs by spreading overheads.

I am not saying that all farms must expand. Many in the UK are of a large enough scale that they will remain viable units for the foreseeable future. The farms in Northern Ireland tend to be of a smaller scale with the average herd size of 75 cows. Many of these farms will not be viable in the future. Even the above average units, which are double this size, may not prove to be viable for the next generation.

Northern Ireland processes and exports over 80% of its milk. Because of this we are much more open to price fluctuation than our mainland neighbours. On top of this, with the removal of the support mechanisms in Europe, we can expect more volatility in the future. Anywhere else in the world where there is a region producing milk and exporting the majority of it onto the world market the average farm size is much larger. This has happened out of the necessity to keep the business viable. The

exception to this rule is the Republic of Ireland where farmers have been held back by a restrictive quota system. They too are feeling the pressure of small scale and have launched their Food Harvest 2020 report which aims for a 50% increase in milk production by the year 2020. This will be achieved by increasing output per farm rather than the number of dairy farms.

My ambition is to expand my business to a level which is sustainable for my own future and that of future generations For me the system for the future will be one which can come through the low milk prices and still be in a strong position to benefit from the peaks. I believe we can run a system that achieves this. The challenge is in finding ways to achieve the necessary expansion. The biggest barrier to expansion in Northern Ireland is the fragmented nature of land ownership. The vast majority of land has been owned by farmers rather than landlords. This has encouraged an attachment to the family farm and a reluctance to sell it. In my area the traditional farm was in the 20-30 acre bracket. Now farmers tend to own a number of portions of land, not necessarily adjoining. This has added unnecessary expense to the agricultural industry here as it necessitates a lot more road work transporting stock, slurry and feed sometimes over quite large distances. All farmers have felt the financial pressure to get bigger. To achieve this most have kept more cows on the same grazing platform and have brought in extra feed. This system has worked well in periods of high milk price but can really struggle in the troughs. It also adds quite a lot of complications to the enterprise and the farmer can find that he is more tied to the business than he was before. Going forward, if the farmer wants to expand again he has little option but move to an almost fully housed herd. While this may be quite feasible in some situations our volatile milk price and expensive bought in feeds will leave this unsuitable for most farmers.

On our home farm we have 34 ha accessible for grazing of the Dairy herd, 9ha of which are rented. In the grazing season we keep 150 of the 200 cows at home and the other 50 are milked on an out farm. This has it inefficiencies however, as in the summer, we require two people twice a day for milking but it allows us to keep 200 cows milking through the winter on the home farm. It is also much better at seeing through a milk price suppression than the housed system mentioned above. With this in mind I have wondered if we can expand on this model and start a fulltime second unit or even a third part-time one.

The Study

From my Nuffield Study I hoped to discover

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- Are multiple Dairy units a realistic way forward?
- What are the important factors in making multiple units work?
- What is an efficient unit size?
- How should staff be remunerated and offered incentives?
- How machinery and labour can be shared between units?
- Pointers for general management?

In writing this report my aim is to be able to offer a starting point for anyone considering a second unit. I hope to help them evaluate if a second unit is a good option for them and what is important in making that unit successful. I have sought to bring together the common themes concerning running multiple units which kept coming up time after time during my travels.

Early in my Study I made a point of talking to people in other sectors of agriculture and managers in other industries. It quickly became apparent that there were key areas on which to concentrate in order to make multiple units work, whatever the business. With this knowledge I concentrated my study on Dairy farms to see how these key areas were being dealt with at a practical level in the farmyard.

Early in my study I visited Mike Murphy, a well known multiple farm owner who is from Co. Cork, Ireland. He told me that you needed two things to start a second unit: Opportunity and Ability. Opportunity is about being able to get the land to do the project. It is also about the current input and output cost which will determine if the project is economically viable. Opportunities can come and go so it is for each individual to evaluate for himself at the time of considering such a project.

Ability however can be gained and I believe needs to be acquired first in order to be ready to take the opportunity when it arises. Ability is not just about yourself but also your current farm, stock and system. I trust that after reading this report the reader will be able to evaluate what his own ability and that of the current farm is and what he needs to do to be in the right position to take that opportunity.

My inspiration has come from many places, dairy systems and businesses around the world. In writing my report I have sought to make it most applicable to UK conditions and the grass based systems that are found here. I have also added a chapter with reference to the particular situation in Northern Ireland, which is where my heart lies.

Travel

During my study I travelled to four countries. In each country I tried to get an understanding of the Dairy industry in that area, and of where they see themselves in the future. I looked at a range of Dairy systems to see if multiple units were being used as a way of expansion. I have tried to select areas or countries which are net exporters of milk and therefore mirror our situation in Northern Ireland.

2009 – 2010 was an interesting time to be doing a Nuffield as there had been a lot of volatility in the milk price around the world. The high world milk prices of early 2008 had encouraged an increase in milk output around the world. By late 2008 the price was dropping and by early 2009 it was below cost of production for many systems and farms with high borrowing. By the end of my travels in late 2009 signs were starting to look more positive and by early 2010 milk price for most, is at least above cost of production, if not excellent. My travels all took place in 2009 and the backdrop of low prices had had an obvious effect on most of the businesses I visited. Many had postponed or altered their plans for the short term. Their thoughts were more of business protection, rather than expansion.

Northern Ireland, like the rest of the UK, has a wide range of dairy systems. I wanted to see if multiple units could be used across all systems or if they only suited certain ones. With this in mind I planned my travel to take me to a range of systems in different countries.

- I first travelled around the UK and Ireland.

- Then through the mid west of America where I would see the typical total confinement system found there.

- Next to Australia's Victoria and Tasmania to see a grass based system, which still used a moderate amount of grain.

- Finally I visited New Zealand to see the typical grass based system.

