



## PHASE 2 - FARM WALK

24 July 2014

Mike Dillane,

Lixnaw,

Co Kerry

Business, Environment Technology through  
Training Extension Research



A Teagasc/Irish Farmers Journal initiative, supported by industry sponsors





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The Teagasc/Irish Farmers Journal BETTER Farm Phase 2 management team (clockwise, from top left): Adam Woods, Paul Crosson and Paul Maher, Teagasc, Darren Carty and Kieran Mailey, Irish Farmers Journal, and programme advisers Catherine Egan, Peter Lawrence and Alan Dillon.

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## Welcome note

I would like to welcome everyone to Liscullane, Lixnaw, Co Kerry. I hope that you find your visit to my farm informative and enjoyable. I initially built up the farm with my late wife Bernie, before joining the BETTER farm programme in 2012. I have made major changes with the support of my children Catherine, Mike and Niamh, and partner Miriam.

I am moving my farm forward to a place where I am going to make a net profit after all expenses, excluding my Single Farm Payment and premia. While I have had a demanding schedule, I feel all the work has been worthwhile when I see the benefits it has brought. I would like to thank my Teagasc team of Adam Woods, Alan Dillon and Oliver McGrath.

**MIKE DILLANE**

On behalf of the management team of the Teagasc/Irish Farmers Journal Better Farm beef programme, I would like to welcome you to today's event. Teagasc and the *Irish Farmers Journal* have worked closely together over the last five years to make the programme a success. This would not have been possible without the commitment and drive of the participants.

Mike has been very open to new ideas and advice and we commend him for this and the improvements he has already put in place. With his management ability and commitment, we have no doubt that he will continue to push his business forward and we look forward to helping him achieve his potential.

**ADAM WOODS, PROGRAMME MANAGER**

### PHYSICAL SYSTEM

Measure	Current 2011	Target 2016
	Suckler to weanling	Suckler to weanling/finish
Stocking rate (LU/ha)	1.57	2.2
Land base (adj ha)	59	59

### PURCHASES

Purchases	15 in-calf heifers	0
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### LIVEWEIGHT OUTPUT

Liveweight output (kg/ha)	568	850
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### FINANCIAL SYSTEM

Output value (€/ha)	1,050	1,901
Variable costs (% of output)	€964 (92%)	€1,100 (58%)
Gross margin (€/ha)	85	801



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# Increasing output on heavy land

**M**ichael Dillane runs a 90-cow suckler herd on 59ha near the village of Lixnaw in Kerry. He has three children – Catharine (25), Michael Jnr (20) and Niamh (18).

Prior to joining the BETTER farm programme in 2012, Michael was operating a 70-cow split autumn- and spring-calving system with the majority of cows calving from October to January.

All progeny were sold as weanlings from August to November with a focus on the Italian live export market. The main sires used were Belgian Blue, Blonde D'Aquitaine, Limousin and Charolais.

Replacements were purchased at two years of age and inseminated on farm.

AI was used on cows and heifers calving from October to January, with a Limousin stock bull used to serve the later-calving cows and heifers.

Since joining the programme, the emphasis has been on increasing output at lower cost, while making the farm more labour-efficient.

The herd has increased to 90 cows calving in autumn, with 100% AI now used on all cows and heifers.

Stock was finished for the first time in 2013 with cull cows and a portion of heifers slaughtered off grass. Fifteen bulls were slaughtered under 16 months of age in spring 2014.

“

Reseeding and paddocks, along with grass measuring, form the cornerstone of cheaper weight gain

These bulls averaged 386kg carcase weight with 90% grading U. Lighter heifers will be slaughtered off grass this summer at 20 months of age.

All stock show excellent conformation and growth rates. An early-season weighing carried out in March showed autumn-born bulls averaging 1.46kg/head/day, while heifers averaged 1.25kg/head/day.

Land type is predominantly quite heavy with the soil profile consisting of a peaty layer of topsoil with a blue/grey-type sub-layer, which displays poor levels of permeability.

After the very bad summer and spring of 2012 and 2013, Michael made a decision to drain one of the wettest areas of the farm that is used for silage cutting.

