

# TEAGASC Today's farm

JULY-AUGUST 2010 VOLUME 21 NUMBER 4

Advice on business, production, environment, and countryside issues

A woman with dark hair, wearing a dark blue long-sleeved shirt and jeans, is sitting on the ground in a grassy field. She is looking down at a tablet computer she is holding in her hands. The background shows trees and a clear sky.

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**Mary McEvoy at Moorepark evaluates a new grass in a variety trial. Reseeding can dramatically increase sward yield. See page 13**

Picture: Mark Moore

COMMENT

# Reseeding — an unbeatable investment



**Mark Moore**  
Editor,  
Today's farm

Reseeding grass leys is such a good thing, it's astonishing that more farmers don't do it more

regularly. It's a bit like taking exercise; we all know we should do it, we all know it will do us good, but we often don't quite get around to it.

The trend to measuring grass covers for paddock management has had a spin-off benefit:

the performance of individual paddocks is measured regularly. The range of performance in paddocks rapidly becomes apparent.

"We knew there would be a difference but we were surprised to see that young paddocks were yielding almost double the amount of grass of older paddocks," says Noel O'Toole of Killimor, near Ballinasloe, Co Galway.

The huge increase in yield from a new ley makes reseeding a great investment. The autumn season for establishing leys is approaching. Weather is a factor to consider in establishing a ley; if conditions look dubious, you may want to postpone until the spring.

The key point is to do at least 10% of the farm each year. The return in higher yields is guaranteed, unlike with many investments!



We knew there would be a difference but we were surprised to see that young paddocks were yielding almost double the amount of grass of older paddocks



**ZERO OPTION**  
10 To milking block

Is é Today's farm an iris do chliaint Teagasc. Bíonn altanna teicniúla ann faoi chúrsaí déiríochta, faoin eallach, faoi chaoirigh agus faoin gcuradóireacht, agus faoi go leor eile. Is minic altanna faoin timpeallacht agus faoi dheiseanna éagsúlaithe feirme san iris freisin. Gné an-tábhachtach den iris is ea na haltanna faoin gcaoi le cúrsaí gnó na feirme a láimhseáil. Ar na topaicí eile a chlúdófar amach anseo beidh táirgeadh fuinnimh ar an bhfeirm, an fhoraoiseacht, an ghairneoireacht, srl. Agus beidh altanna ann ó thráth go chéile faoi chúrsaí feirmeoireachta thar lear freisin.

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# Grange Open Day highlights best a

**C**ATTLE farmers from across the country travelled to Teagasc Grange, Co Meath, to see the recently established 'Derripatrick Herd', which was set up as a research demonstration unit to showcase the best and most profitable technologies and management practices.

Speaking at the open day, Teagasc beef research enterprise leader Dr Edward O'Riordan said: "A target of producing over 1,000kg of beef liveweight per hectare, and a gross margin of €1,000 per hectare, has been set for this suckler herd. To achieve this, we must produce high levels of high value beef output.

"Grazed grass is, comparatively, the cheapest feed, and maximising the proportion of high digestibility, grazed grass in the annual feed budget, while simultaneously achieving high animal performance and providing sufficient grass silage of appropriate digestibility for the indoor winter period, is central to the production system."

## Margins

Teagasc beef specialist Bernard Smyth said: "Increasing stocking rate is the key to driving gross beef output and financial margins. High calving rates, good animal growth performance and the right genetics to produce higher value carcasses are also important.

"All of these are being pursued at the new unit in Grange to reach the targets set, which are up to three times higher than those being achieved on the top third of farms, as measured by the Teagasc eProfit Monitor results and the National Farm Survey."

## Grass utilisation

Teagasc drystock business and technology advisers, along with New Zealand grassland expert Adrian van Bysterveldt, demonstrated the ideal pre-grazing grass covers and the optimum post-grazing heights to maximise grass utilisation in a suckler beef situation.

Teagasc beef specialist Pearse Kelly showed how spending as little as one hour per week on grass measurement and grazing management has the potential to deliver a return of €200/hour for a 25 hectare farm.

**MAIN PICTURE:** Mark Slattery and Michael Daly demonstrate grass covers at Grange.

**RIGHT:** Michael Diskin discussed reproductive performance in sucklers.

**FAR RIGHT:** Professor Gerry Boyle at the well attended forum at the Grange open day.



# t and most profitable technologies



## Climate change conference

A major conference on climate change, organised by the Teagasc Greenhouse Gas Working Group, was held at the Mansion House, Dublin, on 25 June.

Almost 200 national and international delegates heard presentations on how climate change might become an opportunity rather than a threat for Irish farming.

Other topics discussed included 'Which on-farm measures are practical and cost-effective in further improving carbon-efficiency on tillage, dairy and beef farms here?'

Teagasc, together with the food and drink industries,

recently agreed to establish a joint action forum on climate change.

Dr Rogier Schulte said: "Based on the low carbon footprint of our Irish dairy and meat products, it is possible to turn the threat of reducing greenhouse gas emissions into an opportunity for Irish farmers. To make this happen, we need coherent and urgent action from all players in the debate, including Teagasc, Government departments and agencies, farm organisations, food processors and retailers. The joint action forum initiates this process."

# upcoming events

WORKSHOP: MONDAY 5 JULY, HAYES HOTEL, THURLES, CO TIPPERARY

## The use of Irish ash for hurley production

Teagasc in co-operation with the Forest Service and the Irish Guild of Ash Hurley Makers will host a workshop on the use of Irish ash for hurley production on Monday 5 July starting at 9.30am in



Hayes Hotel, Thurles, Co. Tipperary. This event is an insight into the hurley ash cycle in Ireland.

### Registration fee

A registration fee of €10 applies and is payable in advance. If you wish to attend, please register with Michael Somers before Friday July 2. Registration is advisable as places are limited.

### Further information

- Michael Somers, 087-1216163, Teagasc Forestry Development Officer
- Travel directions to the event (enter your starting point at 'A' and click return).

### ORGANIC FARMING OPEN DAYS

## Organic open days in July and August

6 July at 2pm	Kearns Organic Growers, Druminardly, Ruskey, Carrick-on-Shannon, Roscommon	Vegetables
7 July at 2pm	Eamonn Holohan, Barney, Grogan, Rathdowney, Laois	Beef
8 July at 2pm	Michael Seymour, Sheepwalk, Finnoe Road, Borrisokane, Tipperary	Beef/Sheep Farmers' Market
13 July at 2pm	Desmond & Olivia Thorpe, Knockroe House, New Ross, Wexford	Field-scale Vegetables, Tillage & Beef
14 July at 2pm	Pat Lalor, Ballard Farm, Kilbeggan, Westmeath	Beef & Tillage
15 July at 2pm	Jimmy Barlow, Glinsk, Ballymoe, Galway	Poultry, Pigs, Sheep & Cattle
27 July at 2pm	John McDonnell, Shalvanstown, Slane, Meath	Beef, Sheep and Tillage
26 August at 2pm	Philip Dreaper, Coolnagrower, Fortral, Birr, Offaly	Field-scale Vegetables
31 August at 2pm	Dominic Leonard, Castlewood House, Durrow, Laois	Beef, Sheep, Pigs, Tillage, Direct Selling

### TEAGASC BETTER FARM CROPS PROGRAMME



Teagasc Oak Park trials on crop nutrition, weed and disease control will feature during the Teagasc BETTER farm open days in July

### DAIRY BETTER FARMS

## July date for dairy BETTER farm walk

14 July (starts 11am)	BETTER Dairy Farm Walk	James Walsh, Carrick on Suir
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### LEGAL LABELS IRELAND: ASHTOWN FOOD RESEARCH CENTRE, DUBLIN, 7 TO 8 JULY

## Legal labels Ireland — the essential guide to Irish food labelling

Legal Labels Ireland is structured to function as a fully comprehensive review of current regulations and official recommendations.

Starting from first principles, pre-

sentations cover all major labelling considerations, with emphasis placed on more topical and complicated issues, such as product specific labelling for foods with compositional standards, al-

lergens, additive controls and labelling, nutrition and health claims, and the new developments in general food labelling. • Ashtown Food Research Centre, Dublin from 07/07/2010 to 08/07/2010



## Teagasc BETTER Farm Crops Programme

(Business, Environment and Technology through Training Extension and Research)

The Teagasc BETTER Farm Crops Programme aims to assist Irish tillage farmers to avail of cutting edge farm technology and business method to improve profitability.

Teagasc advisers, specialists and researchers are working with these farmers to look at all areas of their production systems and, by implementing the latest technologies and research, ensure that maximum efficiency is achieved. These farms will become a benchmark for efficient production and for transferring knowledge to other farmers. The events will feature:

- Teagasc Oak Park trials on crop nutrition, weed and disease control
- Department of Agriculture variety trials
- Financial/technical appraisal of tillage crops
- Grain marketing, including farm to farm trading and storage.

This is an opportunity for grain and livestock farmers to get to know the true value of Irish grain and find out the details of storage and the associated costs of the different methods involved.

6 July	George & Ken Williamson, Ambrosetown, Duncormick, Co Wexford
8 July	Joe O'Donohue, Glassmerry House, Herbertstown, Stamullen, Co Meath

### 2010 MARE INSPECTIONS

## Preparing for the new 2010 HIS Mare Inspections

Horse Sport Ireland in association with Teagasc invites you to demonstrations on Preparing for the New 2010 HSI mare inspections (for Irish Sport Horse and Irish Draught Horse mares).

Date	Venue	Admission
Monday 28 June at 7pm	Maryville Equestrian Centre, Carrigaline, Co. Cork	Admission Free
Thursday 1st July at 7pm	Kildalton College, Piltown, Co. Kilkenny	Admission Free
Monday 5th July at 7pm	Tubberbride Riding Centre, Collooney, Co. Sligo	Admission Free
Thursday 8th July at 7pm	Mullingar Eq. Centre, Mullingar, Co. Westmeath	Admission Free

The demonstration will provide information on:

- What to expect on the day of the inspection
- How to prepare your mare for the autumn inspections.

#### Further Information

- For further information contact Lorraine McMahon, HSI on 045-854517 or Wendy Conlon, Teagasc on 087-9879083.



John McNamara; Tom Kelly, Teagasc director of knowledge transfer and Minister Dara Calleary.

## Minister Calleary calls for farm safety vigilance

Dara Calleary, Minister for Labour Affairs and Public Service Reform, with legislative responsibility for workplace health and safety, has called for heightened safety vigilance on farms this summer.

As this issue of *Today's farm* goes to press, 13 of 21 workplace deaths have occurred on farms. This is one more than the total for all farm deaths in 2009.