UK and Ireland

Sometimes we are so busy at home that we don't take time to see what is on our doorstep. I have to say it was well worth the look. I was pleasantly surprised and challenged by what I came across. The UK and Ireland have two very different milk markets. Mainland UK is densely populated and therefore can consume most of it milk without the need for much exporting. Milk prices are more stable than in other parts of the world and a very wide range of systems can be found. Ireland is not as densely populated and most of the milk is exported in the form of butter, cheese and milk powder. All but two of the dairy multiple unit set-ups I saw were using the grass based system. It would seem that multiple unit operations were more common in this system.

At this point in my study I wanted to see what was important in making multiple units work. Was there a set of key principles or did it change depending on the type of agriculture or industry you were in? Early indications were that there was indeed a set of important areas to focus on. These were first and foremost:-

- the right people

- simple systems with clear targets

- monitoring

These key areas seemed to be the same across different agricultural industries and indeed across different industries where multiple set-ups were used.

America

Next I went to the USA and travelled round Michigan, Missouri, Iowa and Wisconsin. I wanted to see if the multiple unit model had been used in the housed cow system

common in America. This was indeed the case but on a larger scale than I had seen in the UK.

What was really interesting was that although the system was very different, the same key areas applied. The reason for multiple units on a housed system were:

- To reduce the distance travelled with brought-in forage and slurry taken out
- To reduce animal health risks by having less stock in one place and
- To reduce the number of people working together on one site as this made for less disputes between staff.

Housed cows in the USA

Australia and Tasmania

I spent my time in Australia in the States of New South Wales, Victoria and Tasmania. Australia seems to be going through a large expansion phase in terms of farm size. Many farmers now have to manage people as well as stock. To aid with this, Dairy Australia has set up a website to help farmers understand how best to employ and keep people on the farms. This resource has proved very useful for some who are opting for multiple units. It is also noticeable that a lot of farms are using consultants to help them through this large transition phase.

Multiple units are being used as a means of farm expansion. Most were next door to the existing farm while one was far removed in a relatively new dairying area hoping to sell into a growing market for liquid milk for the big cities in the area. It was here that I was first really challenged about the idea of having a second unit in a completely different place to the existing one. Also I learned of the need for a good monitoring system to keep the owner informed and the manager focused on the business.

New Zealand

Out of all the places visited. New Zealand has by far the most experience of multiple units. The farmers seem to have been using this as a means of expansion for a generation. This has been greatly helped by their straightforward and uncomplicated farming system, their business approach to farming and the share milking idea. Share milking (which was originally brought in to allow a farmer to take a step towards retirement) and equity partnerships have also proved very useful for allowing a farmer to take on a second unit.

Reporting systems are widely used and allow the owner to keep an eye on what is happening on a farm even if he doesn't have time to visit on a regular basis. The farms I visited in New Zealand were very good at recording data. This allowed for good comparison of data and led to setting targets and improved performance.

While there I also came across a number of companies running multiple farms. A few of these companies had ventured overseas to North and South America where land was cheaper and there was a better market for milk.

Benefit of a Second Unit

On my travels, I wanted to see if farmers have opted to have multiple dairy units as opposed to one large one and why they have done this. Multiple unit set-ups turned out to be more common than I had first realised. This was even the case in countries that didn't have the same land availability difficulties as are encountered at home. So what were the reasons for using the multiple unit business model in Dairying?

Economies of Scale

Trevor Westacott, dairy consultant in Victoria, Australia, said, "As businesses expand, they need to catch the economies of scale but avoid the diseconomies." We can see this idea of diseconomies at work in Northern Ireland where our Department of Agriculture and Rural Development benchmarking results show that dairy farm businesses seem to gain economies up to 150 cows. Increasing further than the 150 cow herd does not necessarily seem to bring much financial advantages for many farm businesses. This is because the farm and system struggle to cope with the extra numbers.

There will come a point in any system where the benefit of increasing scale on one site is offset by the disadvantages. This will be different for each system and each individual business according to the restraints it faces, but it will happen to all at some point. Before this point is reached, there will be a point where the advantages of a second unit will equal or outweigh the net advantage gain from increasing the size of the original unit.

Staff

Multiple units reduce the number of staff on any one site. As a unit gets larger, more staff is needed. Terry Truitt, General Manager of JD and RD Wallace LTD, New

Zealand, said that "most people can successfully manage themselves and one or two others. However it takes a really good manager to manage more people than this." Having multiple units, means there are less people on any one unit, therefore making each unit easier to manage. Easier managed units will be easier to staff, and if a manager or other member of staff leaves, they will be easier to replace.

In Michigan, USA, Brian Ingram ran 4 housed dairy units. He said, "You don't want to have more than 3 people working together in the parlour at any one time. If you have more than 3, the risk of people falling out is much greater." By having multiple units, he has been able to avoid this problem.

Time and Distance

There can also be time and distance benefits in operating on multiple sites. When cows are out at grass, the larger herd will have to walk further each day. Once the distance goes beyond 1km, milk production will start to suffer as cows are using more energy walking and are spending less time eating. Larger herds also spend more time in the collecting yard waiting to get milked which further reduces time spend grazing. Longer walking distances and more time standing on concrete will also be harder on the cows' feet and cause more foot problems in the long term.

Most of the large herds I saw were split into groups of up to 500 cows. They were effectively already being treated as 2 or 3 herds which shared the same parlour. This would help reduce standing time in the parlour but would not have any effect on walking distance. Terry Truitt had found that when he put up a extra parlour to split his large herds he saw a increase in milk solids per cow. This seems to be due to a combination of less walking distance and having a herd size managed by a smaller, more focused, group of staff.

When stock is housed, the larger the herd gets the further feed and slurry need to be transported. Many farms in the UK will find they need to travel to silage ground. If they then expand the cow numbers, available silage ground may be further away again. This means more cost in bringing in silage and taking out slurry. If the rate of tax on agricultural fuel continues to rise, this would become very relevant. A second unit will increase the area from which it is economical to bring in feed and take out waste.