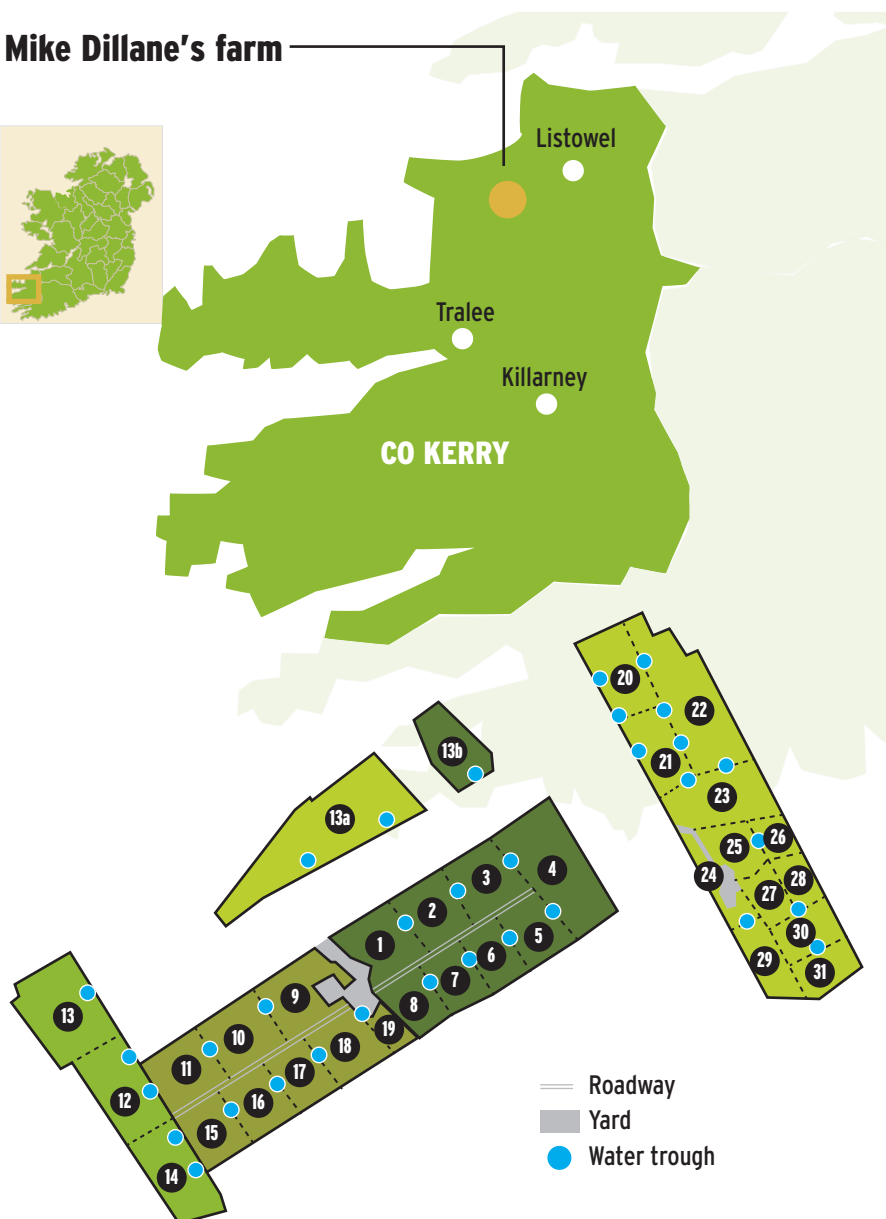
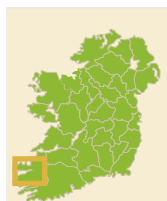
After careful planning and consulting with drainage experts, 11ha were drained extensively in late spring and early summer 2013.

The cost of carrying out drainage on land is high, but Michael is very happy with the results and now has land with a much higher production capability.

Reseeding and paddocks, along with grass measuring on a weekly basis, form the cornerstone of Michael's efforts to extract cheaper weight gain from his calves.

Extra water troughs have been installed on his farm to allow paddocks to be divided into four one-day blocks for each group of stock.

## Mike Dillane's farm





# Controlling costs on

**A**s part of the programme, a three-year plan was drawn up and profit monitor completed for Mike's farm. The profit monitor is a valuable tool, allowing farmers to examine how the farm is performing and measure physical and financial performance under a number of key headings, as shown in Table 1.

The profit monitor allows us to benchmark our performance against others with similar systems and allows progress to be monitored over time. Mike has been completing profit monitors since 2011.

Completing a number of profit monitors over successive years will also give a better overall picture of how his farm is performing, rather than focussing on one year where individual circumstances may give a distorted picture, such as what happened in 2012 when a very wet summer, combined with a disease outbreak, increased costs significantly.

It will also allow Mike to identify areas of weakness that need improvement.

Insufficient output is one of the



main reasons for poor profitability on suckler farms and if gross margin is to be improved, the level of output needs to be examined.

As cattle performance and breeding performance on the farm were deemed to be very good, increasing stocking rate and the resultant increase in output from a lower-cost grass-based system was the driver of profitability on Mike's farm.

The farm is very heavy in nature, so the cost of production is generally going to be higher than on a dry farm.