Teagasc continues to strengthen its farm health and safety programme. This includes safety information in publications and newsletters; farm walks and events; provision of training on completion of the Farm Safety Risk Assessment and on-farm advice, along with comprehensive training on all Teagasc training courses.

### Discussion groups

Farm health and safety will be addressed in discussion groups as part of the Dairy Efficiency Programme.

Teagasc Health and Safety Officer John McNamara points out that a major shift in the demographic pattern of fatal farm accidents has taken place since 2008. "Just 12% of fatalities involved victims over the age of 65 compared with 41% for the previous seven-year period. Seventy six per cent of farm fatal accidents have involved those in the 17 to 65 age category, with 37% aged 46 to 65 years. Increased vigilance is vital in the busy summer months," he said.

# Focus on profit Kerry

**T**HE joint Teagasc Kerry Agribusiness programme, 'Focus on Profit' includes: 26 monitor/support farms; 35 discussion groups, and a grass budgeting programme, with farmers meeting regularly to discuss issues relating to grass measurement and budgeting. The annual monitor farm financial and production outcome document was published recently.

### Lessons from monitor farms

- On-off grazing was practised on a number of monitor farms during particularly difficult grazing conditions and worked well.
- Dairy farms require a reserve of high quality feed. High quality bales made from surplus grass will help to provide this reserve.
- You can't have too many access points and roadways, particularly on heavier soil farms.
- Grass measurement gives you confidence and helps you make better decisions.
- Having enough high quality AI-bred dairy replacements is key to improving profitability on dairy farms.

- Sharing of experience within groups assisted in overcoming major challenges.

### Breeding and fertility

On the monitor farms, herd EBI rose from 70 in 2008 to 75 in 2009. Fertility sub-index rose from 36 to 40. Six-week calving rate fell to 66 from 67 in 2008. Replacement rate remained constant at 26%. Dairy AI straws per cow increased from 1.57 to 1.70 as the monitor farms increased their AI usage.

### Physical performance

The *table* shows physical performance on the Kerry Monitor farms.

"Despite the difficult weather conditions in 2009, grass utilised was estimated at 8.8 tonnes dry matter per hectare on monitor farms. This compares with seven tonnes of grass dry matter used on dairy farms nationally," said Ger Courtney, Teagasc.

"However, a more realistic target for the group is 10t/ha utilised, with lower concentrate feed input. In 2009, five monitor farms utilised more than 12 tonnes of grass dry matter/hectare," he concluded.

### Spring | calving herds

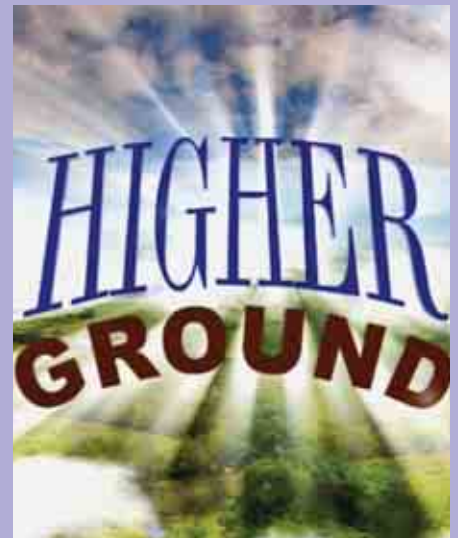
	2008	2009	Change
Cow number	78	82	+4
Milk Yield(kg Milk Solids/Cow)	394	367	-27
Milk Yield/Cow (litres)	5,252	4,919	-333
Milk Protein %	3.43	3.36	-0.07
Milk Butterfat %	3.86	3.88	+0.02
Milk Solids (kg/ha milking block)	894	870	-24
Stocking Rate (Cows/ha milking block)	2.27	2.37	+0.10

'Higher Ground', the rural entrepreneurial series, returns to the RTE this summer.

Last year, the show featured topics ranging from duck eggs to micro brewing, direct selling of beef to Liam Murphy's invention, the Bale Shearer.

Eight budding rural entrepreneurs with innovative ideas from across Ireland have been selected for the new series and they will be helped once again to turn their rural business ideas into lucrative realities. The mentors Paul McCarthy, Teagasc Rural Business Specialist, and Peter Young, *Irish Farmers Journal* advise and coach the eight candidates as they deal with issues such as finance, product development, marketing, possible business investors, partnership issues and also how to run and plan their business but not at the expense of family life.

'Higher Ground' begins transmission on RTE 1 on 14 July, at 8pm.







High quality bales made from surplus grass will help to provide a reserve of feed.

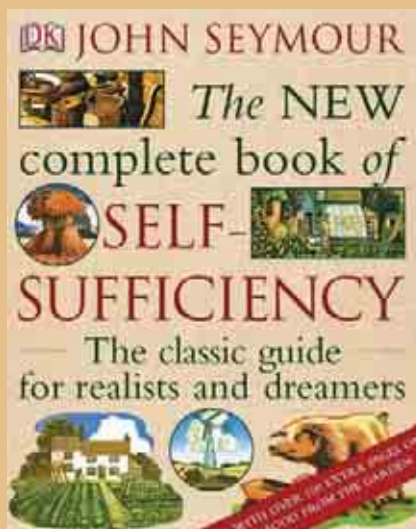
**BOOKREVIEWS**

**The New Complete Book of Self-Sufficiency**

— John Seymour  
(Dorling Kindersley €27)

John Seymour was an influential figure in the self-sufficiency movement when he moved to Co Wexford in the 1980s. At his small holding in Killowen, he began summer courses which still continue ([www.self-sufficiency.net](http://www.self-sufficiency.net)). Over a million copies of his *Complete Book of Self-Sufficiency* have been sold since it was first published and this new, expanded edition should keep it in print for many years to come.

A range of skills and crafts, from working in stone and pig husbandry, to plumbing and irrigation of crops, are



covered in detail, and always with helpful illustrations.

If you are fencing, for example, and find yourself in a spot inaccessible to a tractor, then Seymour shows how three posts and a piece of rope can achieve the staying power to strain 50 metres of sheep fencing.

**Self Sufficiency**

— Liz Wright (Hachette €23)

Liz Wright's new book covers much the same ground — growing your own food, raising animals, preserving food produced in your fields, self-sufficiency in the home — and presents the essentials in an accessible and very knowledgeable way.

You won't need both of these books, but one of them should earn its place on your shelf.

dairying

# ZERO OPTION to milking block

This Co Monaghan farmer has most of his land away from the milking platform

**Joe Patton** Teagasc

**H**EIFERS and housing are the main obstacles to dairy expansion identified by a recent Moorepark survey. Interestingly, land around the milking parlour is not yet limiting the average dairy farm, where stocking rate now stands at about two cows per hectare. But what about those farms that have already reached capacity on the milking block? What are the options if they are looking to grow their enterprise?

David Gartlan finds himself in just such a quandary. He milks 84 Holstein cows at Killanny, Co Monaghan, supplying liquid milk to Drogheda Producers' Co-op.

About 30% of the 6,800-litre herd is calved in the autumn to fulfil milk contracts. David farms 40 hectares of steep, but relatively dry, land, quite typical of this region on the south-east edge of the Drumlin belt. The problem? Only 19 hectares of the total land area is accessible from the parlour, the rest being three kilometres away across the county boundary in Louth. This leaves a stocking rate of 4.4 cows per hectare on the grazing block — not excessive for the summer months but a challenge in spring and autumn. How does David see the situation?

"We're in an unusual position, you could say; highly stocked and lowly stocked at the same time," he David. "On paper, the farm can grow enough grass to feed the herd, but access to grazing is the main concern."

Cow numbers have increased by a third in the last five years, which brings the issue into sharp focus. Some farms might opt for more meal and buffer feeding but David was determined to use the resources at his disposal. "We wanted to get more feed value out of the outside farm. I tried growing maize for a couple of years, with mixed results for yield and



cost. So three years ago I decided to move to zero grazing. It has been trial and error since then but we're learning as we go."

### Feed budgeting

The principle of zero-grazing is simple: the field is brought to the cows, not vice versa. David is adamant that the key to success remains in managing pasture on the home block "If you're asking about the workings of the machine, then you're maybe asking the wrong questions. It just cuts fresh grass and can be driven by an 80hp tractor. It's probably more im-

portant to look at how this grass is used to feed the herd."

In David's case, the extra grass is predominantly used during early spring and later in autumn, similar to grazing silage ground on other dairy farms. Cows are turned out to pasture in early February. Spring feed demand is high because of the autumn-calved cows in milk. However, grass allowance on the home block is rationed to stretch the first rotation until early April. At the same time, zero-grazed grass makes up 4kg to 5kg DM of the diet, along with silage and meals.

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**ABOVE:** Zero-grazed grass makes up 4kg to 5kg DM of the spring diet, along with silage and meals.

**LEFT:** John Lawlor, Teagasc, Drogheda, David Gartlan and Joe Patton, Teagasc.

**ABOVE, RIGHT:** The principle of zero-grazing is simple: the field is brought to the cows, not vice versa.



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“ Three years ago I decided to move to zero grazing. It has been trial and error since then but we're learning as we go ”

David Gartlan



David Gartlan (centre) with his Teagasc adviser John Lawlor (right) and Joe Patton, Teagasc. The profit monitor returns for this Co Monaghan farm show that zero grazing is adding in the region of 0.6c/l to milk production costs, through a combination of depreciation and machinery running costs.

The cutting area is usually fully harvested by late March and is then closed for first-cut silage. The aim is to park the zero-grazer until September, unless deficits arise during the main grazing season.

Regular grass measurement has helped decision making. "When I started with zero grazing I was definitely guilty of overuse," said David. "I suppose when you pay good money for something you feel it needs to be in constant operation to justify the cost. This just led to bad grass utilisation on the home block. Now I use the grass wedge to monitor covers here. My target is to keep 170kg per cow on the farm, or 10 days grass ahead. Grass is brought in only if this falls too far below target."

### Examining feed costs

John Lawlor, Teagasc Drogheda, agrees that the important thing is figuring out if and when zero grazing is needed. "There is always a danger with this, or any other buffer feeding system, that it becomes a gimmick or distraction to profitable farming," said John, who is David's local adviser.

"It is easy to lose focus and allow it to replace good pasture management instead of complementing it," John added. "I think David is taking a reasonable approach here, in that his feeding decisions are based around grass covers on the grazing block. At a stocking rate of around four cows per hectare mid-season, the need to import grass might only arise once or twice under normal conditions."

What does this mean for milk production costs? The profit monitor returns for this farm show that zero grazing

is adding in the region of 0.6 cent per litre to milk production costs, through a combination of depreciation and machinery running costs.

Accounting for additional cash costs, it's estimated that David needs to be making a meal-feeding saving of 150kg per cow at current stocking rates to break even on his investment. John Lawlor points out that increased zero grazing would only dilute costs if it allowed stocking rate to be driven further.