Business Flexibility

One of the problems which has come to light recently in Northern Ireland is over-capitalisation of a farm. This is where the capital infrastructure, i.e. cubicle house, slurry storage and milking parlour, are capable of keeping more cows than the land attached to the farm can carry. This was done so that the farmer could keep more stock with additional land rented in. A few of these farms have recently come up for sale but have had trouble attracting much interest. The value of the farm infrastructure does not reflect the ability of the land to service it. However capital expenditure on a different site is not wasted as that unit can be sold off more readily. This gives more opportunity to cash in on part of your business if funding is required for another venture.

Starting another unit on a different site can open up more options for the future and further expansion. If you only intend to expand once, doing it on one site may not be a problem. But if you have in mind to keep pushing the business on, you will find that you have less options for the next time.

Spreading of Risk

One of the aims in good business practice is to minimise your risk. As we expand our businesses we also expand our risk. There is more potential for things to go wrong and more to lose when it does. The multiple unit business model can be used to help manage the extra risk we take on when we expand.

Disease risks can be minimised as livestock are split over different geographical locations. This means that if there is a disease outbreak on one unit, the livestock on the other units should be able to remaining unaffected.

Financial risk is reduced by giving the business more flexibility as already mentioned above. This means if financial difficulties occur, a unit can be cashed in without affecting the primary unit. This could not be done if the unit was all on one site.

Climate risk. One farmer I visited in New Zealand was involved in an equity partnership, which involved one farm on dry land, one farm on wet land and one on in-between land. The idea was that whatever the weather conditions, the business as a whole should remain relatively stable. The principle was that each year, the same average growth of grass should be realised.

Access to new Markets

Another reason for starting another unit is to benefit from another market. Lower costing and more available land, high demand and under supplied market places, are all reasons that have encouraged dairy farmers to start units further afield and more often than not in another country. This has produced a much better return on capital than just enlarging the home unit.

I visited with Niall Murphy who was running one of the 16 units on the New Zealand owned “Grasslands Farm” in Missouri, USA. The “Grasslands” company, run by Gary Townsend, which headed up the venture, searched North and South America,

and Europe to find a place that presented the best opportunities. They felt that Missouri was suitable for a grass based system and would put them in a good position to service the large and undersupplied market in the south eastern states of the USA.

Optimum unit size

We have seen that multiple units can overcome some of the problems of expanding on one site. The question then has to be asked: what is the optimum unit size and at what point should I start another unit? Each system and farm will have its own optimum size and will feel the effects of diseconomies of scale at a different point.

Optimum unit size can be dictated by three areas.

Land

The first question to ask is, how large can a farm unit grow on a particular site without compromising on efficiency? If increasing the herd size on a unit causes you to alter the farming system, to one which is less efficient, then you have passed the optimum size for that unit. An example of this can be seen in Northern Ireland where many farms have reached their limit in the number of cows they can graze but push up cow numbers anyway. To cope, cows need to be fed more conserved forages and concentrate in the summer. While the farm output is greater, so are the costs. The Dairy benchmarking run by DARD in Northern Ireland shows that in general a farm business expanding in this situation ends up financially no better off as efficiency has been lost.

However if you are planning to start a second unit you may want to use the home unit to build up extra stock numbers. This should only be used as a very short term strategy.

Scale Matching

The next thing to look at is scale matching. Whatever type of Dairy system or scale is used it is hard to achieve more than 150 cows per man. I found a lot of grazing units tended to have 300 or 500 cows. 400 cows units though were very unusual. This was because 300 cows was a good 2 person unit and 500 cows was a good 3 person unit. 400 cows is too much for 2 people and not as efficient for 3. Not everywhere will be able to achieve as high a ratio as this. For many in a less than ideal situation a ratio of 100 cows/ labour unit may have to be accepted. However careful consideration must be given before replicating this ratio.

The optimum unit size must have an efficient ratio of labour to cows. There is a danger here for the 150 and 300cow herds that expand by 50-80 cows and have to employ an extra labour unit to do it. It is all too easy to justify it by finding jobs to do that didn't need to be done before. But at the end of the year the owner may find that they have not seen much return for capital invested to facilitate the increase. If there is a definite plan to enlarge further, then a year running at a less efficient level may be justified. The owner must be careful, though, that the expansion does not stall here and leave the farm running at this ratio for a prolonged time.

Team size

Lastly I have also found that the optimum unit size was as much about the number of people as it is about cows or hectares. Lessons from my travels were that:

- Groups of 2 or 3 people are easier to manage than larger groups. This means that from a staff point of view a unit requiring 2 or 3 people is easier to run than a larger one.

- More than 3 people working together in the same place and at the same time i.e. the milking parlour, can lead to more staff disagreements.

- A one man unit can be difficult as there is no backup if that person needs to take off at short notice. Someone who is brought in at short notice will not be up to speed with what is happening on that unit. It is also not as efficient a use of a skilled labour unit as this person could be looking after more cows with the help of a less skilled person.

Taking these 3 areas into account, the optimum size of unit for the UK herd seems to be a 2 or 3 person unit with enough cows to justify the labour. Fewer cows would be adequate if they can provide a higher return: for example, an organic farm or an autumn calving herd getting a seasonal premium for its milk. In most cases, though, it will mean 300 or 500 cows respectively, provided that the farm can cope with these numbers without compromising on efficiency.

Key Factors for Multiple Units

Having seen that multiple units do work and can be used successfully to grow a business, what are the key factors in setting up a successful second unit? I have visited some very good multiple unit set-ups. I have also seen some having problems and have come across a few situations where people have decided it is not the way forward for them. From this I have been able to develop a list of areas on which to concentrate when running multiple units, which I believe will help minimise the risks of such a venture. These areas can be summed up under the headings of:

The people

The system

Monitoring

It is important to note that failing to focus on one of these areas does not necessary mean failure, nor does focussing on them all guarantee success, but rather focussing on these areas will help reduce the risk of failure. Each time I came across a secondary unit that had not or was not working very well, I could see that the problem or solution lay in one of these three areas.

