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Agriculture and Food Development Authority

Irish FARMERS JOURNAL

BETTER farm

beef programme

Business, Environment Technology through Training Extension Research

PHASE 2 – FARM WALK

20 March 2014

Mark Maxwell,
Ballynagore,
Mullingar,
Co Westmeath

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

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DAWN MEATS

FBD

KEPAK GROUP

CONTENTS

Business, Environment Technology through Training Extension Research

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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The voice of Ireland's farming industry
IRISH FARMERS JOURNAL

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On behalf of Teagasc and the management team of the Teagasc/*Irish Farmers Journal* BETTER Farm beef programme, I would like to welcome you to today's event on Trevor Minion's farm. This is the second in a series of 10 open days taking place in 2014 on farms participating in the programme. I would like to acknowledge the support of our sponsors and, in particular, the *Irish Farmers Journal* who have been instrumental to the programme's success over the past five years.

We hope that you will find today's walk both informative and practical and hope that you can take home some messages from this farm to improve the profitability of your own farm.

Increasing output has been a major focus of the farm plan and is very important in a drystock system. Achieving this output cheaply is equally important and Trevor has paid extra attention to correct grassland management during the year to ensure a long grazing season and maintaining quality swards for grazing.

This farm is the only farm in the programme operating a dairy calf-to-beef enterprise. Trevor has worked this system well which has increased the stocking rate and, in turn, gross margin. Both Trevor and his son Andrew have been very open to taking on new ideas and advice and we commend them for this, and thank their family for opening up their farm today. With Trevor's management ability and commitment, we have no doubt that he will continue to push his business in the future and we look forward to helping him on this journey.

Adam Woods,
BETTER Farm beef programme manager

PHYSICAL SYSTEM

Measure	Baseline 2011	Target 2015
System	Suckler / calf-to-beef	Suckler / calf-to-beef
Stocking rate (LU/Ha)	1.69	2.4
Land base (adj. Ha)	36.7	40

PURCHASES

Purchases	Dairy calves and replacements	Dairy calves and replacements

PHYSICAL OUTPUT

Liveweight output (kg/Ha)	644	987

FINANCIAL SYSTEM

Output value (€/Ha)	1,211	2,012
Variable costs (% of output)	€766 (37%)	€905 (45%)
Gross margin (€/Ha)	445	1,107

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Expaning the suckler herd

Mark Maxwell farms in Ballynagore, Co Westmeath, and is married to Aoife. They have five children, Rachel, Marie Claire, Louise, Kathryn and Robert. Mark joined the BETTER Farm programme in 2012 and operates a suckler to finishing unit with a split autumn and spring calving herd.

The farm, located beside the village of Ballynagore, extends to 107ha. Ninety-four hecatres are owned and split in three separate locations. The main grazing block of 52ha is located at an outfarm approximately one mile from the home farm.

The home farm consists of 28ha and is primarily used to rear spring calving cows and calves. The farm operates 12ha of tillage also, with barley grown for feeding on the farm.

Mark's cow type is very much focused on good maternal traits and utilising first-rate milk yield potential (cows are all linked back to dairy crossbreeding) to achieve good weight for age in progeny.

Sire selection is mainly targeted to terminal sires that add size, shape and good growth potential to progeny. This is achieved through a mixture of AI and Charolais stock bulls.

Male progeny are predominantly slaughtered as steers at an average of 420kg carcase weight, while heifers average 360kg.

In 2013, the farm slaughtered 44 steers and 44 heifers. Some maternal sires were used to start breeding a percentage of replacements from within the herd.

Numbers are increasing on the farm with cow numbers up to 100 in 2014. The aim is to increase to 120 cows by 2015 with all progeny slaughtered off the farm.

Traditionally, replacements have been purchased with a preference for Hereford and Angus dairy crosses. A small number of maternal sires have also been used to breed a percentage of replacements from within the herd.