"As in any situation where expansion is fuelled by imported feed, you need to compare additional milk revenue against full and comprehensive costs. Most farms are a long way off having to worry about this problem, but we may see more questions as farmers increasingly look to expand their herds on a limited land base," said John.

### Liquid milk production

Liquid milk forms an essential component of David Gartlan's dairy farming system. He is part of the Teagasc BETTER Liquid Milk Programme, which in-

volves benchmarking physical and financial performance of 14 liquid milk herds across the country.

Year 1 of data collection in the programme has been completed. Herd expansion has meant a declining proportion of total production supplied as liquid milk — a trend that is repeated on many liquid milk farms nationwide. Does this change anything in terms of farm management?

"More and more of our milk will be paid for on a solids basis so I have put more emphasis on milk solids percentages when choosing bulls," said David Gartlan.

"There is a bigger percentage of the herd calving in spring now so we need to look for a cow that can perform at grass as well as indoors. We will continue to calve 25 to 30 cows in autumn, but try to do so more compactly. Drying off these cows in late summer helps to reduce demand as growth begins to slow down."

Liquid milk will continue to be important for us into the future because of our high stocking rate.

“As in any situation where expansion is fuelled by imported feed, you need to compare additional milk revenue against full and comprehensive costs. Most farms are a long way off having to worry about this problem, but we may see more questions as farmers increasingly look to expand their herds on a limited land base

John Lawlor, Teagasc Drogheda

# GRASSLAND RESEEDING

## An unbeatable investment

Forget shares, prize bonds, or flats in Bulgaria; reseeding pasture will give you the best return on investment.

**Mary McEvoy**, Teagasc Moorepark

**T**HANKS to our mild, moist, maritime climate, few countries can match our ability to grow grass. Over 90% of the agricultural land in Ireland is grazed and, given half a chance and decent management, fields will typically easily yield eight tonnes of dry matter per hectare. But the potential is far greater. An extra three tonnes of dry matter per hectare can be achieved where there is a high proportion of perennial ryegrass in the sward.

The extra output can be used to increase stocking rate or reduce the need for expensive supplementary feeds. Perennial ryegrass not only yields better, it is also of higher quality than other species, which boosts individual animal performance.

Sadly, the high quality, high yielding ryegrass can be muscled-out by species such as annual meadow grass (AMG). There's a huge number of AMG seeds in all Irish soils and, over a number of years, AMG gradually crowds out the vastly more productive perennial ryegrass.

Reseeding will restore the balance. If you reseed 10% to 15% of the farm each year, the entire farm will be reseeded in, at most, 10 years.

Walk the farm weekly throughout the growing season to estimate herbage production. This will identify the lowest producing paddock for reseeding.

“ Reseeding in spring allows enough time for successful crop establishment and a greater window of opportunity for post emergence spray



Mary McEvoy, Teagasc Moorepark, who evaluates grass varieties, says a new sward can often add three tonnes per hectare of grass dry matter.

### Benefits of reseeding

Reseeded perennial ryegrass swards will:

- increase spring and autumn growth
- increase response to nutrients
- improve sward quality
- increase animal output.

Swards with low levels of perennial ryegrass content have limited ability to provide sufficient grass in the early lactation period, possibly forcing later turnout.

Early turnout will mean higher milk yield and higher protein levels. As grass is the cheapest feed available, increasing the proportion of grazed grass will reduce the requirements for alternative feeds, so reducing total feed costs.

Grazing swards in early spring has also been shown to increase the quality of the available grass in subsequent grazing rotations. Swards with a lower proportion of perennial ryegrass are also as much as 25% less efficient at using expensive nitrogen.

Good grazing management is key to maintaining high quality grass swards during the main grazing season. Perennial ryegrass swards, when managed correctly, tend to be leafy in mid-season and less prone to a drop in quality.

There is also some variation in quality between varieties. Selecting varieties with a higher digestible value will have positive effects on animal performance, assuming good grazing management

practices are being implemented.

### When should you reseed?

As with any investment, timing is everything. The majority of reseeding currently takes place in the autumn and this can pose problems, depending on weather conditions.

In recent years, we have had wet autumns and, as a result, it was difficult to do a post-emergence weed spray. This has resulted in problems with weeds, such as docks, on many reseeded pastures across the country.

If you decide on autumn reseeding, target early to mid-August to have the seed set and allow time for establishment of the crop before soil temperatures drop.

Consider spring reseeding, which may be preferable, depending on local conditions. It's possible to achieve a 60-day turnaround time from spraying off the old sward to grazing the new sward if its' managed correctly, although prevailing weather conditions can also influence the turnaround time.

Reseeding in spring allows enough time for successful crop establishment and a greater window of opportunity for post emergence spray, with high quality reseed available to calves or milking cows in the early summer period to optimise performance.

» Next page

### Selecting the right varieties

Perennial ryegrass is the most productive and nitrogen responsive grass species available. Invasions of other species, especially annual meadow grass, takes place due to the availability of a huge number of seeds in the soil profile. Ensuring adequate pH (6 to 6.5) and P and K levels will minimise the invasions of weed, while a post emergence spray is strongly advised to control docks and other problem weeds.

Variety selection will depend on a number of factors. The most important points to look out for when selecting a variety are:

- Seasonal DM yield
- Is the quality or the digestibility value of the variety high?
- Is the ground cover (or persistency) value high?

The Department of Agriculture's national recommended list of grass and clover varieties outlines the seasonal DM yield, quality values and ground cover scores of varieties which have successfully passed through their evaluation trials, and should be consulted when selecting varieties.

Three to four varieties should be used when selecting varieties for a grazing mixture. The mixture should contain approximately one third tetraploid varieties. Varieties should be heading in early June, with a relatively small range in heading dates between varieties.

Varieties that have a high spring growth should be selected to extend the grazing season. They should also have a high quality value. If using clover, medium or large leaf clovers are advisable.

A mixture for silage ground should have up to 40% tetraploid varieties. Depending on harvest date, select intermediates or lates, but ensure the range in heading dates between varieties within the mixture is small (less than seven days). Avoid using clover in silage ground.

Remember that reseeding is an excellent investment. A sward with 40% perennial ryegrass compared with a 100% perennial ryegrass sward is losing you €202 per hectare per year. It costs approximately €250/acre to reseed (excluding a post emergence spray), so it only takes two years for a reseed to pay for itself.

“ Varieties that have a high spring growth should be selected to extend the grazing season. They should also have a high quality value

White clover evaluation and selection under sheep grazing at Teagasc Oak Park.



## Teagasc grass and clover

**Pat Conaghan**  
Teagasc Oak Park

**T** EAGASC is actively breeding perennial ryegrass and white clover to improve the most important traits for Irish grassland farm systems. The main emphasis is placed on improving crop performance under grazing. Consideration is also given to silage quality and production, given that this is our most important winter feed. The specific plant traits selected for improvement in the breeding programme are chosen their economic benefit to our animal grassland production systems and their genetic characteristics.

Breeding is man-directed evolution. Evolution, or the genetic change in a species over time, is a natural and ongoing process. Man's involvement is necessitated by the fact that evolution is an exceedingly slow process. Furthermore, the direction of evolution favoured by man and nature may be completely different.

The breeding process consists of a

multi-step and cyclic process where the best genotypes are evaluated, selected and intercrossed to produce a new, improved variety. Teagasc varieties are stringently bred and tested for use under Irish farm systems. Varieties are tested under real-world conditions using a combination of cutting and animal grazing over multiple years and locations.

Commercial seed production of eight new Teagasc perennial ryegrass, and two new Teagasc white clover varieties, has started. The seed will be available for reseeding in the coming years.

Our ultimate target is to breed varieties that provide sufficient yield to match the animal feed demand curve over the entire season. Therefore, we are placing major emphasis on improving spring and autumn yield where currently forage supply is significantly less than animal demand. Persistency, defined as the change in yield benefit over time, is also monitored and considered in producing a new variety.

Reseeding is expensive. A variety with a yield advantage declining rapidly over time will require more frequent re-



## Measuring grass covers 'opened eyes' to the importance of reseeding

Noel O'Toole, who farms at Killimor near Ballinasloe, Co Galway, said that measuring grass covers as part of the Teagasc/Germinal seeds initiative opened his eyes to the value of reseeding.

"We always did some reseeding, but when we started recording the output from various paddocks, it really became obvious what effect reseeding can have," he said.

"New, young leys were yielding 16 tonnes of dry matter per hectare, which was double the yield from older paddocks.

"I've found that the newer leys respond better to nitrogen and give you additional grass at the start and end of the season. The extra grass (his most recent variety mix included Dunluce, Tyrella and Mezquita) outweighs the cost by a long shot. The cost of reseeding is paid back in two to three years."

## over breeding

seeding. This will offset the profit and benefit from any improvement in yield and quality from this variety.

During the mid-season, grass supply tends to be greater than demand, but poor quality can limit animal performance. We are selecting for improved nutritive value in perennial ryegrass through a combination of increasing digestibility, increasing the ratio of leaf to stem and reducing repeat heading.

Another approach to improve mid-season quality is to increase the proportion of white clover in the sward. The digestibility and intake characteristics of white clover are typically higher than grass. Increasing the proportion of white clover can have a marked positive effect on animal production.

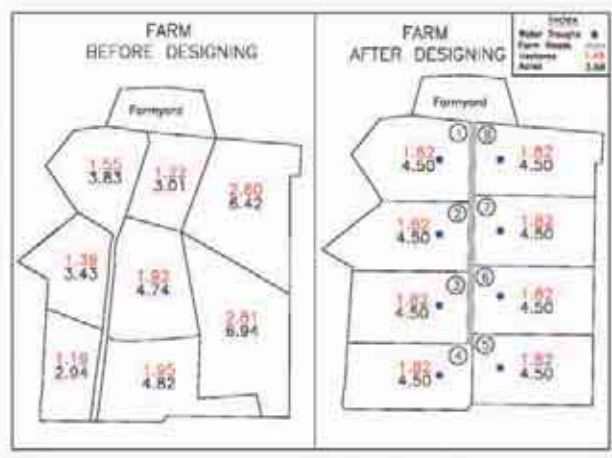
Ground cover is also an important trait for improvement. High ground cover is a desirable trait for a variety as it indicates a dense sward with little bare ground. This reduces invasion by weeds and less productive grasses into the sward while also reducing the threat of poaching during wet weather.