The Right People

There is no doubt that getting the right people is fundamental to the success of the multiple unit set-up. You need people with drive to succeed: people who will take ownership of the job and treat the unit as their own. They must be able to show initiative and be willing to deal with problems. There doesn't seem to be any easy answer as to how to ensure you get the right people. It seemed to be a case of trial and error, choosing who you thought was most suitable and seeing how it worked out. One person I spoke with had found it so difficult to get the right person that he now gets a recruitment firm to do it for him. Attitude seemed to be the most important attribute. Interestingly enough, nobody mentioned qualifications. The feeling seemed to be that skills could be taught while attitudes could not. Some people were particularly keen on younger employees, as they tended to come with no preconceived ideas about how things should be done. This seemed helpful if you were running a system that wasn't the norm in that area. The advantage of older people is that they tend to be more settled in life and where they live. This means they more likely to stay with the business.

Having the Right People does not stop with the employees. You must be the right employer too. Employers must allow people to use their initiative, they must understand that others will do things differently and that getting the job completed is more important than how it is done. People will make mistakes and learn from them. They need to be allowed to make decisions while you are there or they won't be able to when you are gone. Don't set people up to fail but help them to understand the targets and commend them when they meet them. You must be able to communicate with people and understand what they are really telling you when you speak with them. Evaluate what skills you have and what you lack. The skills you don't have can either be learned or someone else can be brought in to do that job. Mike Murphy said "see good people as a resource, not a cost"

Remuneration

I hoped that during my travels I would find the best remuneration system for employees on multiple units. It appeared that there was not a case of one system to suit all. I came across a wide variety of systems from salary to share milking. Different countries seem to prefer different systems. The UK and the USA tended more towards a salary based system; whereas New Zealand had more incentive-based systems such as share milking or equity partnerships. This led me to believe that any system can work. The key is that the people involved understand the system used and that it fits in with the income and capital gains tax rules in that particular country.

Where a system was in most danger of failing was when it was unfamiliar to the employees, as they didn't understand how it benefited them. I came across this on a few occasions where a different system had been used because it would be more beneficial to both parties. However, the benefits had not been properly explained to the employee and they felt that they were being offered a bad deal. The Dairyco website (www.dairyco.org.uk) offers templates, and on request legal documents for setting up different types of contract arrangements for Dairy farms

The one theme that is common through all these systems was that people were paid to take on responsibility i.e. looking after a herd of cows. They were not just paid to do a set number of hours in a day. This is unusual in the family farms that I am used to in Northern Ireland. Running multiple units requires that unit must run effectively when you are not there. Having staff take on responsibility for a job is important in making this happen. A good level of remuneration is important for attracting good staff but don't think that nothing else matters. Staff tend to have other goals in life, and freedom to pursue these goals will encourage people to stay.

There is no doubt that people who run multiple units need to be good with other people. In running multiple units you become a people manager rather than a herd manager. I had the opportunity to witness one of these people in action. Peter Notman always finished speaking with staff by asking them "what do you think?" This meant staff felt more involved in decision making which led them to taking ownership of what they were doing.

In Australia I came across "the people in Dairying" website. (www.thepeopleindairy.org.au) This was set up with milk levy funding by Dairy Australia. Its aim is to help farmers who are going through the expansion phase with the new challenges of being a people manager. It gives advice on topics from recruitment to remuneration and retaining staff etc. While the website is dealing with the employment rules in Australia it still gives some useful information and advice for anyone working with people, from a dairy farmer's perspective. For help with the legal issues within the UK, DairyCo is a useful place to start.

The System

Just as crucial to the success of multiple unit set-ups was the simplicity of the system. Everywhere I went this was key. Simple systems allowed for clear plans and targets to be set. This allowed a farm to function normally whether the owner was there or not.

So what is a simple system? I would define it as one that has a clear plan and goal and that allows a person to focus on one particular job at a time. The compact spring calving system lends itself very well to this end. This is because one job is done at a time and full focus is given to that job i.e. calving- first round grazing- breeding cows- rest of grazing season- drying off.

Other dairy systems do tend to be more complex with more jobs going on at once. But with a bit of imaginative thinking, they can still be made simple for each member of staff. This was best seen in the USA where Brian and Sarah Ingram ran four housed dairy units keeping 5000 cows with all year round calving. To keep things simple, three units just milked cows. On each unit a manager was in charge of staff, cow health, and who dealt with any problems that arose. There was then a team of staff who did milking, cubicles and scraping. Technicians who moved around the three units did the breeding. There was one person on each unit responsible for feeding. The fourth unit was for the dry period and the first few weeks of the lactation. The day cows were due for drying off they would be kept out at the milking unit and then transported to the fourth unit. They would then be milked once more

with samples taken and dried off. After spending the dry period on the fourth unit, they would calve down and be milked for a further 2 weeks. When it was certain that all was well with the cow, she would move back to one of the milking units. The best staff worked on the 4th unit and concentrated on one role. Brian used this system to keep all the complex work in one place, making the three other milking units as simple as possible.

I saw this idea of confining complex work to one place to make it simpler elsewhere, used in Australia. Graham Barlow calved 1000 cows on the home farm in a autumn and a spring block. At the other end of the farm, was a second milking parlour. Graham would send 380 spring calving cows to this end of the farm for the lactation. He only sends young trouble-free cows so as to make for an easier managed unit while he concentrates on the home unit.

So how do we go about simplifying a system? Mike Murphy from Ireland told me to "take out what doesn't need doing, delegate what can be and do the most important things yourself, leaving yourself more time for planning". While in Australia I visited a farm owner who had a list of 35 skills that he felt a person needed to be able to work on a dairy farm. This made me think that it would be a good exercise to write down a list of all the jobs that took place on a farm. Then go through it and delete any jobs that didn't really need doing, see which could be delegated without affecting the business profit, then see if you could alter the system to minimise the number of jobs needing to be done at any one time or by any one person. Perhaps some jobs could be sourced out at a busy time to help keep the focus on issues that drive profitability.

