How much do we need to do?

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Background

This paper is written in the context of a circa 50 % increase in milk production in Ireland since quota abolition. This has led to an increase in the average herd size and a resulting demand for greater labour requirements on many dairy farms. In 2007 I completed a Nuffield Scholarship, entitled "*Transition to scale, using pastoral dairy farming systems*". A chapter of this report addressed the labour requirements of expanding dairy farms. In the ensuing decade our farm has moved from milking 42 dairy cows with drystock to milking 155 dairy cows, without employing any full time paid labour.

I am married to Yvonne and we have 4 children aged between 17 and 23. My father George is still active, not in a physical sense but can oversee operations while I am away and this has to be acknowledged.

Farm statistics

- 64 Hectares
- Grass grown: 14 tonne DM/ha
- 2.6 cows per hectare
- Herd EBI 140 (65 % crossbred)
- 493 kg MS/cow delivered (1281 kg MS/ farm hectare)
- 550 kg meal fed/cow
- Six-week calving rate: 90%
- Average milk price 2017 42 c/litre (estimated at 4.90 % fat, 3.88% protein)
- A small rare breed sheep flock is also kept on farm.

Conclusions of Nuffield study

In 2006 I spent a month travelling around New Zealand, meeting dairy farmers, looking at their infrastructure and listening to their observations. I was struck at the time, that labour on these farms were not actually very busy between milking once calving and breeding seasons were completed. A lot of machinery operations were contracted out and practically all replacement rearing was also contracted at that stage. It has to be said that this was before the significant spike in milk prices which seemed to have increased supplementation and complicated systems.

Some observations at that time:

1. Simple grass based systems reduce labour requirements;
2. The introduction of supplements can be profitable with high milk prices but they demand more management time and are less easily understood by staff;
3. Fertile cows allow concentrated periods for calving and mating with plenty of time to recover between these periods;
4. Cow flow through yards, milking parlours and around farms did not require huge investment but allowed ease of management of larger herds of cows;
5. Larger herds with greater staffing requirements seemed to work better because of peer pressure relating to completion of tasks;
6. Paid labour rarely had the same pride in performance as owner operators;
7. One third of Irish dairy farmers' time was spent milking cows so improvements in this area had greatest effect on labour efficiency.

I recommended at that time that 160 cows per labour unit with the above management practices and the use of casual labour at calving with relief milking was a viable model for Irish dairy farmers in the medium term.

Home Farm development timeline

Year	**Stock**	
2006	42 cows, 65 calves, 65 1 to 2 year olds, 100 sheep	6 unit herringbone
2007	71 cows,70 calves, 20 repl. heifers, 25 sheep	
2008	86 cows, 40 calves, 35 heifers, 25 sheep	Built 22 unit herringbone, collecting yard and lagoon
2009	92 cows, 50 calves, 25 sheep, repl. heifers contract reared	Built 40 cow kennels
2010	107 cows, 50 calves, 25 sheep	Built 30 cow kennels
2011	119 cows, 50 calves, 25 sheep	Purchased 30 acres of land across road
2012	107 cows 60 calves, 25 sheep, repl. heifers back home in June	
2013	130 cows, 50 calves, 25 sheep	
2014	140 cows, 50 calves, 25 sheep	Built 60 cow kennels and feeding area
2015	150 cows, 25 sheep, calves contract reared	
2016	155 cows, 25 sheep	
2017	155 cows, 25 sheep	

We started availing of students from Switzerland and Holland in 2006 and they have been a constant with the exception of one year. They stay for approx. 10 weeks from late January to early April. We strongly encourage them to travel around Ireland for a week before they go home and provide them with a car if necessary. Many of these students have returned to visit in subsequent years.

The only investments in machinery over this period have been an agitator for the lagoon in conjunction with a neighbour and a new yard scraper.

The only investment in automation has been an auto drafting system in conjunction with the milking parlour which is a no frills 22 unit herringbone built in 2008.

Grassland management

We have been measuring grass for over 20 years but it was the advent of the Agri Net programme that really increased the accuracy of the decision making. The farm is walked twice weekly during periods of rapid growth and less often during autumn and winter. So what has this got to do with labour efficiency?