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# DAIRYMAN — bringing together the

The DAIRYMAN project aims to bring together the best in knowledge and innovation on dairy farms, from farmers, researchers and advisory staff across NW Europe, to benefit dairy farmers, the wider rural society, economy and environment, write **Andy Boland, Paul Murphy, John Upton, Lena Mihailescu, Mingjia Yang and James Humphreys**

A collaborative project involving Teagasc and partners in eight other dairy regions of north-west Europe is now underway. The project, Dairyman, aims to develop a more competitive dairy sector, stronger regional economies and an improved environment through the sharing of knowledge and management tools. More information can be found at <http://www.interregdairyman.eu/>

Dairyman will assess the environmental and economic performance of dairy farms and implementation of EU regulations in the main dairy regions in north-west Europe and analyse needs for improvement through comparisons between the different regions.

A network of pilot farms is being established to carry this out and to demonstrate improved management practices and tools.

Encouraging and supporting farmers to adopt such practices and tools is a key objective. This includes co-operation between dairy farms and other rural stakeholders, such as wind farm operators or nature organisations, for example.

As part of this effort, pilot farmers, researchers and students from the different regions will visit other regions. The Dairyman project includes Brittany,

“ The pilot farms will be used to demonstrate the practical possibilities and benefits of improved resource-use management to the wider farming community



John Upton, Teagasc energy specialist.

Pays de la Loire and Nord-Pas de Calais in France, Ireland, Northern Ireland, Flanders and Wallonia in Belgium, Baden-Württemberg in Germany and The Netherlands.

It is an INTERREG program (INTERREG IVB NWE), co-funded by the European Regional Development Fund. The project will run until 2013.

### Nutrient use efficiency and greenhouse gas budgets

A network of 120 commercial dairy pilot farms that span the participating dairy regions of Europe has been set up. The 21 pilot farms in Ireland are located in Cork, Limerick, Tipperary, Kilkenny, Waterford, Wicklow and Carlow.

These farms will be used to demonstrate the practical possibilities and benefits of improved resource-use management to the wider farming community. Data collection to assess resource-use efficiency on the Irish farms started last January. This aspect of the project is managed by Joe Kirk of Acorn Advisory Services, Youghal.

All farm inputs and outputs are being recorded, including livestock, fertilizer, feed, fuel, herbicides, pesticides, labour, milk and meat. This data will be analysed by Mingjia Yan, a PhD student at UCD, to calculate a total farm greenhouse gas budget, using a Life Cycle Assessment.

Elena Mihailescu, a PhD student at WIT, is looking at nutrient use efficiency on the farms, together with economic data, to assess the economic and environmental performance of nutrient man-

agement practices on the farms.

### Reducing energy consumption

Twenty-one dairy farms are now being fitted with electricity monitoring equipment as part of the Dairyman project. This equipment will measure total farm electricity usage, along with the breakdown of electricity used in the winter sheds and the milking parlour.

The amount of electricity used for milk cooling, water heating, vacuum pumps and lighting will also be available. Power consumption of dwelling houses will not be included.

Information will be transmitted through the mobile phone network to a dedicated software package in Moorepark. Baseline electricity consumption data will be collected in year one and recommendations for reducing electricity consumption will be made in year two. This energy auditing is of great importance to the energy research programme in Moorepark.

Firstly, it will provide an insight into the electricity consumption trends of commercial Irish dairy farms which, to date, has never been measured in detail. Secondly, the economic impact of improving energy efficiency on each farm in the study can be calculated, based on energy efficiency experiments carried out in the energy research laboratory in Moorepark.

### Knowledge exchange

Pilot farmers, their advisers and researchers from Ireland will visit their





ious management tools are used by dairy farmers to improve their management practices in areas such as fertilizer or feed requirements. These tools are often used in only one region, typically where they were developed.

An inventory will be made of such management tools, for efficient resource use, which are currently applied in the participating regions.

The tools will be described and the most suitable selected. They will then be adjusted to specific regional conditions, tested in the various regions on the pilot farms, and the most promising will be presented to the wider dairy farming community.

Knowledge Transfer Centres (KTCs) have been established in the participating regions to facilitate the use and

transfer of knowledge. On the KTCs, highly innovative farming systems are tested and evaluated. The participating centres are Trévarez (Brittany), Derval (Pays de la Loire), De Marke (the Netherlands), Moorepark/Solohead (Ireland), Hillsborough (Northern Ireland), Hooibeekhoeve (Flanders), Gembloux (Wallonia), Bildungs-und-Wissenszentrum für Viehhaltung, Gruenland-wirtschaft, Wild und Fischerei (Baden-Württemberg) and Lycée Technique Agricole (Luxembourg).

The centres will be virtually connected via the Internet and video conferencing facilities to enable effective collaboration and a fast exchange of information.

Training programmes will be formulated that focus on the requirements of EU and national environmental legislation and opportunities for improved use of resources.

Dairy farmers and their advisers will be trained to improve resource-use management on dairy farms and effectively co-operate with other regional stakeholders.

colleagues in other regions to exchange experiences, assess regional strengths and weaknesses and obtain knowledge for further farm improvement.

Farmers in a region with a low performance for a certain sustainability indicator (e.g. nutrient use efficiency) will visit regions with a high performance for that indicator to learn from their colleagues how to strengthen sustainability in that area.

They will complete a standardised questionnaire to suggest improvements for their own farms, based on what they observed at the farms visited (taking ideas), and improvements for the farms visited based on their own farms (giving ideas).

The intention is to maximise the benefit to the participating pilot farmers and their advisers and, by extension, to dairy farmers in the region as a whole.

During the project period, a group from each region will visit two other regions. In the final year of Dairyman, an inter-regional seminar will be organised for pilot farmers and their advisers to compare and discuss expectations, outcomes and limiting factors for improving resource-use on their farms

In north-west Europe, var-

“ Dairy farmers and their advisers will be trained to improve resource-use management on dairy farms and effectively co-operate with other regional stakeholders

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# Lessons from Scotland



**Aidan Murray**  
Teagasc Grange

In mid-May, the management team from the Teagasc/*Irish Farmers Journal* BETTER farm beef programme visited four diverse suckler units in southern Scotland over a two-day period. The purpose of the visit was to look at how the Scottish managed their suckler systems and what lessons, if any, we could take home.

The four farms we visited were:

- **John MacIntosh** in Stranrear, who is running 2,000 suckler cows, bringing all progeny to beef. He also had 500 in calf heifers, some of which were sourced in Ireland. All cattle were outwintered on either woodchip corrals or on sandy ground.
- **Robert Neill** farms near Jedburgh. He farms a total of 450 ha with 300 suckler cows bringing all progeny to beef. He also grows 243ha of cereals.
- **John Finlay** farms at Corsock, near Dumfries. He has 728ha of hill ground and he runs 750 pure Scottish Blackface ewes and 45 pure Galloway cattle. He fattens steers at 22 to 25 months and heifers are sold as breeding heifers at 24 months.
- **Doug Greenshields** has a mixed farm, near Sanquhar. He runs 190 cows, which



are all crossed back to Stabiliser bulls, and he sells forward stores. He has 600 Blackface and 700 mule ewes and is one of the SAC grass monitor farms.

## Good cattle handling facilities

Given the sheer scale of some of these farms, labour efficiency is a key factor if you are to get around all the jobs. While we were on the farm of Robert Neill, he demonstrated the ease of management involved in working with stock using his handling facilities and electronic tagging.

Thirty finishing cattle were taken out of a straw-bedded shed and walked down to the handling yard. A circular holding pen with a selflocking forcing gate eased the cattle up a curved sheeted race and a fully automatic squeeze crush fitted with an EID scanning board read the animals electronic tag and, at the same time, the animal was weight recorded.

All the cattle were through in about 10 minutes. It was impressive because of the speed of operation. There was no stress on the animal; the operator was safe because you did not have to get into the pen with cattle and, with the electronic tagging and weighing, you generated a lot of useful production data. The weighing unit was able to show the liveweight of the animal, its average daily gain (ADG) from the last weighing and the ADG from birth, all highly valuable information for anyone finishing cattle like Robert. It has been proposed that, in Scotland, from 2012, there will be an option to vo-



luntarily electronically (EID) tag cattle and this would eliminate the need for cattle ID cards.

The cost of the electronic reader for the crush, along with the weigh bars and weighing clock, works out at €3,400. The tag set costs €2.50, which includes the large primary tag and the smaller electronic tag. Certainly, after seeing it in action, it is a system that a number of larger scale operators at home should



RIGHT: Doug Greenshields  
ABOVE: Robert Neill



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





they are put on to ad lib meal and eventually slaughtered in December at between 22 and 25 months. At peak, they consume about 7kg/day. The average carcass weight this year was 340kg to 350kg and they averaged €1,250/head. The beef is highly sought after for the specialist butcher and connoisseur market and generally goes to London. The beef price is flat across the year at €3.57/kg. Heifers are grazed and sold as breeding heifers at a sale in Castle Douglas and, this year, they averaged €1780.

Certainly, the breed won't contribute much to the live export trade but they are good functional stock. The cows are hardy, regular breeders and good mothers that suit marginal land and an easy care type system.

In Britain, there is a premium niche market available for the beef.

Our visit highlighted the importance of having the right cow for your conditions and John Finlay was certainly maximising his returns from suckling on extremely difficult land.

### Staying focused

It is very easy to get sidetracked or to take your eye off the ball, no matter what you are doing. On Robert Neill's farm, he has Limousin x British Friesian type cow that is crossed back with Limousin and all progeny are finished at between 13 and 24 months.

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consider. John Finlay at Corsock runs both the well known Blackcraig Scottish Blackface Flock and Galloway cattle.

He owns over 700ha of hill ground and he has to rent in lowland ground to make silage.

Where he farms is certainly not for the faint hearted and it is certainly not the type of place you could imagine some of our big Continental cows thriving, even at low stocking rates.

He admits, from experience, that "crossbred cows just won't do" on his type of land. So, he looked at two hardy traditional breeds, Luing and Black Galloway, opting for the Galloway. This breed was developed to thrive on poorer land types and under extreme weather conditions.



Cattle are outdoors all year round. Cows and calves go off to the hill over the summer and weanlings receive creep before weaning. Cows are fed round bale silage and meal and minerals over the winter.

Yearling steers go out to greener areas on the hill during their second season and are grazed. They receive 2kg of meal over the summer before



The farm walks threw up some of the same issues we have at home on grass

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An automatic squeeze crush fitted with an EID scanning board reads an animal's electronic tag and weighs it at the same time on Robert Neill's farm.

Replacement heifers are sourced from the family dairy herd in the north of England. Cows calve in April and May and they go straight to grass.

Calves are tagged, dehorned and male calves are castrated using rubber rings at one day old. After weaning, calves are housed on straw and fed a total mixed ration of silage, straw and homegrown concentrates.

Steers receive 3kg to 4kg of meal over the winter before being moved over onto ad lib feeding the following spring. Heifers get 1kg to 2kg and go to grass the following spring before being re-housed in late summer/autumn, where they too receive ad lib meals up to finish.