To help keep everyone on the right job at the right time, New Zealand and Australian farmers tended to use a farm plan. These plans would include a calendar with all the jobs noted in at the right time of year. Names would be beside each job to show who was ultimately responsible for it. Some more detailed plans would include a description of how to do each job and the targets to aim for. For example, a more detailed plan for the breeding season with targets for submission rate, non return rates, and empty rates. These plans proved very useful in helping keep everyone focused on their particular job and also informed the staff of the long-term aims of the business. It is an easy mistake to have a plan in your head but not to share it with anyone else. If those working on the unit don't know the goals they can't aim for them. An example of a simple farm plan can be seen in Appendix 1.

Stock

Another area that caused complications in a system was under performing livestock. This can be caused by not being able to get the right type of stock, as was a problem for the grazing set-ups in the USA and I understand also in Chile, South America. They needed a high fertility low bodyweight cow, which would do well on a grass based system. The crossbred Jersey that has been bred for fertility is usually the cow of choice. However the cows in these countries tended to be more from Holstein or North American Jersey.

Under performing livestock can also be due to the health or genetics of bought-in stock. This issue had caused problem for a number of people I visited in the UK. They felt that the sooner they were in a position to rear all their own replacements the better. This didn't seem to be an issue in New Zealand as stock health tends to be

better. However, if you are setting up a second unit in the UK or Ireland, it would seem advisable to try to plan ahead to rear as many of the stock as possible from your own herd. If you end up with too many too soon, it is a good opportunity to cull some of the lower performing and problematic cows in your herd. You may be willing to put up with them on your own unit but they add complication that is detrimental to the success of a multiple unit farm. If there were still some spare heifers, they could be sold.

The right cow for the system.

Quick Establishment

New unit infrastructure should all be put in on year one, so that the unit can focus on production from year two onwards. Quick establishment is important both for simplicity and for profitability. If a unit expands slowly over a number of years, staff roles in the system keep changing. This adds complication and will prevent staff from focusing on the profit drivers of the unit. Starting a second unit, but only running it at 70% capacity, is an inefficient use of capital as it slows down the return on capital invested. There is an opportunity cost here. This is the cost to the business in lost profit by not getting the unit running at full potential and therefore not getting the full return. This is a lost opportunity and cannot be regained at a later date. The potential opportunity cost alone, of slow establishment, may well pay for the full establishment in the first year.

Monitoring

The right system needs to be well monitored to ensure it stays efficient. Monitoring systems were commonplace in the multiple unit farms I visited. They serve to do a number of things:

- to communicate with the owner as to what is happening in the unit

- to gain the benefits of the knowledge and experience of a second opinion

- perhaps, most important of all, it was used to keep the unit manager and team focussed on the important issues at the right time.

These issues are the profit drivers of the business like feed cost and availability, fertility and output. Monitoring was normally done in one of two ways or sometimes a combination of the two: filling in a report sheet or a farm walk at one to four week intervals.

People who lived a long distance from the unit or had a number of units in different locations usually used the report sheet option. The report sheet would cover things like production, health, feed/forage usage and growth, staff issues and farm maintenance. What made the report work so well was that as the manager filled it in, it caused him to focus his thoughts on each area and see how he was doing against the targets. It worked out as a form of self-examination. An example of a report sheet can be seen in Appendix 2.

In the farm walk system of monitoring, a walk would usually occur weekly or bi-weekly, although some opted for a monthly walk. This tended to be in more established units where the owner had employed the most capable staff, as he didn't want to be too involved. These walks would usually be with the overall manager, owner or a consultant.

In the twelve-unit Grassland farm in Missouri USA, two of the operational managers would walk each farm every week. The farm manager was required to be there but the staff were also encouraged to come. While walking round, each field would be measured for grass growth and decisions taken for the week ahead. Any decision taken would be noted down and the outcome or progress reviewed at a future walk.

Farm walk taking place

Other Areas of Relevance

Sharing of labour and resources

From the start of my study I felt that, for the smaller sized units that we have in Northern Ireland, sharing of labour and resources like machinery would have to be part of the system to get any real financial benefit. Early on it became apparent that sharing resources wasn't complicated, it just took the right mindset.

A lot of the units I visited had at some point tried something along this line of sharing resources. They had found that it was very difficult and had ended up buying items for each unit. The problem is around accountability and logistics. A piece of machinery that is moved around has no person accountable for it and how it is kept. Quite often two people will want it at the same time meaning one person's plans are upset.

Labour was similar as staff moving around from unit to unit felt they were dealing with other people's problems. The incentive to have a well-run unit is lost if it means you then have to go and deal with problems somewhere else. To help this, some tried to encourage a whole farm mindset instead of a, "my unit" one. In reality this seemed difficult to instil and ran the risk of staff losing focus on the unit they worked on.

For sharing among units to be successful, it takes a designated person with a designated job. I saw a few examples of this on my travels:

- On one two-unit farm in Scotland the manager and tractor driver did the feeding and other machinery work on both units. The herdsman on the unit told them what jobs needed doing and they fitted them in as it suited.

- On the Grasslands twelve-unit farm in Missouri USA, cutting and baling surplus grass on each unit was in control of the four operational managers who oversaw the 12 units. They decided whose farm was done when, and they were responsible for the operation.

- On Brian Ingram's four-unit farm in Michigan, labour was being shared between the units. A small team of people looked after fertility and AI on the three milking units. Again this worked because they had designated people with designated responsibilities moving between the units.

For more advice on sharing on dairy farms the English Food and Farming Partnership has its "share to farm" website. (www.sharetofarm.com) The Dairy section on this site gives information on collaboration in the dairy sector along with case studies, options and advice.