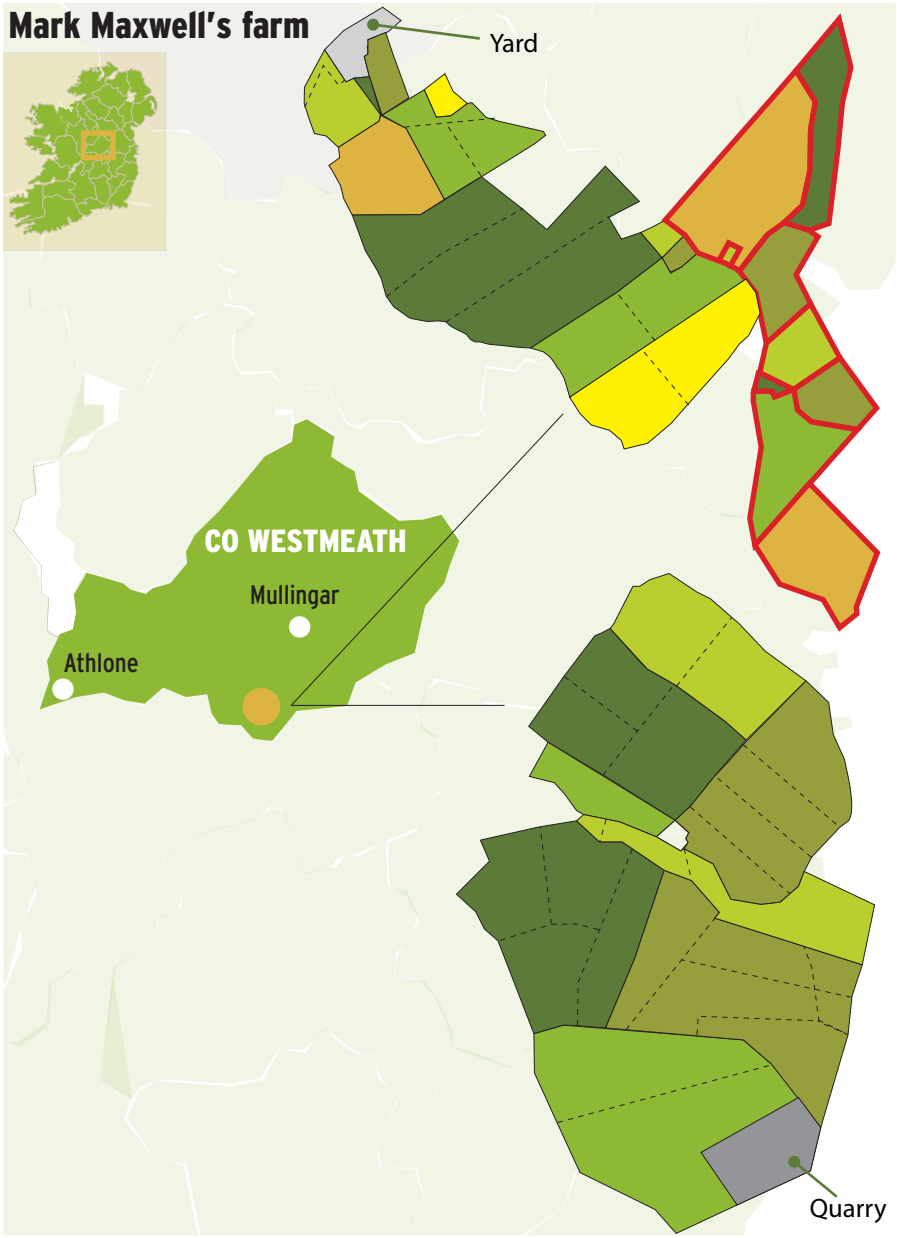
This increase in output, in combination with improved technical efficiency, should improve the farm's gross margin. Better grassland management is a large aspect of improving technical efficiency.

> "Better grassland management is a large aspect of improving technical efficiency.

This will be achieved through measuring grass on a weekly basis, using more paddocks and moving stock to fresh grass more regularly.

Mark had been measuring grass on Excel for the last 12 months but has now begun using Pasturebase Ireland, which will accurately record weekly and annual growth data for individual paddocks on the farm.

In 2013, Mark grew 9.6t of grass dry matter per hectare and the plan for 2014 is to increase this by at least 10%.


Mark Maxwell's farm
Yard
CO WESTMEATH
Mullingar
Athlone
Quarry

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Investing for increased output

Since joining the BETTER farm programme, Mark's profit monitor results have shown a steady increase in output value. The farm has increased its stocking rate by 7% since 2012.

While liveweight output has increased by 1% since 2012, the value of Mark's output has increased by 2% since 2012. While the increase has been minimal, it has to be remembered that 2012 and 2013 were extremely difficult year's weather-wise, which made increasing the stocking rate and output on the farm very difficult.