Robert sells all his stock live at the local mart in St Boswells. He sells three to five animals every week and targets the specialised local small butcher trade. He is very focused on what his customer wants. He weighs and selects animals weekly, having them clipped and well presented for the sale.

Typically, he wants animals at 580-620kg liveweight. In recent weeks, he is averaging €2.15/kg liveweight for animals sold.

When asked why he was not tempted to sell off his heifers as replacements, he said that it would only be a distraction from his main focus of supplying the local butcher trade that is serving him well. He also acknowledged the fact that it doesn't pay to 'jump ship too often'.

The focus on the farm is very apparent from the type of animal he breeds to the way the system is planned and stream-

lined towards consistently hitting his target market.

### Grassland management

This is the second year that the SAC (the Scottish research/education/advice body) has been working on the grass monitoring farm of Doug Greenshield, near Sanquhar. The farm walk we attended threw up a number of the same issues we have at home about managing grass and it helped to reaffirm some of our own findings.

The cold late spring highlighted the value of reseeded ground versus old pastures. Figures presented at the farmwalk showed that between mid-April and mid-May, grass growth on new grass was almost double that recorded on old pastures. This was broadly in line with our own measurements on the BETTER farms.

The value of the paddocks system was also very obvious, where a number of larger fields were subdivided on the farm. The paddock system has given higher liveweight gain on cattle and even last year in what was a very difficult year, yearling cattle did over 1kg per day over the grazing season.

The paddock system allowed the farm to run larger groups of stock, cutting down on actual group numbers of stock compared with a set stocking regime.

Cattle were easier to handle because the rotational system led to more human contact with the stock.

The paddocks gave greater flexibility in managing grass and, as a result, grass

quality improved on the farm and closing in rotation last autumn, allowed earlier spring turnout.

### Future of the Single Farm Payment

As you are well aware, if we were to move to a flat rate area-based Single Farm Payment (SFP), Irish farmers would lose out on over €200m a year.

When we asked a number of the farmers we visited who have much larger holdings than we have here as to how moving to an area-based SFP would affect them, we got some interesting responses.

The farmers with the most productive farms on the better land said that moving to an area-based payment would effectively halve their SFP and, as a result, could have serious repercussions on their ability to hold on to existing labour. It would curtail their ability to pump money back into the local economy.

On the more marginal, less productive land, the response was that their SFP would increase under an area-based payment system and, therefore, they could possibly ease back on stock numbers. These comments raise a number of issues. An area-based payment, both here and in Scotland, would have the greatest effect on the more productive units. It would also raise concerns over long-term food security, if these farms were forced to cut back on production. It also calls into question how feasible it would be to move from a historical-based payment system to a completely area-based system, literally overnight.



# Managing grass, making money

**Adam Woods**

BETTER farm adviser, Teagasc, Grange

ONE of the key objectives of the Teagasc/*Irish Farmers Journal* BETTER farm beef programme is that each participant will be a competent grassland manager by the end of the programme. In this article, we profile the Carlow farm of Dermot O'Connor in Hacketstown, and how he is mastering grassland management by using the Teagasc grassland programme to aid him to make important management decisions on a weekly basis.

Each farmer in the programme was provided with a plate meter with which to measure grass weekly, improve grassland management, achieve earlier turnout dates and maintain grass quality throughout the grazing season.

"At the beginning of the programme, I was a little sceptical of spending two and a half hours each week walking the farm to measure grass. I now see it as one of the most important jobs to be done each week. The programme allows me take corrective action 10 to 14 days in advance. There is no point in taking action when it's too late. You need to see the problems coming."

## Farm facts

- Area: 72ha
- Blocks: Three separate farms within a three-mile radius.
- Stock: 40 Spring calving suckler cows. Bulls finished at 18 months and heifers finished at 18 to 20 months.
- Dairy calf to beef system purchasing autumn dairy bull calves and finishing them at 16 to 18 months out of shed on ad-lib system.
- Stocking rate will increase from 1.57LU/ha to 2.2LU/ha over the course of the programme and the target gross margin is €1,098/ha.

## Grassland management

Grassland management for 2010 on the farm began on 1 October 2009, when the



Dermot O'Connor uses a plate meter to measure grass covers each Monday.

first of the dry grazing paddocks were closed. Silage ground was then closed on 1 November and all cattle were housed on 15 November.

Average farm cover at closing was 650kg DM/ha which was on target. However, the cold weather with snow and frost in December and January took its toll on this fairly high-elevation farm and average farm cover had actually dropped to 125kgDM/ha at turnout on 8 February. Seventy-two of the lightest weanlings were turned out at this time and fed meals at grass (as there was virtually no pasture) to reduce demand until growth kicked in.

We have found over the past two years that this is quite a slow farm to get going in spring regardless of closing dates. It is quite high at 180m above sea level and soil temperatures are slow to get above the magic 6°C needed to sustain growth. Temperatures in March were running 1°C to 1.5°C behind the rest of the BETTER farms.

While growth was slow to get started, grass utilisation was excellent with all paddocks being cleaned out fully in the rotation.

Growth rates over the past four weeks have been excellent with the farm consistently growing 70kg to 80kg/Dm/ha from mid-May to present. This has allowed Dermot take out strong paddocks

as surplus grass in the form of pit silage or round bales.

First cut silage was harvested in a split cut system with the first half of the first cut taken on 1 June. This silage should be of high quality and will be prioritised for weanlings and young stock, while the second split was let bulk up and this will be lower quality but will suffice for the spring calving suckler cows on the farm.

## Fertilizer use on the farm

The farm was soil sampled on entry to the programme and a detailed fertilizer plan drawn up. Slurry is generally returned to silage ground and paddocks low in P and K.

Over the past six weeks, paddocks have been receiving 20 to 25 units of nitrogen after grazing in the form of sulphur can or pasture sward, depending on P status.

Some paddocks with a high percentage of clover did not get any N since mid-May. When first cut silage was cut, this ground received 27 units of nitrogen. No second cut will be taken as such but, instead, surpluses will be taken out of the grazing rotation to control quality in the second half of the grazing season.

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## Grass budgeting — the basics

Why budget?

1. To maintain enough grass ahead of stock
2. To maintain the quality of grass being grazed next

Budgeting is carried out by regularly measuring the quantity of grass that is available on the farm. Dermot walks every paddock on the farm on a Monday morning and measures the amount of grass in each paddock in cm using a plate meter.

He then inputs these figures into the grassland programme, along with the amount of stock grazing each farm.

The programme then indicates to him whether there is a shortage or surplus of grass coming and allows him react well in advance of this shortage or surplus coming.

The programme also calculates the optimum grazing cover for his farm, so he knows that if he goes above these, the quality is reduced and the option of taking paddocks out has to be looked at.

## Important grassland measures

**Days ahead (the number of days grazing left on the farm if growth were to cease):**

- Derived from total amount of grass available/daily herd demand.
- This tells whether there is too little or too much grass ahead of stock.
- As the season progresses, the target number of days ahead increases.
- Real value to this measure is predicting what it will be in seven to 10 days allowing pre-emptive action.

If days are running ahead:

- Take out a strong paddock for round bale silage.
- Take out a paddock for reseedling.
- Increase the stocking rate and, hence, increase the daily demand to reduce the days ahead.

If days ahead are running behind:

- Spread more nitrogen to boost growth.
- Reduce demand by removing stock from grazing block or housing.
- Introduce supplementary feed to reduce demand and slow down rotation.

**Herd demand (the amount of grass that the herd eats each day):**

- This is calculated by allocating 2% of bodyweight for daily intake for each animal on the farm, the total kgDM required is then divided by the total area available for grazing.
- Can compare it with growth for previous measurement period or to



Dermot O'Connor and BETTER farm adviser Adam Woods.

figures in national farming press.

- Where growth is less than herd demand, days ahead will be falling.
- Where growth is more than herd demand, days ahead will be increasing.

**Target pre-grazing cover (the target grass**

**cover to be going into for the farm to ensure that there is enough grass ahead of stock and to keep the grass DMD at a maximum).**

- This is calculated by the formula: Intake x Stocking Rate x Rotation Length + Residual

**Table 1:** | Guideline grazing stocking rates

Date	Stocking rate
Turnout to mid-June	1,000-2,500 kg/ha (400-1,000kg/acre)
Mid-June to late August	1,500-2,000kg/ha (600-800kg/acre)
Early September to housing	1,000-1,500kg/ha (400-600kg/acre)

**Table 2:** | Days ahead

	Turnout Feb/March	Apr-June	July-Aug	Sept-Closing
Target days ahead	28-30	12-14	16-18	> 25
Action required if > than	-	16	20	40
Action required if < than	-	10	14	House

**WHAT ABOUT** the wedge?

Astute readers may query how the idea of 'days ahead', as used in the beef programme, relates to the 'grass wedge' concept used by Teagasc dairy advisers. In terms of grass management philosophy, there is no difference. Both are based on rotational grazing with the farmer estimating the supply of grass available in each paddock on the farm and then comparing it with herd demand.

The key objective of both is that animals are constantly supplied with fresh young grass which is the cheapest, most effective, feed available.

In both systems, the farmer manages fertilizer, stocking rates, reseeding, etc, so that animals are constantly moving onto pastures with grass at the optimum stage of development — leafy and high quality. Animals are rotated through the paddocks which are each at a slightly different stage of development. As the animals graze out a paddock, another should be just reaching the ideal stage for grazing. The wedge system could be said to be a more visual representation, the days-ahead more figure-based.

In either system, if one or more paddocks 'gets away' — threatening to become 'stemmy' before it reaches the front of the queue, it will be taken out of the rotation and cut for baled silage. Animals will move into the paddock which was 'next-up' and will be at the right stage for grazing. Ultimately, the 'wedge' and the 'days-ahead' concepts are about money more than grass. Dermot O'Connor put it well:

"The focus on this farm has changed from farming for the sake of it to farming as a business to make money. A budget is now done at every stage of the cycle be it at purchasing, summer grazing or wintering. I need to know that there is a decent margin in return for my labour. By managing grass better, I can achieve that."

**“** You should budget to maintain enough grass ahead of stock and to maintain the quality of grass being grazed. Budgeting is carried out by regularly measuring the quantity of grass that is available



- Highly stocked farms will have a higher target compared to lower stocked farms.

**Comments**

We can see from the *Table 3* that cutting 1.9ha will bring days ahead back to 14

(one within target).

Dermot is continuing to apply nitrogen after each grazing and will taken out surpluses as they arise. This will ensure that quality is maintained and it also means that he is growing the maximum amount of grass possible.