Conclusions

1. Efficiency is paramount. Replicating an inefficient unit will have little benefit. Efficiency is just as important over mulple units. The most successful mulple unit operations I saw all have unit efficiency as a key aim. Expansion was a result of efficiency, not the cause.

2. Be aware of dis-economies of scale as you expand. They are very real and even relatively small herds can be affected.

3. Running multiple units is possible. Concentrate on the key areas of, People, Systems and Monitoring to help ensure success.

    - People: The right people and remember this includes yourself. Your role will change from a cow manager to a people manager.

    - System: Needs to be simple with clear targets that everyone understands.

    - Monitoring: Keep everyone focused and keep efficiency levels high.

4. Quick establishment is important to keep the unit simple and increase the rate of return on capital invested.

5. In countries with under performing livestock because of poor health or type, planning ahead and being able to raise your own replacements will make for a much more easily managed system.

6. In the UK the ideal herd size will be one that can be run efficiently with a team of 2 or 3 people.

7. Sharing of machinery and labour is difficult. It can be done though, with a designated person doing a designated job on the different units.

8. There is no one right system of remuneration. Select one that fits in with the tax and employment rules and expectations of staff. It must encourage staff to take responsibility for a job rather than just a set time.

9. Fragmentation of land in Northern Ireland is causing dis-economies of scale at relatively small herd sizes as farms try to implement much needed expansion. It is also adding a lot of unnecessary cost to the industry here and is affecting our ability to compete on the world market.

Recommendations

1. Before starting a second unit see if you can improve the efficiency of the primary unit as these will be the lowest cost and easiest obtained gains. Measure what you can and compare with others. The aim is to be in at least the top 25% on a profit base.

2. Get to a position where your primary unit can run effectively even if you are not there. If you can't do this with the first one you will find it hard to achieve it on another unit.

3. To keep the system simple with clear targets produce a farm plan that includes a calendar, a list of jobs and names the person who is responsible for them. Try to keep the number of jobs being done by any one person at any one time to a minimum.

4. Establish a good monitoring system, which concentrates on the profit drivers.

5. If possible plan ahead and rear as many of your own replacements as you can.

6. As you expand your business, look for areas of risk and try to diminish them.

7. Government, Farm lobby groups and Farmers must look for ways to encourage land to be pooled together to enable the scale needed for a viable future in Northern Ireland Farming.

Application for Northern Ireland

In the previous chapters we have looked at multiple units in a general sense. We have seen that multiple units can and are being used as an effective route for business expansion. So what does that mean for me and others in areas with a fragmented land base? Can the multiple unit model be used in these situations?

There is no doubt that in an ideal world, farmers in Northern Ireland should expand to 2-person units keeping as many cows as they can without comprise on efficiency. This will be around 250 to 300 cows depending on the system. Farmers would then consider replicating that unit if they wanted to expand further.

In reality, though, very few will have this opportunity. The easy option would be to keep expanding on the same unit, changing the system to cope. This however will lead to milk with a lower profit margin, which will increase the risk to that business in a downturn and make for fewer options for the future.

Another option would be to move to another country where the opportunities are better. For anyone willing to take this step, there are great opportunities out there in areas of higher population with lower milk supply and more available land. It is a big step, but none whom I met that had taken it have regretted it. This said, I can fully understand that most people won't want to take this option. A halfway house would be to start a second unit in another part of UK, Ireland or even elsewhere in the world. While daunting, it is possible and has been done by others. A second unit in this situation would be best at bigger scale, around 500 cows. This will probably be bigger than the original one, which would make the project hard to afford, as the original business would struggle to support the financing of it.

Areas like Northern Ireland cannot use the multiple unit model to the best of its ability. This is because we cannot achieve the ideal scale needed. However, I believe we can still use it to our advantage. The unit must still be viable in its own right. There is little benefit in a second unit if it is depending on the first unit to be viable. It would be very temping to set up a 100-cow unit as a farm that size would be much easier to get and the expansion jump much more affordable. Even a one man unit needs 1.3 people to allow for time off. This would make for an inefficient use of labour. The result will be that it brings down the overall efficiency of the business. For secondary units to work to their full potential, we will have to add on some extra criteria to that which was mentioned earlier in this report. In setting up a second or multiple units, which are smaller than the ideal, we must be able to gain other advantages. There are two ways in which this can be done:

1. Using the principle of confining the complex work to one place as was seen on farms in USA and Australia. One unit must facilitate the other to be as simple an operation as possible. This would mean that one unit would concentrate on milking cows while the other would milk cows and do the associated work for both units. The outcome would be one highly efficient unit and if done right, the other will be made more efficient as it has a higher throughput of work.

2. In such a situation the aim should be to share machinery and labour between units. There would be an advantage in using only contractors on both units

but most farms will find it hard to function without some machinery. It would be possible to use a contractor on the second unit for tasks but it is through sharing of machinery that a real benefit can be gained for the business. As stated earlier in the report, this only works well when designated people are doing a designated job.

The catch here is that this will require more movement between the two units and therefore the closer the units will need to be. This will greatly limit the choice of farm when starting a second unit.

It is very difficult to give a set plan for a second unit in this type of situation. To help illustrate the idea I will give an example. A 200 cow unit with 2 people looking after the cows and 1 other looking after young stock takes on another 200 cow unit and 1 more labour unit. One person looks after each unit. The feeding, other machinery work, young stock rearing and relief milking is done by the other 2 people. The cows on each unit are blocked calved at different times meaning that at the busy time on each unit extra help can be concentrated there. The end result is that instead of having 100 cows/person on the dairy unit it is now 133 cows per person. The young stock rearer who was looking after 50 replacements per year is now looking after 100. This is only an example of what could be done and is by no means the only way.