This is due to longer winters, difficult ground conditions in early spring and late autumn and the threat of a poor summer, lead-

“

Insufficient output is one of the main reasons for poor profitability on suckler farms

**Table 1: profit monitor yearly comparison on cattle enterprise only**

Year	Area farmed (ha)	Stocking rate LU/ha	Lwt output kg/ha	Value of output €/ha	
2013	59	1.97	606	1265	
2012	59	1.78	491	1105	
2011	59	1.57	568	1050	

# heavy land

ing to stock being housed during the main grazing season, as happened in 2012.

Gross margin per hectare has increased from €85/ha to €390/ha – a 358% increase in the past two years. The average gross margin per hectare on the 34 participating farms in 2013 dropped by 17% when compared with 2012.

## VARIABLE COSTS RISE

As a result of the increased stocking rate and the greater need for more grass, the farm has seen the expected rise in variable costs.

Fertilizer costs have not increased to any great degree though, increasing from €173/ha to €181/ha, or by less than 5% between 2011 and 2013.

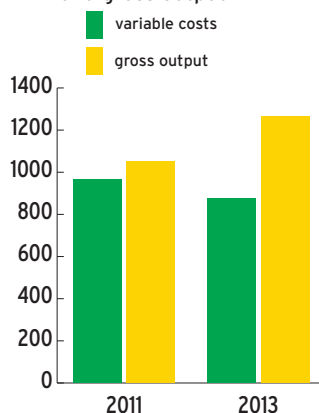
This is despite a 25% increase in stocking rate over the same period with the gains coming from more paddocks, more use of phosphorus and potassium fertilizer and tighter grazing.

Very little topping has been done on the farm since the start of the programme. Variable costs were very high, but have since decreased.

Meal bills have reduced, despite

**Figure 1**

Change in variable costs and gross output



almost 40 cattle being finished on the farm last year, compared with none the year before.

The farm's vet bill has dropped since 2011 by 50% and this is due to better herd health management with all calves being vaccinated at regular intervals.

Only three vet calls were recorded between autumn 2012 and autumn 2013 and this has helped to significantly reduce costs.

Contractor costs remained at similar levels and are not predicted to drop substantially due to a requirement for five to six months worth of silage to be harvested annually due to long winters.

	Feed	Fert/lime	Vet	Contractor	AI	Other	Gross margin
	250	181	136	186	21	100	390
	449	178	187	217	63	111	-100
	254	173	273	186	38	41	85

# Future direction for the farm

## Alternative options explored

**M**ike currently has an 88-cow herd, which calves in late autumn. The highest-quality weanlings are sold live with the remainder taken through to beef bulls at 16 months of age and heifers at 20 months of age.

A proportion of heifers are also retained within the herd as cow replacements to maintain a replacement rate of 16%.

Analysis was carried out to evaluate alternative options to further increase gross margin on the Dillane farm (Table 1).

It was assumed in this analysis that the level of productivity for all options was the same as current levels on the farm, eg forage produced on the farm was at current levels. It was also assumed that replacements continued to be retained from within the herd with a 16% replacement rate.

Option one involved selling progeny as weanlings rather than the current system where only the best calves are sold as weanlings with the remainder retained through to beef.

The price received for weanlings was reduced by 20c/kg when compared with the current system, since the average weanling value will be less than the value of the highest-quality weanlings.

In this scenario, cow numbers



were increased to 96 (Figure 1), since the feed demand for progeny was lower (since there were no finishing cattle) and hence more feed was available for the suckler herd.

Despite the increase in cow numbers, gross margin was reduced by 26%. This can be explained by the lower margin for the calf to weanling system when compared with the calf to beef system on the Dillane farm.

In option two, it was assumed that progeny were taken through to finish on the farm with bulls sold at under 16 months of age and heifers sold at 20 months of age.

Cow numbers were reduced to 82 in this system because more of the feed produced on the farm is needed for the yearling cattle. Gross margin is 2% greater than the current system and almost 30% greater than the weanling option (Figure 1).

For options three and four, it was assumed that Mike moved his calving date to spring with a mean



**Table 1: Farm planning options evaluated for Mike Dillane's farm**

	Current System	Option 1	Option 2	Option 3	Option 4
Calving date	Autumn	Autumn	Autumn	Spring	Spring
Bulls	Weanling & Finishing	Weanlings at 11/12 months	Finishing at <16 months	Weanlings at 8/9 months	Finishing at <16 months
Heifers	Weanling & Finishing	Weanlings at 8/9 months	Finishing at 19/20 months	Weanlings at 8/9 months	Finishing at 19/20 months

calving date of mid-February. The cost of carrying the suckler cow was substantially reduced in these systems at €597/cow, compared with €663/cow in the current autumn-calving system. This was a result of lower feed costs in the spring calving system.