**Table 3:** | Pre-grazing cover

Days grazing ahead	16
Grazing stocking rate (kg LW / ha)	2,183
Current target aays ahead (from 1 April)	13
Average farm cover/hectare (kg DM/ha)	764
Cutting 1.94ha reduces days ahead by	1.6
Target pre-grazing cover	946
Grass growth (kg DM/ha/day)	75.5
Growth needed to meet herd demand	46.7 (kg/ha/day)

beef

# North Tipp groups target Derrypatrick

**Michael Daly**  
Teagasc

**T**HE ambitious financial targets set and publicised for of the Derrypatrick suckler beef herd at Teagasc Grange offer all suckler farmers a benchmark for their own performance. Some farmers may even aim to exceed the Grange results.

At local discussion group level, the question is will it be realistic to achieve such performance? As a group, where do we stand collectively, and what measures needs to be taken to reaching a potential gross margin of €1,000/ha?

Members of the Thurles and Nenagh suckler discussion groups have already completed 2009 beef profit monitors, and their results are similar to the Teagasc National Farm Survey (NFS)/Teagasc eProfit Monitor (ePM) nationally.

Calculating your gross margin gives an automatic advantage in terms of knowing where you stand.

To date, members have compared their ePM within the group and against Teagasc national figures, but the research work at Grange has added a new dimension by offering a whole new performance target.

Thurles & Nenagh suckler discussion groups 2009 top third ePM range	Derrypatrick target at 2010 prices
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Financial (€/ha)		
Gross output	963 to 1,269	1,797
Variable cost	378 to 788	745
Gross margin	481 to 632	1,052
Stocking rate	1.80 to 2.14LU/ha	2.88LU/ha

Some group members are well on track to matching the future Grange target. The feedback from group members who attended the open day was very positive, and all were very interested in returning again to monitor the performance of the current crop of calves later in the year.

As an adviser, I was expecting a lot more comments on the cow breeds used, etc but instead, most feedback was on two key drivers that are maximising

output at Grange: stocking rate and liveweight per day during suckling and grazing periods (i.e. grassland management).

### Stocking rate

If the level of production efficiency is maintained, increasing stocking rate will lead to a direct increase in farm profitability. For the Derrypatrick herd, at current prices, each 0.1 livestock increase in stocking rate corresponds to an increase in gross margin of €33/ha, with stocking rates ranging from 1.9LU/ha to 2.9LU/ha.

While the local discussion groups are at the lower end of this range, there are some members that will be able to increase their stocking rate and, in turn, increase overall gross output and potentially gross margin/ha. For others, concentrating on the other aspects of maximising output will be the preferred option in the short to medium term.

### Liveweight per day

The Derrypatrick herd has a target mean liveweight/day of age for bull and heifer progeny of 1.17kg and 0.92kg respectively. Bulls finished at 390kg carcass at approximately 18 months and heifers at 310kg carcass at 20 months.

At a local level, members of discussion groups have differing production systems, but the basic principle of liveweight gain per day, especially during the grazing period, still apply.

As per Grange, cows must have adequate milk, a breeding programme producing progeny with high growth rates and high weight gains at grass and during finishing periods. Grazed grass is our cheapest feed, and maximising the growth potential from a long grazing period is one of the biggest challenges to the Thurles & Nenagh discussion groups. Their figures are as follows:

- **Turnout days:** 15 February to 15 March
- **Housing dates:** 10 November to 24 November
- **Days at grass:** 240 to 280



An increase of just 25g/day in animal performance can increase gross margin by €30/ha.

Relative to targets being set by the Derrypatrick Grange herd, a reduction of six weeks in the grazing season will reduce grazed grass in the total feed budget by 8% units, and increase variable costs by 13%, resulting in a 9% reduction in gross margin.

### Calving rate

The number of live calves born per breeding female per year is the calving rate. A high level of reproductive performance is critical for profitable suckler beef production. Each additional percentage unit increase in calving rate equals an €11/ha increase in gross margin for the Grange herd at current prices.

Carcass grades are also rewarded for better conformation and appropriate fat scores.

**Table 1** |

	Teagasc NFS top third	Teagasc ePM top third	Derrypatrick target
Gross Output (€/ha)	772	1,126	1,797
Variable costs	435	555	745
Gross margin	337	571	1,052
Fixed costs	407	514	479
Net margin	-70	57	576
Stocking rate (LU/ha)	1.70	1.95	2.88
Liveweight output (kg/ha)	483	663	1,036





John Fitzpatrick (second from right) and Michael Daly (far right) at a recent meeting of the Thurles discussion group.

**JOHN FITZPATRICK**

# Maximising grass quality and quantity

**A**Ta recent Thurles discussion group meeting hosted by John Fitzpatrick, Clonmore, Templemore, maximising the quantity and quality of grazed grass in the annual feed budget was highlighted and linked specifically to reducing John's current variable costs.

**John Fitzpatrick 2009 eProfit monitor results**

Financial (€/ha)	
Gross output	1,269
Variable costs	788
Gross margin	481
Stocking rate	2.14LU/ha

John runs a 108 suckler Hereford cross Continental cow herd (70% autumn and 30% spring), finishing all progeny to beef both as steers and heifers.

Increasing his stocking density is limited by soil type, grass quality and the fragmented nature of this farm. Reducing variable costs was targeted to increase gross margin. The areas for potential improvement, as highlighted by the group, are reducing purchased concentrate, currently at €243/ha, and

fertilizer at €182/ha or 19% and 14% respectively of total variable costs.

John operates a rotational paddock grazing system on 50% of the farm, but the productivity of the sward on some fields is low. He plans to begin measuring covers to identify poor performing swards. The biggest challenge in grassland management, he feels, is to budget grass availability and to have the courage to remove surplus grass as it arises.

The average number of days at grass are 245. All pastures are 14 years old or older, and his plan for the future is to

“ All pastures are 14 years old or older, and the plan is to reseed non-productive pastures, ensuring that leafy swards of high digestible material are presented to the herd

reseed on a phased basis all non-productive pastures, thereby ensuring that leafy swards of high digestible material are presented to the herd at all times.

Overfeeding of concentrates to weanlings, both on grass and during housed periods, was also highlighted by the group as a potential area for reducing costs, and is directly influenced by grass quality and quantity.

**Liveweight gain**

Maximising liveweight gain from grass is his focus. Earlier access to spring grass by the autumn-born weanlings was also discussed, with the possible option of allowing such weanlings access to paddocks that adjoin the wintering sheds.

While John is at 50% of the Derrypatrick herd target of €1,000/ha, improved grassland use through reseeding and general grass budgeting will increase the herd days at grass, reducing current variable costs, ensuring cheaper liveweight gain from beef progeny. This could generate an additional €150 gross margin/ha, a good first step on the road to matching or beating the Derrypatrick performance.

sheep

# Put your foot down on lameness

A realistic target for every sheep farm is to keep the number of lame sheep at any one time below 5% (one animal in 20)



**Michael Gottstein**

**A** PART from being an animal welfare issue, lame sheep do not thrive to their full potential and this loss in production, combined with the cost of treating lame sheep (labour, footbath solution and antibiotics), represents a huge cost to sheep farmers.

The causes of lameness in sheep are

many and varied. In Ireland, the main two causes of lameness are scald and footrot and these account for approximately 90% of lame sheep. The remaining 10% arise from other infections and injuries to the feet. Proper diagnosis is essential if the control/prevention programme is to be successful. The following are some of the more common causes:

1) Sores between the digits at the back of the foot, no smell from the sore and sheep have become severely lame very quickly. This is most likely to be scald.

2) Hoof horn lifting, foul smell, rotting in hoof, usually starting around the outside of the hoof. This is most likely to be footrot.



**ABOVE: A bad case of foot rot.**

3) Infection breaking out between the coronary band and the hoof (i.e. where the hoof meets the hair on the leg). Severe lameness and no smell. This is likely to be Contagious Ovine Digital Dermatitis (CODD). You should seek veterinary advice.

4) Injuries and infections in the joints

**Table 1** | Various products that can be used, their dilution rates and advantages/disadvantages

Chemical	Concentration	Advantages	Disadvantages
<b>Formalin</b>	3% of 40% formaldehyde. (i.e. 300ml per 10 litres of water). Avoid higher concentrations due to risk of skin damage.	1) Sheep can walk through — fast working. 2) Cheap. 3) Breaks down naturally and is easily disposed.	1) Cannot be reused after one day. 2) Stops working if contaminated with mud, straw, faeces/organic matter. 3) Unpleasant — irritant, toxic and carcinogenic. 4) Very painful for lame sheep. 5) Hoofs become hard/ brittle with repeated use.
<b>Zinc Sulphate</b>	10% (1kg per 10 litres) using Zinc Hexahydrate. 6.5% (650g per 10 litres) using Zinc Monohydrate. Add a few squirts of washing up liquid to improve horn penetration.	1) Can be reused. 2) Not painful. 3) Not deactivated by organic matter.	1) More expensive. 2) Can be toxic if drunk. 3) Can be difficult to dissolve. 4) Need to stand sheep in bath. 5) Harder to dispose — heavy metal.
<b>Copper sulphate</b>	10% (1kg per 10 litres)	1) Can be reused. 2) Quicker to penetrate than zinc.	1) Very expensive. 2) No longer recommended by SAC due to risk of copper poisoning. 3) Reacts with galvanised metal. 4) Colours fleece. 5) Toxic if drunk. 6) Difficult to dispose.
<b>Other organic acid zinc/copper salt mixtures</b>	Use as directed.	1) Quick to penetrate. 2) Some stick to feet improving penetration further.	1) Very expensive. 2) Cannot be reused. 3) Reduced efficacy if soiled with organic matter.
<b>Antibiotic footbaths</b>	Use as directed by veterinary surgeon	1) Useful against CODD.	1) Expensive. 2) Cannot be reused. 3) Reduced efficacy if soiled with organic matter.

NOTE: Table adapted from Heather Stevenson, SAC Veterinary Services, SAC sheep & Beef Notes



are characterised by swelling, heat and tenderness in the affected area.

Identifying the cause of the problem is relatively easy. Putting in place an effective control programme, which cures infected sheep and prevents other sheep from getting infected, is a different matter altogether.

I find that I can nearly always guess how good the handling/footbathing facilities are on a farm just by looking at the sheep. Flocks with good handling/footbathing facilities 'in general' have far fewer problems.

The key to managing lameness is early intervention. Sheep with lame feet will do all in their power to avoid the sores from coming in contact with a footbathing solution. It makes sense that they would do so as the solution will sting causing pain to the already sore foot. But if the infected foot is not immersed in the solution, how can it be treated?

Ideally, sheep should be footbathed every time they are in for handling/drafting. In most instances, this means that the sheep will be footbathed once a month, or so. If, in the intervening time, there is an outbreak of scald in young lambs, an additional trip to the yard will be warranted. With this approach, lameness levels can be kept very low, provided

that there is an effective footbath on the farm.