In summary, running a second unit at a smaller than ideal scale, is feasible but will never be as efficient or as simple as a larger unit. The long term aim for Northern Ireland farmers will be a unit which can be run by one person if necessary but will justify having two staff. Sharing of resources and confining of complex work will have to be part of the system to gain full benefit from the second unit. It will need to produce milk with a high profit margin, capable of seeing through any downturn in our volatile milk price.

****

Doing a Nuffield study has been a great experience. I know that it will have an impact on my business and the way I think. I trust this report will be useful to anyone considering a secondary unit and I wish them success in their venture.

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UK
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Andrew Fletcher
Fiona and Tony Hillman
Michael and Lorrie Kyle
Callum McGinley
Ben and Catherine Mead
Josephine Scamell
Derek Steen
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Appendix 1

Year Plan 2008/2009 FARM

Month	Job Requirement	Responsibility	Supplying Company/Contact	Checklist Complete
June	**FARM**			
	All capeweed should be finished rates and Product refer to Chemical sheet	KH	**Nufarm**-03 92821000	
	Pasture cover target 2000 kgDm/ha	PN		
	Nitrogen 1 kg/Day on perm pasture.	KH	**GBS** –03 56 252637	
	Nitrogen 1.3 kg/Day on short terms.	KH		
	Put oil on lanes.	KH		
	Make sure all fences are running at 5.5 plus.	KH		
	Holiday after bulls are out.		**Gallager** –Geoff 0427 316252	
	Animals			
	AI joining finished on the 19th, bulls with herd 20th.	KH		
	Dry cows off 8 weeks out full dry cow treatment plus Genises Pour on order dry cow from Purkis Rural.	KH-KH	**GHI**- 56 623250 **Drouin Vet** -56 252002 **Purkis**-02 67 722341	
July	**FARM**			
	Nitrogen 1 kg/Day on perm pasture.	KH	**GBS**-03 56 252637	
	Nitrogen 1.3 kg/Day on short terms			
	Animals			
	Bring animals home 10 days before calving, feed 3kg of pellets or grain with salts plus ad-lib oaten hay or low potassium local hay.	KH-kH ALL		
	Can calve in paddock if Dry			
	Be aware of Photo in cows	ALL		
August	**FARM**			
	Change inflations, Alfa Laval number 22 . Check milking plant.	KH-KH	**Treacys** 56 22306	
	Nitrogen 1.1 kg/Day on perm pasture.	KH	**GBS**-03 56 252637	
	Nitrogen 1.4 kg/Day on short terms Pasture cover target 2000 kgDm/ha			
	Animals			
	Calving induction 15th. *Check Seed stock re Vermine control.	KH-KH Gavin		
		AA		
September	**FARM**			
	Spray grass on side of laneways with Roundup 2lts/ha plus Nu-Trazine 2 kg/ha.	KH-KH	**YGP** 56 232434	
	Potash apply 80 kg /ha MOP.			
	Nitrogen 1.2 kg/Day on perm pasture.	KH	**GBS**-03 56 252637	
	Nitrogen 1.5 kg/Day on short terms	PN		
	Nitrogen 2 kg/Day on short terms if locked up for silage			
	Pasture cover target 2100 kgDm/ha			
	Animals			
	Lift pellet or Grain feeding to 7kg.	KH		
	Mating first PG 21st.	KH		
	Calves to be dehorned 12th.	KH		

October	**FARM** Two crop paddocks to be ploughed on the 2nd, then planted asap If turnip or Rape must have Boron applied 1 kg required per ha. Plan maize crop read the full plan and organize contractors order all products required. Organize medic hay Topping paddocks Weed control, thistles and ragwort Start irrigation when soil is dry Chook shit 6 to 8 mts per hectare this is preferred option if weather and soil conditions permit. Nitrogen 1.2 kg/Day on perm pasture. Nitrogen 1.5 kg/Day on short terms Nitrogen 2 kg/Day on short terms if locked up for silage **Animals** Hefiers mating starts 2nd PG. on the 3rd. Joining begins on the 5th.	KH PN-KH PN-KH KH-KH KH	**Adrian Tilling** – 56 592406 **Shit from Phillip Ould** - 0359961172 **Spreading – Jarred Hick** 0407308089 **GBS-**03 56 252637	
November	**FARM** Plough paddock 1st , then plant asap. Plough Maize paddock spray with Prime extra Gold 4.5 lts/ha plus 0.5lt/ha Dual Gold spread 20 mts /ha Chook shit then power harrow this all should be done as quickly as possible. Plant Maize 10th this is a must no more that 3 days either way. Continue topping. Weed control, thistles and ragwort. Irrigate crops if Dry. Complete soil test full range. Chook shit 6 to 8 mts per hectare this is preferred option if weather and soil conditions permit. Nitrogen 1.2 kg/Day on perm pasture. Nitrogen 1.2 kg/Day on short terms **Animals** Finish A.I.on the 21st bulls with herd 22nd. Brand last years calves.	KH-PN	**Adrian Tilling** – 56 592406 **Maize Planting- Luke Shone** 0438 920535	
December	**FARM** Irrigate crops if Dry. Paddock feeding, spread as far as possible no clumps. Spray grass on side of laneways with Roundup 3lts/ha plus Nu-Trazine 2 kg/ha. Ragwort & Blackberries (Grazon 500ml/ 100lts water plus wetter). Thistles (Lontrel 330ml / 100lts water plus wetter). If grubs on crop spray Fastac100 @ 500ml / ha WHP 1 day. Nitrogen only if moisture available. Nitrogen 1.0 kg/Day on perm pasture. Nitrogen0.6 kg/Day on short terms **Animals** Watch out for photo on crop treat with Anti	KH ALL KH-KH PN	**For sprays Jones Irrigation** 03 56 235955 **Spraying – Jarred Hick** 0407308089 **Chemical companies-** Bayer 1800804479 Nufarm 03 92821000 **GBS-**03 56 252637	