Fertilizer costs have shown the biggest increase in 2013. The farm is generally good for phosphorus (P) levels, apart from two or three areas, but potassium (K) levels are very low as identified in soil test results taken at the end of 2012 (see pages 10-11).

A significant cost was, and will be, involved in rectifying this. Reseeding poorly performing paddocks has also contributed to fertilizer costs.

> While these costs may rise, the extra output generated should more than cover any increased costs

Costs in improving grassland productivity (fertilizer mainly) and other costs such as vet and contractor will increase slightly again in the future as stocking rate increases.

This is due to higher requirements for slurry spreading and silage harvesting along with higher numbers of stock for dosing, testing etc. While these costs may rise, the extra output generated should more than cover any increased costs.

Programme adviser Alan Dillon

Table 1: Target performance by end of 2015

	2012	2013	2015 (target)
Stocking rate	1.57	1.68	2.11
Output kg/ha	504	510	763
Output €/ha	€1,108	€1,138	€1,633
Gross margin €/ha	€630	€662	€1,053

Table 2: Profit monitor yearly comparison

Year	Area farmed (ha)	Stocking rate LU/ha	Lwt output kg/ha	Value of output €/ha
2011	94.5	1.47	462	866
2012	91.8	1.57	504	1,108
2013	95	1.68	510	1,138

Plan for profit

Mark aims to slaughter spring-born steers at 24 months out of the shed and heifers at around 22 months. He is achieving very high weight gain at the second year at grass and this transpires to a high weight at slaughter. Mark is achieving a 400kg carcase at 24 months from steers, comparable with some bull beef systems. The steer system allows Mark to make maximum use of grass, while also selling on the grid and benefiting from the QA bonus.

Heifers are killed at 330kg to 360kg carcase weight at the beginning of the year, making maximum use of grass and benefitting from a short winter finishing period.

Table 3: Example production budget for a 24-month-old Charolais steer system

Variable costs	
Cow and calf to weanling stage (8mths - 340kg@weaning)	€500
Dose IBR/Rumen fluke/ worms	€10
First winter (silage +2kg of ration - 120 days - 400kg turnout)	€126
Dose at grass Rumen fluke/Liver fluke/worms	€10
2nd grazing season (210 days - 600kg at housing)	€147
Winter finishing period (108 days - 730kg @ slaughter)	€216
Sale assuming 730kg lwt @55% killout = 400kg carcase grading R=3+	
Price per kg carcase	
Base price (current)	€4.00
Quality assurance bonus	€0.12
Total price per kg carcase	€4.12
Sale price	€1,648
Margin per head	€639
Sensitivity analysis	
Beef price -10%	-€160
Ration price +10%	-€20
Net margin per head	€459

Assumptions: Home mixed ration: barley, soya hulls, soya bean meal; silage 70 DMD costing €28/t fresh weight; Grazed grass costing €0.07/kg DM; Steers fed average 6kg per day over finishing period, 2kg per day over first winter

	Feed €/ha	Fert/lime €/ha	Vet €/ha	Contractor €/ha	Other €/ha	Gross margin €/ha
	160	79	48	39	97	479
	137	98	70	29	117	630
	114	143	74	6	80	662

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Spring rotation planner

The spring rotation planner (SRP) is a management tool to remove guesswork from decision-making during this period. The planner allocates a proportion of the farm each day to the herd from turnout to grass in spring up to magic day (where growth rate equals demand), thereby rationing grass supply in spring until growth exceeds demand.

The SRP technique, in addition to weekly grass measurement, will ensure that the first rotation finishes on the correct date and the herd does not run out of grass at critical times of the year.

Mark fills out a simple planner each year to aid in grassland management.

Table 1: Spring rotation targets

Total hectares to be grazed	94
Graze 40% by 27 March	37
Graze 70% by 10 April	66
Graze 100% by 20 April	94

As turnout date is dictated by grass supply and ground conditions, the farm's turnout date varies slightly from year to year.

This year, given the wet start, the turnout date on this farm was slightly later than anticipated, on 7 March.

With magic day estimated at around 12 April, this gives six weeks until the second rotation has to begin.