It is absolutely critical that we have a cover of 950 plus on the farm at the start of calving so as to get cows to grass straight away and out of yards with associated work and health issues i.e. mastitis. We aim to graze cows on the driest part of the farm for weeks 2 and 3 of calving which is the busiest time so that there is little chance of weather related issues affecting us then. This land is across a public road and cows are milked OAD at this period.

We aim to graze all the farm, including silage ground twice before true surpluses appear, again to maximise grass in the diet in this period. One spring the silage ground was grazed 3 times due to poor growth. Silage is cut in early June and late July to introduce after grass quickly as growth slows in the autumn.

- During the summer period the grass wedge determines whether surpluses need to be removed or supplement introduced. Demand is rarely over 60 kg DM/ha at this time so usually we don't need to feed meal except to prevent tetany in May. Surpluses are quickly baled, which has practically eliminated topping which would have been commonplace 10 years ago. The downside of this seems to be a greater demand for potash.

A significant percentage of our land is wet and so, we target a maximum average farm cover of 1000 kg DM/ha in the autumn and keep silage out of the diet for as long as possible. We find that the introduction of silage reduces utilisation of pasture on our farm.

Cows were fully housed in early November last year. This was the earliest we have housed in over 20 years but we were happy to do so at a cover of 650 kg DM/ha, knowing that the farm is in a good growing state to hit target opening covers this spring. Grass

measurement provides information to aid decision making and reduce the possibility of introducing forage supplementation which increases the workload.

The farm is consistently growing between 13.5 and 14 tonnes of grass dry matter per hectare. Stocked at 2.6 LU/ha and allowing for half a ton of meal fed per cow, it is a relatively simple system. Stocking higher than this just increases the need for forage supplementation at the shoulders with increased demand on labour.

My point is to match your stocking rate to what your farm can grow.

Cow breeding and calf rearing

With a very compact calving pattern, very few cows calve in April and if numbers permit, these cows are often sold. We do not undertake any pre mating heat detection. No bull has been used on the farm in 70 years and given that we mate for 12 weeks then pre breeding attention would probably lead to fatigue.

All cows are tail painted the day before we start AI on the 7th of May. Cows are observed at milking times and at 9 pm which we feel is the most productive observation. As cows are served, scratch cards are applied with carpet glue. Constantly touching up tail paint is too time-consuming for a one person operation although cows being served in the second half of first cycle will need attention. A relief milker comes in when painting is happening.

Dairy breeds, Holstein and Jersey are used for circa the first four weeks and then we switch to short gestation Hereford and Angus sires. All Holstein sires must be easy calving, this is taken as a given with Jersey bulls. We breed for 12 weeks while cows not bred are scanned 5 weeks after breeding begins (usually one or two).

A whole herd scan is not undertaken as this requires help, so we only scan cows that are continuously repeating. Last autumn 7.7% were scanned empty. We usually pick up one more cow before calving finishes. Cows are dried off 6 weeks before calving; with heifers getting a 9 week dry period. Dry cow silage is milking quality silage which we dilute with hay or straw to avoid over fat cows developing milk fever. This was a problem last year.

As cows and heifers come near calving, they are run through the milking parlour to train the heifers and draft cows on the point of calving. These cows are put in a large loose shed. No night feeding takes place as we prefer cows to calve at night. Sub dividing these cows into smaller sheds reduces but does not avoid mismothering.

Cows are checked at 11.30 pm and again at 6 am. Any cows that we are concerned about at the night check will be checked again. Next morning fresh calves are tagged, navel dressed and 2 litres of colostrum are given via a tube. Calves are initially housed in groups of 4 until sucking and then in groups of 10 or 15. All cows are vaccinated for rota virus which devastated calving a number of years ago.

Male calves leave the farm as quickly as possible and surplus dairy heifers sold at the same time. After 5 weeks there will only be 50 dairy heifer calves plus the very young calves. Once calves are weaned, they leave the farm to go for contract rearing in Kilkenny.

Contract rearing

We commenced contract rearing in 2009 with the maiden heifers. In 2015, we moved off the heifer calves as well as cows numbers increased. Land could have been leased for this purpose but I felt this would add to the workload and in overall terms would be a more costly option.