	Histamine Product Histamil 10 ml twice a day until symptoms have gone animal must not graze crop or green feed , keep in shed out of full sun.		**Drouin Vet** -56 252002	
January	**FARM** Irrigate crops if Dry. Clean out calving pad , and calf shed & spread on paddocks Ragwort & Blackberries (Grazon 500ml/ 100lts water plus wetter). Thistles (Lontrel 330ml / 100lts water plus wetter). If grubs on crop spray Folidol 500 @ 700ml / ha WHP 14 days Prepare feed pad Holidays **Animals** Watch out for photo refer photo treatment December. Take bulls out 15th.	KH-KH	**Spraying – Jarred Hick** 0407308089 **Chemical companies-** Bayer 1800804479 Nufarm 03 92821000	
February	**FARM** Irrigate crops if Dry also newly sown pasture. Re sow crop paddock that has been finished grazing spray with 3lts.ha Roundup then sow asap Ragwort & Blackberries (Grazon 500ml/ 100lts water plus wetter). Thistles (Lontrel 330ml / 100lts water plus wetter). If grubs on crop spray Folidol 500 @ Bring animals home 10 days before calving, feed 3kg of pellets or grain with salts plus ad-lib oaten hay or low potassium local hay. Can calve in paddock if Dry. Chook shit 6 to 8 mts per hectare this is preferred option if weather and soil conditions permit. Holidays **Animals** Bring animals home 10 days before calving, feed 3kg of pellets or grain with salts plus ad-lib oaten hay or low potassium local hay. Can calve in paddock if Dry Be aware of Photo in cows	KH-KH PN KH-KH KH-PN KH-KH	**Chemical companies-** Bayer 1800804479 Nufarm 03 92821000 **Shit from Phillip Ould** - 0359961172 **Spreading – Jarred Hick** 0407308089	
March	**FARM** Irrigation, keep pond as low as possible. Re sow crop paddock that has been finished grazing spray with 3lts.ha Roundup then sow asap Do last check for Ragwort & Blackberries (Grazon 500ml/ 100lts water plus wetter). Thistles (Lontrel 330ml / 100lts water Chook shit 6 to 8 mts per hectare this is preferred option if weather and soil conditions permit if feb application has been applied this can go on in April . Holidays **Animals** Pregnancy test cows	KH-LH KH	**Mario De Grasio**- 0419 582501	

	Calves to be De –Horned			
April	**FARM** Check drains beside calving pad and calve shed Graze new pasture (height 10cm when dry) Irrigate when soils are dry keep pond low. Capeweed new pasture 300ml /ha Amicide 625 or Tigrex 350ml/ha both 7 day WHP If spraying older pastures not sown this Autumn Double the Rates above. Chook shit 6 to 8 mts per hectare this is preferred option if weather and soil conditions permit. **Animals** Finish calving Induce cows 10th April. Brand last winters calves Calves to be De horned 19th.	KH-KH-PN	**Air Ag Laurie Coot**- 03 56 643332 **Shit from Phillip Ould** - 0359961172 **Spreading – Jarred Hick** 0407308089	
May	**FARM** Irrigate when soils are dry keep pond low. Finish all weeds Capeweed new pasture 400ml /ha Amicide 625 or Tigrex 450ml/ha both 7 day WHP If spraying older pastures not sown this Autumn Double the Rates above. Nitrogen only if moisture available. Nitrogen 1.0 kg/Day on perm pasture. Nitrogen1.2 kg/Day on short terms Change inflations, Alfa Laval number 22 . Check milking plant **Animals** Joining PG all cows not in calf on the 7th to the 19th. AI begins on the 21st refer breeding program. Check calf tag numbers, order if required. Dry off cows 8 weeks out.	KH-KH	**Spraying – Jarred Hick** 0407308089 **GBS**-03 56 252637 **Treacys** 56 22306 **Drouin Vet** -56 252002	

June	**FARM** All Capeweed should be finished. Pasture cover should be 2000kgdm/ha Put oil on lanes. Make sure all fences are running @ 6 plus. Nitrogen 1.0 kg/Day on perm pasture. Nitrogen1.2 kg/Day on short terms Holiday. **Animals** AI joining finishes on the 19th, bull with herd on the 20th.	KH-KH	**GBS**-03 56 252637	

Appendix 2

Monthly Farm Report

Farm:			
Month:			
Production	Actual	Budget	Comments
Total Solids for Month			
Solids per ha for Month			
Last bulk SCC (5 day aver)			
Total MS year to date			

Area in Cropping	Actual	Budget	Comments
Maize Area			
Turnips Area			
Area New Grass			

Pasture	Actual	Budget	Comments
Number of Milking Cows			
Number of Dry Cows			
Area Pasture Ha. (less cropping)			
Average Cover			
Rotation Length			
Total Area per day for Milking Cows			
Total Area Per Day for Dry Cows			
Kgs of pasture per Milking Cow/day			
kgs of pasture per Dry Cow/day			
Total Supplement Kgs/day			
Supplement per cow Kgs/cow/day			
Total KG DM /cow/Day			

Hectares of grass silage locked up/cut			

Kg DM Supplement on Hand

Maize			
Grass silage			
Other			

Financial / Year to Date	Actual	Budget	Comments
Gross Income			
Expenses			
Operating Surplus			
Net Income			
EFS			
Capital Expenditure			
Cash Surplus			

Jobs to do

Jobs completed

Up coming events

Issues, problems encounter, accidents

Stock

Total MA cows on farm	
Culls on hand: On farm:	
Deaths to end of month:	
Cows in treatment:	
Mastitis cows last 30 days:	
Date of last visit to stock Off farm:	
No of bobby calves sold	
No of gate sale calves	

Equipment

Services	Date Last	Date Next	
Tractor 1			
Tractor 2			
Bike Quads			
Bikes 2 Wheelers			
Silage Wagons			

Other:

No of queries on Herd Register	

Signed…… Date……