Although, the autumn-calving system has advantages, such as capacity to use AI and availability of weanlings for sale early in the weanling sale season, these costs must be borne in mind. In particular, it must be considered whether the advantages are sufficient to offset the additional costs incurred.

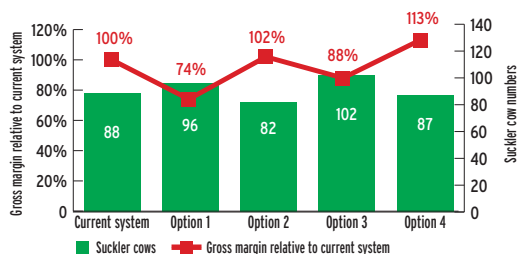
Option three involved selling spring-born calves as weanlings at eight or nine months of age in October/November.

Cow numbers were increased to 102, but margin was reduced by 12% when compared with the current system.

Option four evaluated the impact of taking all progeny through to beef. This option returned the highest margin of all scenarios investigated, returning a 13% higher margin than the current system. Cow numbers were similar to the current system at 87 cows (Figure 1).

**Figure 1**

Relative gross margin and cow numbers of options evaluated for the Dillane farm



This analysis was carried out to provide Mike and his advisers with some indication of the relative impact of production system changes on his farm.

Critically, the core profit drivers remain the same in all cases – having a productive cow, maximising performance from grazed grass and operating towards a farm plan.

However, it was also clear that taking progeny through to a stage later than weanling was an effective strategy to dilute suckler cow costs over a greater quantity of beef output, to provide a greater proportion of the grass grown on the farm to growing animals and to increase farm margins.

# Reducing costs and maximising

**P**roper subdivision of grazing land is essential to be able to successfully manage pasture and achieve desirable rotation intervals. On joining the BETTER farm programme, one of Mike's first tasks was to increase the number of paddocks on the farm. This also meant installing extra drinking troughs to allow for more flexibility in grassland management. The farm layout is detailed on **Page 5**.

Mike is able to subdivide the permanent paddocks further into four sections thanks to water trough locations, giving a potential of 52 paddocks on the farm between five groups of stock.

This means that there are up to 10 paddocks per grazing group when silage ground is back in the rotation. Paddocks range in size from 0.5ha to 2.4ha. The aim is to graze out the paddocks in three days and allow 18 to 21 days for regrowth.

Grass is measured weekly with a platometer. Once the number of grazing days ahead is established, decisions can be made whether to take out surplus grass as baled silage or spread extra fertilizer if a potential deficit is identified.

Grass budgeting using the grass wedge is key to maintaining a highly-digestible grass sward. Mike aims to increase the utilisation of grass by maintaining pre-grazing heights of around 10cm (1,600kg to 1,700kg DM/ha) and grazing paddocks down to 4cm.



Measuring grass weekly will also identify the poorer performing paddocks and the need to address soil fertility or undertake reseeding.

Despite the fact that the farm is quite heavy and wet, there is a focus on turning cattle out to grass earlier in the spring to help prolong the grazing season and help to reduce the expensive indoor winter period.

This is achieved by having drier fields closed early to have grass available for early turnout and turning out lighter stock, such as finishing heifers, first and also allowing autumn-born calves to creep graze around the sheds during the winter period as weather permits.

Mike is also very flexible with his grazing management and has practised on-off grazing with cows and calves during difficult periods over the last two years.

# growth rates

## SOIL FERTILITY

The maintenance and improvement of soil fertility are very important tasks to maximise grass growth. On good mineral soils, a soil pH of 6.3 and soil phosphorus (P) and potassium (K) at index 3 is required.

The farm was soil-tested in February 2013. Overall, approximately 8% of the farm tested for optimal pH. Soil pH on the farm ranges from 5.0 to 6.2. Table 1 outlines the farm's soil pH readings.

As can be seen, 25% of the farm tested for soil pH below 5.5, 25% of the farm tested between pH 5.5 and 5.9, 42% of the farm tested between pH 5.9 and 6.2 and 8% of the farm tested pH 6.2 and 6.5.

The pH status of the soil has a significant influence on the availability and uptake of both soil nutrients in the form of either artificial fertilizers or organic manures by the plant.

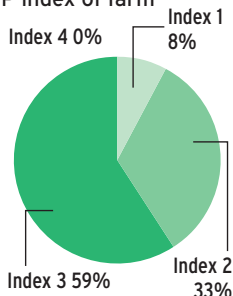
It will be important to apply lime on the low pH soils and monitor the response over the coming years.