Put simply, Mark must aim to graze roughly 50% of his farm, including silage ground, in the first three weeks so as to hit his target of 100% by 12 April.

Table 1: Grazing options spring 2014 based on turnout date and availability of silage area for grazing

All silage ground available to graze 1 March turnout Cutting silage end of May	Graze 50% of paddocks 1 March
All silage ground available to graze 1 March turnout Cutting silage 18 to 22 May	Graze 25% of grazing paddocks 1 March
No silage ground available to graze 1 March turnout Cutting Silage 18 to 22 May	Graze 100% of grazing paddocks 1 March
All silage ground available to graze twice 1 March turnout Cutting silage 10 to 15 June	Graze all silage area 1 March
No silage ground being grazed 1 March turnout Cutting silage 18 to 22 May	Graze 100% of grazing paddocks 1 April

	Graze all silage ground 20 March	Graze remaining 50% of paddocks 10 April	Start second rotation 20 April
	Graze all silage ground 12 March	Graze remaining 75% of paddocks 1 April	Start second rotation 20 April
			Start second rotation 20 April
	Graze all paddocks 27 March	Graze all silage ground 15 April	Start second rotation 1 May
			Start second rotation 20 April

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Feeding the soil

All owned grassland was soil tested in 2013. Table 1 gives a breakdown of soil sample results by paddock. Soil pH on this farm is naturally quite high ranging from 6.49 to 7.26. Soil that has a pH maintained between 6.3 to 6.5 will release 60-80kg more nitrogen per hectare than soils with a pH of 5.0. This represents a saving of €60-€80/ha.

As can be seen from Figure 1, approximately 79% of the farm is index 4 for Phosphorus (P). Phosphorus is very important for crop establishment and root/growth development and plays an important role in the nutrition of livestock.

As concentrates fed to livestock will contribute to the P usage on the farm, there is no allowance to spread chemical P on the farm.

> Soil that has a pH maintained between 6.3 to 6.5 will release 60-80kg more nitrogen per hectare than soils with a pH of 5.0

Soils at a P index 1 will produce approximately 1.5t/ha less grass dry matter compared with soils at index 3.

Soil Potassium (K) levels are quite low on the farm with 82% of results at index 2 and 12% at index 1.Potassium is particularly important for increasing stem strength, improving drought resistance and cold tolerance and importantly for increasing yield. Potassium fertilization is more important especially in autumn and on older grass. If adequate amounts of potassium are not available, the rate of growth and yield will be restricted. There is also a relationship between nitrogen and potassium as the response of grass to nitrogen is dependent on an available supply of potassium to allow N uptake as nitrate and conversion into proteins.

Table 1: 2013 Grassland soil sample results

Paddocks	Area (ha)	pH	P index	K index
1	2.85	6.85	4	3
2	2.85	7.26	4	3
3	3.85	6.85	4	2
4	3.85	7.11	4	2
5	4.1	6.49	2	2
6	4.1	6.69	4	2
7	3.75	6.84	4	1
8	3.75	6.66	4	2
9	5.1	6.97	4	2
10	6.06	6.77	4	1
11	2.57	7.27	2	2
12	5.14	7.14	4	2
13	6.86	7.06	4	2
14	3.8	6.74	4	2
15	2.94	6.61	4	2
16	6.5	7.01	4	2
17	5.2	6.81	4	2
18	3.89	6.69	2	2
19	3.6	6.8	3	2
20	4.11	6.6	3	2

Table 2: Fertilizer usage in 2013

Fertilizer	Quantity (t)	Units N	Units P
CAN	32	8,800	0
Leifi Boost (20-0-15)	50	10,000	7,500

Figure 1
P index of farm

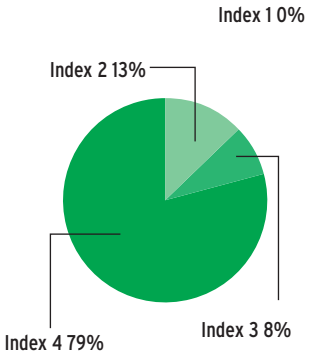
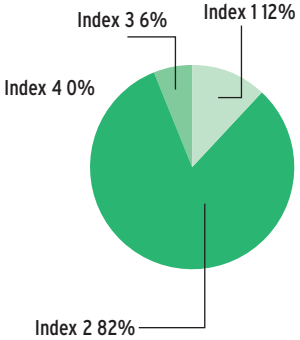


Figure 2
K index of farm



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Taking the guesswork out of slurry spreading

There are three variables which affect the rate that slurry is spread:

- Discharge rate – how fast the slurry leaves the tank when spreading.
- Spread width – how wide the slurry is spread behind the tank.
- Forward speed – how fast or slow you drive.