An effective footbath must be designed and managed well. Walk through footbaths, where the sheep literally just run through the bath in a few seconds is, in my mind, not a great option. They work fine for lambs with scald, where a quick dip in something like formalin is quite effective. But they aren't much use when trying to control outbreaks of footrot or CODD, where the length of time that the solution is in contact with the feet has a bearing on the success of the operation.

### Best solution

In my opinion, a 'stand in' bath is the best solution. This is a bath situated at the end of the dosing race, which holds about 10% more sheep than the race. This allows all the sheep in the race to be held in the footbath, while the race is being refilled with new sheep. As the next batch of sheep are being treated in the race, the previous batch are being footbathed. It takes no extra effort as the sheep are going through the race anyway.

A roof over the footbath is a good idea as it prevents rain water from diluting the solution.

It is also a good idea to have a short water bath before the sheep enter the

footbath (to clean their feet). Running the sheep across an area with loose round stones can also help to clean feet.

Even the best designed footbath will fail if it is not filled with a suitable footbath solution. Work out the size of your footbath — length by width and the depth of the solution in metres. This will give you the volume of water that the bath holds.

An example would be a footbath 2m wide, 3m long and 5cm of solution. To work out the volume of solution required, we multiply 2m by 3m, which gives us 6m<sup>2</sup>. Next, we multiply 6m x 5cm, which is 0.05m to give us the volume of 0.3m<sup>3</sup>. One cubic metre is 1,000 litres; therefore, the volume of solution in the footbath given in this example is 300 litres.

Try to carry out the footbathing on a dry day and aim to have the sheep's feet as clean as possible. This can be achieved by running them through a water bath or across slats or round stones. There is no need to turn all sheep to pare their legs. However, sheep with overgrown feet or lame sheep should have their feet examined and pared, if necessary. Do not overpare. Drawing blood is not a good idea. All you are trying to achieve is to correct the shape of the feet in the case of overgrown feet.

Once sheep have been footbathed, the solution must be given a chance to work. Standing the sheep on a dry, clean and hard surface after treatment is essential. Ideally, sheep should be allowed to stand on this surface for one hour before being turned out to grass.

It is a good idea to draft off any sheep that are lame. Keep these animals in a separate paddock to avoid contaminating the healthy sheep post footbathing. Lame sheep should be bathed every five days until they are cured before being returned to the main flock. Serial re-offenders (i.e. sheep that keep getting lame) should be culled.

There is a vaccine available to help control footrot in sheep (Footvax). It is expensive and is only an aid and not a replacement for having proper facilities as it only controls footrot.

Flocks that have problems getting footrot under control often use vaccination to help them get on top of an outbreak before embarking on an intensive footbathing regime to keep the disease at bay.



Foot paring.



Stand-in footbath.

## farm management

# Lessons from a difficult year

Profit margins for dairy, beef and tillage farms drop in 2009

## Liam Connolly

Teagasc, National Farm Survey, Athenry, Co Galway

**A**VERAGE profit margins in 2009 for dairying, cattle, and tillage crops show a decline on the 2008 gross and net profit margins, due mainly to a decline in prices of milk and cereals, coupled with unfavourable weather and growing conditions.

Results on profit margins from the 2009 National Farm Survey show disappointing returns for all the main farm enterprises, with the exception of sheep.

## Enterprise returns

The average gross profit per hectare for creamery milk production declined from €1,967 per hectare in 2008 to €1,034 in 2009, while the net margin per hectare declined from €863 to €177 per hectare in 2009.

However, there was considerable variation between dairy farmers, both in relation to profit margins and technical performance as shown in *Table 1*.

The data in *Table 1*, based on a random sample of dairy farmers, show clearly that even in one of the most difficult years on record, the most efficient dairy producers obtained reasonable gross and net profit margins.

These margins exclude all direct payments and subsidies. The top third of farmers produced 12,123 litres of milk per hectare more than one-third more than the national average of 8,837 litres/hectare. This was achieved by a combination of higher stocking rates (21% higher) and higher milk yield per cow (14% higher).

The Teagasc National Farm Survey data clearly shows that increased technical efficiency is required to survive the volatile changes in farm product and in-



**Table 1** | Manufacturing milk: financial and technical performance 2009

	AVERAGE	TOP ONE-THIRD
<b>Financial</b>		
Gross profit (/ha)	1,034	1,691
Net profit (/ha)	177	596
<b>Technical</b>		
Milk yield/cow (litres)	4,760	5,426
Milk per ha (litres)	8,837	12,123
Stocking rate (LU/ha)	1.9	2.3
Concentrates (kg/cow)	900	950

**Table 2** | Single suckling : financial and technical performance 2009

	AVERAGE	TOP ONE-THIRD
<b>Financial</b>		
Gross profit (/ha)	111	337
Net profit (/ha) :		
excluding direct payments	-178	-70
including direct payments	268	430
<b>Technical</b>		
Livestock units	54	34
Suckler cows (head)	18	28
Stocking rate	1.3	1.7
N kg/ha	58	70



ABOVE: Professor Gerry Boyle, Liam Connolly, Anne Kinsella and Cathal O'Donoghue.

put prices and, even in a difficult year, generate a positive net margin.

Teagasc National Farm Survey data show a similar scenario for the main cattle system in the country, i.e. single suckling. Again, the results shown in *Table 2* are based on a random sample of suckler farms for 2009.

Last year was also difficult for suckler farmers with lower cattle prices, higher input costs and unfavourable grass growing conditions. Net profit margins for all cattle systems were on average negative and producers had to rely on subsidies and direct payment for all their income, as shown in *Table 2*.

The data shows that excluding direct payments, even the top one-third, or most efficient producers, were unable to cover production costs and had to 'eat' into their direct payments. The most efficient third lost €70 per hectare, while the average suckler farmer lost €178 from the marketplace.

When subsidies and direct payments are included, the top performers obtained a net margin of €430/hectare compared with €268 for the average nationally.

As on dairy farms, higher technical output resulted in higher profits with the most efficient farmers having a stocking rate of 1.7 LUs/hectare, compared to 1.3 LUs/ha on average. This resulted in higher financial output and increased profit margins.

#### Farm returns

The 2009 results on a per farm basis were equally disappointing, with incomes on specialist dairy farms declining by 48% to €23,684 per farm (incomes stood at €45,732 in 2008), due mainly to a decline of 30% in the price of milk.

Farmers in the Dairy Other System also saw decreased incomes in 2009, with family farm income (FFI) per farm declining by 27% to €17,280. This decline was due to lower milk and livestock output and higher direct and overhead costs.

Farm income on suckler farms declined by 15% from 2008 to 2009 — to the lower average level of €6,563.

This was due to a decline of 9% in output per farm and increased direct costs of 1.3%, while overhead costs declined by 12%.

Incomes on the Cattle Other System declined by 17% to €9,302 in 2009, with output down by 10% and costs by 7%.

2009 was another difficult year financially for tillage farmers, whose average FFI declined from €19,380 in 2008 to €15,247 in 2009 — a drop of 21%. This resulted from a 13% fall in output, despite an 11% decline in total production costs.

The last two years have been disastrous for tillage farmers, who have seen their average FFI fall from €40,611 in 2007 to €15,627 in 2009 — a decline of 62%.

Average FFI on sheep farms increased by 1% in 2009 to €9,688 per farm (€9,593 in 2008) due mainly to reduced costs, as output declined by 3.5%.

On 52.6% of all farms, the farmer and/or spouse had an off-farm job — a 3.7% decline on 2008. This was the second year off-farm employment has declined (-2% in 2008), reflecting the difficulties in obtaining employment nationally.

On 35% of farms, the job was held by the farmer. Overall, on 79% of farms, the farmer and/or spouse had some source of off-farm income, be it from employment, pension or social assistance.

#### Direct payments and subsidies

National Farm Survey data show the growing importance of subsidies from 1995 onwards, especially in the drystock sector, where their contribution exceeded FFI by over 30% in most years since 2000 and increasing to 204% in 2009. In other words, returns from the marketplace were not sufficient to cover total production costs.

In 2009, market-based output from the cattle rearing system, which accounts for almost one-quarter of all farms in the country, was €13,396 per farm. Total production costs were €19,125, resulting in a loss from the marketplace of €5,729 per farm.

Subsidies as a percentage of FFI was also high in the tillage sector at 162% of FFI in 2009.

Direct payments contributed 45% to specialist dairy farmers' income in 2008 but increased to 87% in 2009, due to a decline in milk price. The 2009 data show tillage farms and dairy/other farms receiving the highest direct payments at €24,668 and €24,351 per farm respectively.

#### Optimistic outlook for 2010

The outlook for the agriculture sector in 2010 looks more optimistic than 2009. Milk price has increased with May price of 30c per litre from many processors. Cattle prices, while weak in the early part of 2010, have become firmer and lamb prices are ahead of 2009 prices.

The outlook for grain prices has also improved but cereal yield may be lower due to poor growing conditions, especially for spring sown crops.

The unfavourable weather in the spring and early summer of 2010 has also resulted in increased feed costs, which will reduce profit margins in 2010.

# Organic tillage –



Paul (4), Trevor and Anna (6) Harris.

# getting the mix right

**James McDonnell**, Teagasc organic specialist, Oak Park and **Mark Plunkett**, soil specialist, Teagasc, Johnstown Castle

**W**HILE still a niche, organic production is growing and the area under organic management is up 50% in the last three years.

The majority of recent entrants are drystock farmers, which has generated strong demand for organic cereals. Only 1,200ha of organic tillage in Ireland in 2009 but with wheat prices at €250/tonne and €340 for oats last harvest, it is an enterprise worth considering. Organic tillage works best on a mixed farm because there is a ready supply of nutrients in manure and it is easier to practise a good rotation.

Trevor Harris is a well established producer, who operates an organic farm with his wife and five young children near the picturesque Donadea forest in north Co Kildare. In the late 90s, Trevor had lengthy discussions on potential demand and prices for organic cereals, beef and lamb, and implications for support payments, with his local Teagasc adviser David Wallis. He then decided that organic production could enhance the returns from his land.

He converted to organic in 1999 and his land achieved full organic symbol status in 2001. Since then, the farm has been expanded to its current 100 hectares.

Drystock includes 20 suckler cows and followers and 100 ewes and 30 hogget ewes. The suckler herd was added after converting to organic and the first crop of organically certified calves were born on the farm in 2006. All animals are now reared to slaughter. Artificial insemination is used on the herd and the cows calve down from January to April. Ewes lamb in February, Belclare replacements are being introduced to for their parasite resistance and higher prolificacy.

Trevor maintains that the key to successful organic farming is the mix of enterprises. Why?