Grassland soils maintained at pH 6.3 to 6.5 will release approximately 60kg to 80kg/ha more nitrogen per year than soils with pH 5.0. This represents a potential cost saving between €60 and €80/ha.

Phosphorus is a very important element for crop establishment and root development. It also plays an important role in the nutrition of livestock. Soils at P

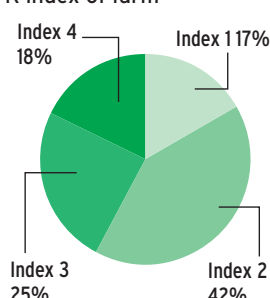
**Figure 1**

P index of farm



**Figure 2**

K index of farm



**Table 1: Range in soil pH on farm**

Soil pH range	% of farm within range
<5.5	25%
5.5-5.9	25%
5.9-6.2	42%
6.2-6.5	8%
>6.5	0%

index 1 will produce approximately 1.5t/ha less grass dry matter compared with soils at index 3. As can be seen from Figure 1, 0% of the farm is index 4 and 59% is categorised as index 3 for P. Most of this land is on the main grazing block and the soils with lower P indices are mostly on the silage fields.

Potassium plays a key role in increasing stem strength, improving drought resistance and cold tolerance and, most importantly, for increasing yield.

Eighteen percent of the soils are index 4 with 25% of soils testing index 3. Mike can focus on targeting his slurry spreading to his silage fields and paddocks with low P and K levels.



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# Cow type and AI delivering

**T**here is often dispute over the ideal suckler cow or breed of the cow. However, regardless of breed type, a functional suckler cow should have the following characteristics:

- ☛ Longevity.
- ☛ Fertility – calving every 365 days.
- ☛ Milk.
- ☛ Calving at 24 months.
- ☛ Good temperament.
- ☛ Calving ease and calf quality.
- ☛ Easily fed.
- ☛ Good conformation.

Mike began breeding replacements from within his herd in 2012. Prior to this, heifers were purchased locally and bred by Mike, but with supply of suitable stock declining, and taking AI use into account, it was decided to breed his own replacements.

When selecting suitable replacement heifers, Mike is very conscious about selecting daughters from cows with good milk yield, fertility, docility and conformation. The cows are very functional and are capable of rearing excellent-quality weanlings with good weight for age.

Herd fertility is excellent with a 381-day calving interval in the 2013/2014 breeding season. By using the Herd Plus ICBF cow report and reviewing calf performance from previous weighings, Mike has very accurate data to help selection decisions.

Heifers are calved at 24 months

of age where previously, purchased heifers would have been between 30 months and three years old at first calving. The average age of cows at calving was seven years and two months. Cows are mostly bred from Limousin and Blonde sires that had very good maternal traits.

## USING AI

Mike uses 100% AI and this is one of the reasons for sticking with autumn calving, as he finds rounding up spring-calving cows in the field too taxing on his time.

He also finds AI gives access to the top bulls in the country. Many heifers calving down this year are sired by the Limousin bull Ozous (OZS). Next year's heifers will be calving down to the Simmental bull Seaview Tommy (SEV).

For the remaining cows, terminal sires are used to deliver top-quality calves for export or finishing. The main bulls used last year were Belgian Blue bulls Sultan (STQ), Giga Du Bois Remont (RGG), Rosemount Cash ET, (RWS), and the Charolais sire Lisnagre Elite (ET) (LGL). These are all good terminal sires capable of producing heavy, well-muscled calves.

Easy-calving maternal sires are used on heifers with Hauteclair (HCA) being one of the main bulls used. There are no sires with calving difficulty over 4% used, with the aim to calf heifers normally at 22 to 24 months to help achieve



Good breeding management and herd fertility are key to an efficient suckler herd

**Table 1: Three year calving performance statistics**

	2013-2014	Current national averages
Total no. of calving's	82	
No. of cows	65	
No. of heifers	17	
Calving interval	381	395
Mortality at birth %	0	4.7
Mortality at 28 days %	1.2	6.1
Females not calved in period %	0	10
Calves per cow per year	0.94	0.83
Births with known sire %	95	61
Births with difficult calving %	0	3.9

a 365-day interval. Genetic indices are used as a key support tool when selecting breeding bulls and herd replacements.

In winter, heifers and cows are observed three to four times a day for signs of heat. Mike is a believer in having a large number of replacement heifers as it allows him to cull problem cows and late-calvers without affecting output.

### BREEDING PERFORMANCE

Good breeding management and herd fertility are key to an efficient suckler herd. A long drawn-out calving period of October to April is now shortened from September to late January/early February.

This will be tightened further in the next two years until all cows are calved from September to Christmas. It will be achieved through a combination of strict breeding policy (AI for a short period of eight to 10 weeks), good herd health management and

nutrition. Animals not in-calf will be culled.