Step 1. Discharge rate

Discharge rate (m^3 per minute) = tanker size (m^3) / time taken to empty tank (mins)

Typical tank sizes	m^3
1,600 gallon	7.2
2,000 gallon	9.0
2,250 gallon	10.1
2,500 gallon	11.3

Step 2. Slurry spread width (m)

Step 3. Forward speed

Table 1: Forward speed to spread 2,000gal/ac

Spreading width (m)	Discharge rate (m^3 per min)	Forward speed	
Six metres	1.5	6.8km/h	4.0mph
	2.0	9.1km/h	5.5mph
	2.5	11.4km/h	6.8mph
Eight metres	1.5	5.1km/h	3.0mph
	2.0	6.8km/h	4.0mph
	2.5	8.5km/h	5.1mph
10 metres	1.5	4.1km/h	2.4mph
	2.0	5.5km/h	3.3mph
	2.5	6.8km/h	4.0mph
12 Metres	1.5	3.4km/h	2.0mph
	2.0	4.5km/h	2.7mph
	2.5	5.7km/h	3.4mph

EXAMPLE: Mark Maxwell BETTER Farm programme

Mark has a Belmac 2,050gal tank

If 1,000gal = $4.5m^3$
then, 2,050gal =
4.5 x 2.050 = $9.2m^3$

Discharge rate

Mark's tank took 4.5 minutes to empty

Discharge (m^3/min) = 9.2/4.5mins = $2m^3$/min

Spread width (m)

Mark's tank spreads 8m wide

Forward speed

ANSWER = 6.8KM/H (4.0MPH)

Slurry spreading tip

It is important to note that the nutrient value of slurry can also vary depending on the diet of animals. This will be explained in the treatment plot demo.

FERTILIZER TREATMENT PLOTS

UREA 40 units N/ac or 0.9 bag/ac	**UREA** 24 units N/ac or 0.5 bag/ac	**CAN** 24 units N/ac or 0.9 bag/ac	**18:6:12** 24 units N/ac or 1.3 bag/ac

SLURRY TREATMENT PLOTS

2,000g/ac Beef finishing shed slurry	**1,000g/ac** Suckler shed slurry	**1,500g/ac** Suckler shed slurry	**2,000g/ac** Suckler shed slurry

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Five tips for BETTER silage

1. Plan

➲ Decide on fields to harvest
➲ The amount and timing of fertilizer and slurry to be spread
➲ The approximate harvest date
➲ Contractor to avoid delays in harvesting
➲ Prepare silos and effluent tanks in advance

2. Target high yields

➲ Harvesting large yields of grass dilutes production costs
➲ Soil tests should be carried out to determine optimal rates of P, K and lime to be applied
➲ Timely removal of livestock will allow permitted N application to promote high yields

3. Graze tight

➲ Graze off to remove dead herbage in spring
➲ Graze to 4cm to 5cm prior to applying fertilizer/slurry
➲ Harvest at appropriate growth stage

4. Work fast

➲ Fast filling and perfect sealing from air are essential for good preservation
➲ Harvesting a clean, dry crop enhances preservation

5. Minimise exposure to air

➲ Careful management of silo/bales and feed trough during feedout
➲ Remove silage at a reasonably fast rate from feed face
➲ Ensure that feed face is kept even and clean

Characteristics of good quality silage

Variable	Ranges
Dry matter	20% +
pH	3.8 to 4.2
DMD	70% +
Crude Protein	12 to 16%
Ammonia	<10%
Ash	<10%

DMD* ranges of different forages

Forage type	DMD ranges
Grazed grass	72% to 82%
Leafy silage	74% to 76%
Stemmy silage	60% to 65%
Hay	55% to 60%
Straw	45% to 50%

*Dry matter digestibility

Five steps to BETTER soil fertility

1. Soil testing

➲ Provides vital information about your soils
➲ Is a foundation for your fertilizer plan
➲ A standard test will give fertility status on pH, lime requirement, P and K