Both Jerry Lanigan initially and Sidney Colclough in more recent years who both farm in North Kilkenny have proven great stockmen. We do not have formal contracts as this arrangement is all about trust. I check heifers monthly and pay by electronic transfer. The mainly crossbred type heifers come home on the point of calving weighing 480 to 490 kgs which is a good result.

Potential pitfalls are a TB breakout or health issues. Heifers are tested early in the year so there is plenty of time to get clear before they come home. Thankfully this issue has not arisen yet. All stock are on a full vaccination programme for BVD, IBR, Salmonella and Leptospirosis. This is all time consuming work for a one person unit and when you factor in heat detection and AI, it has dramatically reduced my workload.

Last year for simplicity, we used a proven easy calving Norwegian red bull across all bloodlines with Angus semen after 4 weeks. No bull was used last year, staying with a vasectomised bull for 12 weeks and continuous scanning. Empty rate, at 10% last year, was twice normal, possibly due to over conditioned stock that hit grass in late January with no setbacks subsequently.

I struggle to understand why more people do not explore this option.

Milking routine

Our parlour is a 22 unit herringbone. There are no automatic cluster removers or swing arms. The pit has space for another 6 units. This space is critical for cow flow with no gate behind the cows once milking commences. If the last cow in the last row is not in a safe position to milk, she is simply not milked. This is a rare enough occurance. Air gates at the front are opened after 16 clusters are removed or earlier as the cows slow in the autumn.

Heifers will start going through the parlour and the drafting unit as soon as they come home from the rearer. They start calving earlier than the main herd so dry cows will run through with them until they calve. An adjustable breast rail which is at maximum spacing the previous autumn is left in this position initially with dry cows at the back. The rail will be tightened when heifers are fully trained.

Fresh cows are drafted and run through again in the last row as there is no dump line. This prevents milking time being slowed down. Two of us milk OAD for the first 2 to 3 weeks. At that stage 90 % of heifers will have calved and settled down to the milking routine. My student totally concentrates on calf rearing then and I will milk alone for the rest of the year with relief milkers as required. Milking time is circa 140 cows per hour at peak with washing up to follow.

The parlour is open on 3 sides which permits plenty of natural light in so cows eyes do not have to adjust when entering the parlour. They enter straight in with a backing gate available when meal feeding ceases. A fire alarm when started moves them as it is associated with the gate. The pit is 4 feet wide to minimise walking. Cows have to turn 90° when exiting, but there is space for 40 cows in this area so flow is not impeded. An open trough ensures there is no meal left in trough when cows exit to slow down flow. To draft the cows, they have to turn 180° into an Alfco unit. This allows them to recycle through the parlour. This turn impedes flow in autumn so is rarely used at that time until drying off.

Contractors

A team of contractors is the absolute key to my whole system. The genesis of this thinking was a farm which I worked on in NZ in 1990 which only had a small tractor, a transport box and a feedout wagon. I was never really attracted to machinery so as the machines on our farm aged I simply did not replace them and employed contractors instead. There are five men who are called on as required.

1. The contract rearer who was covered in a previous section.
2. Pat Walsh has been making the pit silage and bales for over 20 years. This includes wrapping and drawing in. He also spreads some slurry and does all of the hedge cutting. Four years ago he began winter feeding of three quarters of the herd. A new silage feed rail is a long way from the pits so a diet feeder is used as a transporter. This is fed out every second day to milkers and every three days to dry cows. High quality silage is always targeted so straw or hay will be included for the dry cows. Pat also has a plant hire and construction company which we have used in the past.
3. Pat Finn has been spreading fertiliser for 10 years. We blanket spread the whole farm every 4 weeks or earlier depending on the weather forecast. This includes where the cows are grazing on that day. He also spreads lime as required as well as supplying, delivering and stacking straw.
4. Robert Roe agitates slatted tanks that we have and does lighter digger work. He built the milking parlour with me and is an important source of advice too. He has worked with us for 15 years.
5. Denis Kelly has been our relief milker for 25 years and also looks after hoof care. Two of the children are able to milk now too so time away is not an issue.

As mentioned before my father can keep a watchful eye when I am away and this is reassuring. All contractors are given as much notice of impending jobs as possible and are paid promptly. Electronic transfer has practically taken over from cheques at this stage.