In addition to a short breeding season, Mike maintains that it is very important to have cows in the correct energy balance, whereby they are at the correct body condition score and on a rising plane of nutrition prior to breeding.

Cows calved from September, once housed, are fed top-quality silage harvested by the last week of May (72% to 75% DMD) along with 1kg to 2kg of ration daily until breeding is ceased.

Once breeding finishes, cows are grouped and meal feeding ceases with cows having access to only good-quality silage plus minerals. Calves are allowed, weather-permitting, to creep graze paddocks surrounding the sheds over the winter period, while being fed 1kg of ration daily. This helps thrive, while also creating a healthy environment for calves and cows.

As can be seen from Table 1, Mike's mortality rate at calving and 28 days post-calving are well below the national average and hence he is producing over 0.94 calves per cow per year.

Mike is very focussed on fertility and his calving interval was traditionally running at 367 days. However, as Mike was building cow numbers, some cows were purchased in and so, along with a number of cows calving later in the autumn than usual, calving interval has increased to 381 days.

Now that Mike has reached his target cow numbers, he can begin to cull more ruthlessly and reduce his calving interval once again.



# Achieving top animal

One of the main objectives on this farm is to maximise the weight for age of all progeny in order to increase kilogrammes of liveweight produced/ha. As can be seen from Tables 1, 2 and 3, Mike is achieving very good growth rates in his cattle.

This can be attributed to:

- Good herd health and stockmanship, as the calves have very few setbacks from birth to selling time.
- Breeding cows with good maternal traits that are able to produce heavy weanlings. As milk is the driver of calf weaning weight, Mike is very conscious of maintaining milky cows within his herd.
- Using animals with good genetic merit and growth rate traits.
- Cross breeding – this has been shown to increase growth rates when two to three different breeds are used.
- Good grassland management is essential in order to provide high digestible grass to cows and calves at all times during the year.
- Mike aims to start turning heifers out to grass from late-February in order to prolong his grazing season. He also aims to creep-graze calves around the shed for the winter period once ground conditions allow. This should significantly help to continue to increase thrive at lower cost.



## SLAUGHTERED STOCK PERFORMANCE

Due to an overall depressed weanling market last year, Mike felt he was not getting enough value for his weanlings in local marts.

Budgets were carried out and he made the decision to try to finish some of the stock as a trial to see if he could improve his margin per head.

Fifteen bulls and five heifers, some of which had gone unsold at marts in August, were finished. Heifers were finished at grass in December at 12.5 months at a light carcase weight, while bulls were fed up to 3kg to 4kg of meal at grass prior to housing in late October and finished off ad-lib meal in February and March under 16 months.

Both bulls and heifers were paid for on the QPS grid and eligible for the quality assurance scheme bonus of 12c/kg. Carcase weights were adequate in all cases and fat scores averaged 3+.

Table 3 outlines the increased profitability of the systems in 2013/2014 versus selling the stock as weanlings.

“

Budgets were carried out with stock finished as a trial to improve margin per head

# performance

**Table 1: 2014 Winter/early spring-born bulls and heifers**

Weigh date	D.O.B.	Avg weight (kg)	ADG from birth (kg/day)	ADG from last weighing (kg/day)
Heifers	01/02/2014			
16/03/2014		120	1.55	
05/07/2014		256	1.3	1.23
Bulls	01/02/2014			
16/03/2014		129	1.8	
05/07/2014		241	1.41	1.36

**Table 2: 2013 autumn-born bull and heifers**

Weigh date	D.O.B.	Avg weight (kg)	ADG from birth (kg/day)	ADG from last weighing (kg/day)
Bulls	4/11/2013			
16/03/2014		234	1.42	
05/07/2014		392	1.39	1.34
Heifers	01/11/2013			
16/03/2014		216	1.31	
05/07/2014		346	1.2	1.05

**Table 3: Comparison of returns from selling animals live versus finishing**

Details	Bulls (<16 months)	Heifers (<12.5 months)
Number	15	5
Age at slaughter	15	12.5
Average value as weanling (15 Aug)	€890	€730
Grass cost post-weaning	€13	€15
Meal cost to slaughter @ €260/t	€403	€140
Silage	€40	€0
Average carcase weight	386kg	267kg
Average value	€1,650	€1,150
Margin over selling as weanlings	€304	€265

# Tackling a major land

**T**he site was surveyed and levels taken to establish falls, low areas and surface run-off directions. Soil and geological maps were consulted to get an overview of the conditions in the area.