2. Soil pH and lime

➲ Lime improves the availability of N, P, K, sulphur, calcium and magnesium
➲ Lime at least every five years
➲ Ground limestone can be spread at any time
➲ Apply lime as per soil test report

3. Target Index 3 for P and K

➲ Index 3 is optimum for crop growth
➲ Only a soil test will determine P and K status
➲ Index 4 soils (high fertility) are a resource – use them to save money on fertilizer costs
➲ Index 1 & 2 (low fertility) need additional nutrients

4. Slurry and manures

➲ Plan when and where slurry/manure will be best utilised
➲ Aim to apply slurry in spring during moist, cool conditions

5. Nutrient balance

➲ Develop a fertilizer plan for your farm
➲ Get the best value from fertilizer and organic manure
➲ Enhance crop yield and animal performance
➲ Reduce environmental risks due to field loss of excess nutrients

The P index system

	Soil P ranges (mg/l)	
Soil P index	**Grassland crops**	**Other crops**
1	0.0 – 3.0	0.0 – 3.0
2	3.1 - 5.0	3.1 – 6.0
3	5.1 - 8.0	6.1 – 10.0
4	Above 8.0	Above 10.0

The K index system

Soil K Index	Soil K ranges (mg/l)
1	0 – 50
2	51 – 100
3	101 – 150
4	Above 150

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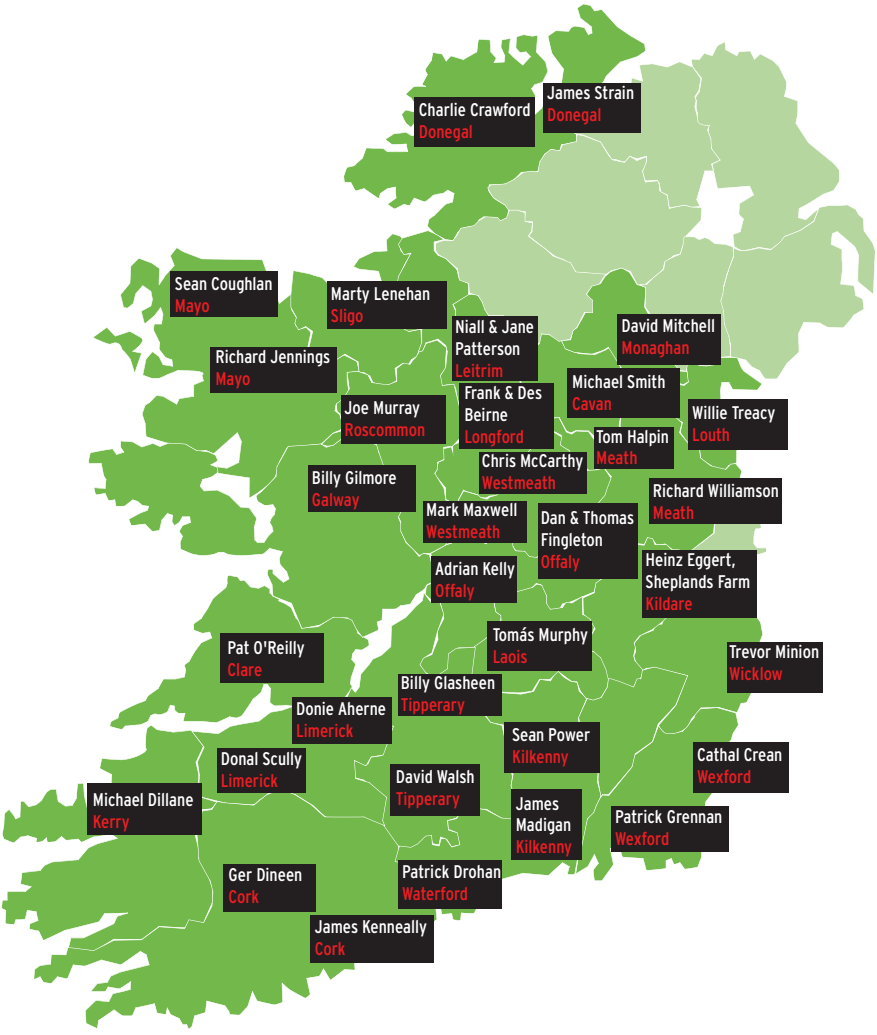

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