The key element was the digging of four test pits, which were similar in makeup. They showed peat varying in depth from 30cm to 70cm overlying a substantial layer of silty/clay material. Below this at 1.5m, the till was somewhat more permeable.

Ground water pressure was evident and while the depth of silt/clay band was thick, the trial holes appeared less dramatic (filled to the top with water – approximately 2m depth of water) and weakened the case for shallow drainage.

Due to the evidence from the test pits, it was decided that most drains would have to be deep at around 1.5m+ or else at about 1m

**Table 1: Cost of drainage on Mike's farm**

Costs	Total/ha
Digger work, mole plough and stone cart hire	€2,500
Drainage pipe	€312
Drainage stone	€1,995
<b>Drainage cost</b>	<b>€4,807</b>

depth with sumps to a depth of 1.5m to 1.8m located every 30m approximately.

## GROUND SITUATION

A combination of these drains were carried out and stone of 2in diameter and greater was used over the pipes. Drains were spaced at approximately 12m distance apart and most were piped with 80mm corrugated pipe.

There is the potential to install mole drainage in the future in localised spots should there be any surface drainage issues. The main outlet was deepened to improve fall and flow in the main



# drainage project

open channel. The few low-lying hollows were filled with excess soil and when the drainage was complete, the whole area was ploughed and the land levelled to give all sections of the site an out-fall.

## VERDICT

Since draining, 50% of the land has produced three cuts of top-quality silage (72%DM+) and three grazings, while the remainder has produced one cut of silage and six grazings.

Taking each cut of silage at an average of 4t DM and each grazing at 1.4t DM, the land has produced 11.5t DM /ha compared to 3t DM in 2012, or an increase of 8.5t/ha.

Taking a value of €90/t DM, this equates to an increase of €765/ha/year in terms of the value of increased grass grown. This increase would lead to the drainage works being paid off in around

seven years. Drainage will also facilitate a planned higher stocking rate.

## FACTORS TO CONSIDER

It is important before anyone attempts to carry out a drainage job to consider the following:

- ➔ Every drainage job is only as good as its out-fall. Therefore, cleaning and upgrading of open drains acting as outlets for land is a must before work commences. All open drains must be dug to as great a depth as possible.
- ➔ A site assessment. Test pits must be dug to ascertain soil type in the area and the type of drainage required (shallow or deep).
- ➔ Hire an experienced contractor. An operator with good knowledge and experience can be the difference between a successful and

➔ Continued next page



unsuccessful drainage job.

➤ Drainage is expensive and can impact seriously on farm cashflow if plans for finances are not properly in place. Farmers need to sit down with their adviser in advance to assess if draining land is the best move for them to make.

➤ When reseeding land post-drainage, select grass mixes that are suitable to heavy land and with good ground cover and persistency. The mix used per acre basis was Twymax 4kg, Drumbo 4kg, Abermagic 5kg and Timothy 2kg.

### GENERAL DRAINAGE LESSONS

Poor design – spacing, depth and type of drain merit a lot of detailed investigation and contractors with local experience are good at advising on such matters. Where the drainage system fails or is substandard, this can be confirmed by observing the water table depths between the drains and also the drain flow rate.

Ideally, drains should be installed in dry weather. Deposition of soil particles in a drain pipe usually takes place just after construction when the backfill is loose. Generally, this material is coarse as the fine material has been washed out.

In wet weather, the problem is more acute and the chance of other problems occurring increases (ie scaling, which may cause breakage or misalignment of the pipe and non-uniform settlement of the drain itself and the backfill).

Soil particle entry into the buried pipe may occur in soils that are very fine grained and uniform



(fine sands) – this is where the soil enters the drains over time and clogs the system. However, this is not likely to be a problem in clay soils especially where gravel is put in around the pipe.

Sedimentation or settlement out of the heavy soil particles from the drain water will tend to occur at joinings and where there is a sharp change in the fall. These should be avoided where possible.

Organic wastes, such as slurry or milk, entering the system will quickly form a gel which rapidly blocks the pipes. Ochre or red/iron deposit can cause severe problems and is difficult to overcome – larger diameter pipes and/or more gravel fill are a help and submerging of the system has been successful.

Finally, the drain mouth outlet may become clogged by roots or weeds or silt, etc, and subsequently causes stagnation/sedimentation along the pipe, which compounds the initial problem. Drain mouths should be identified/marked and cleared every so often and care should be taken when cleaning main drains that these outlets are not damaged.



# Herd health central to strong performance

**F**armers planning on increasing intensity and output must ensure herd health management is sufficient, as increasing stocking rate, improving grassland management skills and animal genetics will be pointless if herd health breaks down. Mortality is kept very low by the following steps:

## COMPACT CALVING

Keeping calving periods compact avoids calves of different ages mixing, which leads to younger animals being exposed to infection from older calves. It also makes management of dosing or vaccinating easier as calves are uniform in size. Also, compact calving makes supervision at calving time more focussed, whereby Mike knows his cows will all calve within a designated 10- to 12-week period.

## CALVING DIFFICULTY

Selecting breeding bulls (AI sires) with low calving difficulty (<4%) and cows with good pelvic size minimises the risk of calving difficulties and other issues. Cow body condition scores are monitored during the year with the aim to calve cows around a score of 3 (scale 0-5) in order to avoid any difficulties at calving.

## COLOSTRUM

As calves are born without any immunity, Mike ensures that each calf receives sufficient colostrum

within two hours of calving. Colostrum not only provides food but also maternal antibodies to protect the young calf against the common infections that it may encounter in early life.

## HYGIENE

Mike is a firm believer in providing a clean, dry lying area with no draughts and good ventilation. A lot of emphasis is put on having a clean environment for the cow and calf post-calving and isolating them for four to five days to develop a strong cow-calf bond.

## PARASITES

Faecal samples are taken from different stock groups shortly after winter housing to determine liver and rumen fluke burdens, and during the grazing season to assess gastrointestinal parasites.

## NUTRITION

Silage provides the basis of winter feeding diets. Testing establishes the nutritional quality and allows the design of diets to meet different stock nutritional requirements. Having cows in optimum condition at calving and on a rising plane of nutrition is also helping to achieve good breeding performance.

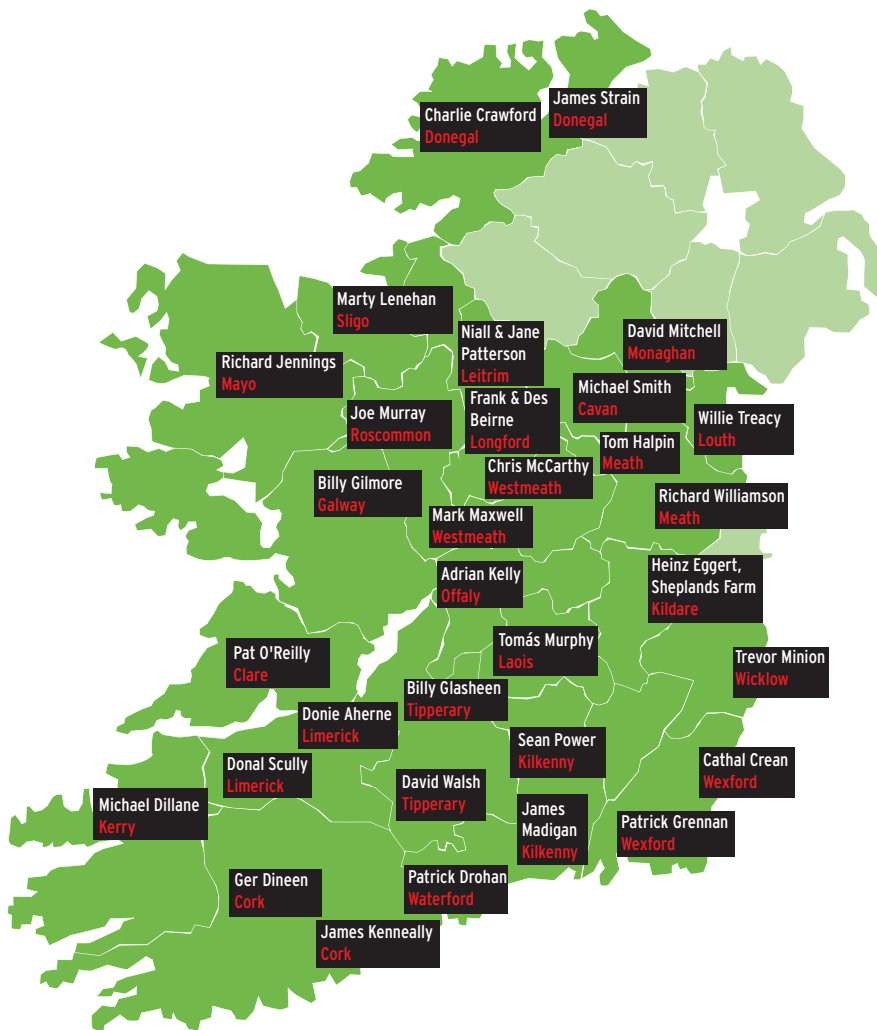
## FARM BIOSECURITY

The change to 100% AI and breeding replacements from within the herd is allowing a closed herd policy. This reduces the risk of disease entering the herd.



Business, Environment Technology through  
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# PHASE 2 PARTICIPANTS



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