- Clover must be part of an organic crop rotation as this provides the nitrogen to drive crop yields.

- Animals are used to graze/eat clover. Otherwise, the clover must be mulched in which adds significantly to costs of production.

- Animals housed provide a source of farmyard manure and slurry, which is applied in a targeted way to the crops in the rotation.

- Sheep can be fed very efficiently grazing them on stubbles after harvest.

Grain prices have been good for the past few years by comparison with conventional production, but Trevor cautions that it is not all rosy as he does have the same weather for sowing and harvesting!

Delivering oats to Flavahan's for the organic porridge market is his target; with €340 available for oats at 15% moisture content in 2009. "Flavahan's currently imports some oats and would like to buy more organic porridge oats in Ireland," says Trevor.

"So, there is a ready market at €340 last year. Other grains sell inter-farm for about €250/tonne and, again, there is plenty of demand."

Nonetheless, Trevor is conscious of not growing too many oats in the rotations in case there is a disease risk like oat mosaic virus. The other crops in his rotation are fed to ewes at lambing and also to finish his own cattle.

The remaining grain is dried, rolled and sold in half tonne bags to other organic farmers. Organic concentrates are expensive to purchase in Ireland as they are imported and generally retail in excess of €550 per tonne.

There are some important points worth noting to operate a successful organic tillage enterprise like Trevor Harris's:

- Crop rotation
- Sowing date
- Nutrient management — N, P, K and lime
- Weeds
- Disease
- Crop choice
- Markets

## Crop rotations

Clover is the nitrogen factory on the organic farm. Nitrogen is fixed and used by the clover as part of its normal growth and clover is ploughed in the decaying clover plant and roots release nitrogen, which is then exploited by other crops in the rotation, such as cereals. Depending on the farm system/rotation, red or white clover is selected.

Red clover fixes a far greater amount of nitrogen (greater than 200kg/ha) than white clover (120kg to 150kg N/ha) but can really only be used effectively for silage production.

Red clover is very popular among organic farmers in Ireland as a nitrogen fixer. It achieves optimum fixation after two years. High nutrient demanding crops like winter cereals are generally sown after clover ley, followed by spring crops towards the end of the rotation or a legume, as shown in *Table 3*.

Good crop rotation with suitable cereal crops is essential to control weed populations and build up of disease. A good crop rotation requires planning and, in many cases, will be farm specific.

## Sowing date

Winter crops are the crop of choice, as:

- The crops are sown when weed seeds are entering winter dormancy and are advanced when weed seeds germinate in spring.

- The crops are longer in the ground and, so, have more time to take up nutrients and, thus, have a higher yield potential.

Aim to have crops in by mid-October (these are the best looking crops in 2010) and if you miss autumn sowing, it is better to sow spring crops early (the early March sown crops are the better of the spring crops)

## Nutrient management

Getting the basics right is the secret to successful organic crop production. Soil test regularly to establish P and K levels and lime to maintain pH at 6.5 is the starting point. In a mixed system, clover pastures can be fed to livestock.

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**Table 1** | Trevor Harris's rotation

Year	Crop
1-4	Grass/clover ley
5	Winter wheat /triticale
6	Winter oats
7	Beans/peas
8	Spring oats

**Table 2** | Typical crop yields on Trevor Harris's farm

Crop	Yield	Yield
	tonne hectare	tonne /acre
Winter wheat/oats	4.4 - 5.1	1.8 -2.1
Spring Oats	4.0 — 4.4	1.6 -1.8
Peas	4	1.6

**Table 3** | Crop rotations on mixed organic farms

Farm 1 (5-year)	Farm 2 (8-year)
Red clover	White clover
Red clover	White clover
Winter oats	White clover
Winter wheat	White clover
Winter oats	Winter wheat
	Winter oats
	Peas
	Spring oats

Providing N for the following crops and the farmyard manure/slurry will supply the crop's P and K requirements, so both grassland and tillage crops are satisfied.

In all organic farming systems, nutrients are exported off the farm in the form of crops, meat or milk.

This has long term implications for the farm. There must be some form of nutrients imported back to replace nutrients lost to prevent a decline in soil fertility.

Let's look at *Table 4* to see the amounts of nutrients removed by particular crops.

In an organic crop rotation, we aim to harvest at least three viable crops prior to returning land to grass/clover mix. *Table 4* shows the nutrients removed by a range of crops; for example, a 5t/ha crop of winter oats will remove approximately 18kg P and 56 kg K in both grain and straw.

Over the course of a long rotation, where nutrient off-takes are not replaced, the soil P and K fertility could potentially drop a soil index over a number of years.

A nutrient plan is a vital tool. For example, to replace the nutrient removals in a 5.0t/ha crop of winter oats, an application of 25m<sup>3</sup>/ha (2,500gal/ac) of cattle slurry would be required to replace P and K off-takes in grain and straw.

Alternatively, 15t/ha of FYM would also satisfy the crops P and K requirements.

The fertilizer replacement value of nitrogen is determined by composition, date of application and method of application.

To get the best value of the nitrogen in slurry, it should be diluted and spread in the springtime. Farmyard manure is best spread in the autumn time as composted manure and targeted at winter cereal crops and red clover swards.



Clover is the driver of nitrogen production in an organic system.

### Weeds and disease

A certain level of weeds is not usually detrimental to crop growth. However, it is important to know that when weeds reach a threshold, it will result in de-

pressed yields. On larger farms, camera guided hoes are growing in popularity.

Annual weeds tend not to be a problem. These are managed by adjusting sowing date, taller crops (absence of growth regulators) and higher seeding rates. Wild oats, docks and charlock (low populations) are weeds that require hand roguing in the months of May and June.

### Organic protein

Organic protein is expensive, with organic soya costing in excess of €900 per tonne and there is strong demand for locally grown beans and peas. But beans or peas are poor competitors with weeds. Using machinery (grass tine harrows or camera guided hoes) is essential to keep crops relatively clean, together with the optimum position in a rotation.

Disease is not generally a problem in organic crops due to the absence of chemical nitrogen and lower crop density. It is something that you can't do a lot about if it gets into a crop. However, variety choice, suitable rotation to prevent build-up and cultural control are some of the critical elements to producing a disease free healthy crop.

"Organic farming can be challenging but it works for us, both practically and financially," concludes Trevor Harris.

**Table 4** | P & K Removal [kg/ha] for a range of crops grown in a crop rotation

	Winter wheat (5.0 t/ha)	Winter oats (5.0t/ha)	Spring oats (3.7 t/ha)	Red clover (35t/ha fresh)
<b>GRAIN</b>				
	<b>Nutrient removal (kg/ha)</b>			
P	17	17	13	—
K	24	24	17	—
<b>STRAW</b>				
	<b>Nutrient removal (kg/ha)</b>			
P	1.3	1.3	1.0	—
K	17	32	24	—
<b>GRAIN + STRAW</b>				
	<b>Total nutrient removal kg/ha (units/ac)</b>			
Total P	18 (14)	18 (14)	14 (11)	20
Total K	41 (33)	56(45)	41 (33)	170

**Table 5** | Typical N, P and K levels in organic fertilizers

	N kg/t*	P kg/t*	K kg/t*
Cattle slurry 5.0	0.8	4.3	
Farmyard manure	4.5	1.2	6.0

\*1 tonne slurry = 1,000litres. 1,000gallons = 4.5 tonnes



# Your 10 point plan for winter cereals



**Michael Hennessy**  
Teagasc

**Y**IELD drives profit in cereals. High yields, if costs are controlled, will inevitably deliver profits — unless adverse weather or market conditions intervene.

The foundations of a high-yielding crop are built on favourable soil conditions and structure. If key elements such as soil structure (compaction, consolidation, water retention), pH, fertility and pest burden are working against the wheat crop, then high yields will not be achieved. Is there a blue print that everybody can follow to achieve these yields? The bones of a template are well established, but it's attention to detail at each step that pushes yields from good to profitable.

- Plant as many first wheats as possible, as these wheats have the highest yield potential. Wheat should follow ley or a break crop (oats, oilseed rape, beans, beet, maize etc). Think about a land swap with neighbours, or growing maize etc for sale as part of your rotation.
- Plant first wheats early. This varies from north to south of the country. Early planting in the north east means late September, whereas in the south, this can be pushed out a week or 10 days. Planting early delivers many advantages, such as completing primary cul-



tivations in drier soils, crops establishing faster in better seed beds and it will reduce problems such as slugs.

- Delay planting second or continuous wheats for a week to 10 days to reduce the risk of take-all. Dress with Latitude in the high take-all risk years (year three, four and five after ley or two, three and four after a break crop). Consolidate the seed bed at planting and apply extra nitrogen at the first timing in spring. Select a variety that shows more tolerance to take-all (Einstein, J B Diego, Kingdom).
- If planting a large acreage, block varieties for ease and more precise management through the year.
- Choose your variety according to planting date. If planting early, avoid early-maturing varieties (Cordial, etc), which have poor disease resistance. Varieties such as Alchemy, Oakley, etc are well suited to this slot.
- Control aphids at the four-leaf stage if

sown early, and control weeds in the autumn. It's the cheapest option.

- Correct trace element deficiencies at the tillering stage of the crop in spring. Apply all P and K by mid-tillering.
- In a long-term tillage field, apply first split of nitrogen (approximately 25%) at the start of growth (early to mid-March). Apply main split (approximately 50%) by first node (early to mid-April) and the final 25% by flag leaf peeping (early May).
- Apply the main growth regulator by first node.
- All crops will need a three-spray programme for disease control; the first at third last leaf emerged, at flag leaf out and at the start of flowering.

These pointers should be adjusted to suit local conditions such as weather, earliness of the site and crop progress. Above all, be prepared to challenge your advisor and yourself to improve yields, which can mean changing what you were doing for the last number of years.

## BETTER tillage farm open days in Meath and Wexford

Good forward planning is carried out by all of the growers participating in the crops BETTER farm programme.

The strong desire of all these growers is to plan rotation, timing of seedbed preparation and all inputs well in advance of sowing the crops.

There are open days on BETTER Farms in Wexford and Meath over the next couple of weeks.

The details are shown in *Table 1*. All are welcome to visit the farms and discuss the finer details of growing

winter wheat and other crops with the host farmers and Teagasc experts on the day.

**Table 1** | BETTER tillage farm walks

Date	Farmer	Address
6 July	George and Ken Williamson	Ambrosetown, Duncormick, Co Wexford
8 July	Joe O'Donoghue	Glassmerry house, Herbertstown, Stamullen, Co Meath

tillage

ENERGYCROPS

# Growing nicely

The relatively small area of crops planted to energy crops belies their significance and potential, according to **John Finnan & Barry Caslin**, Teagasc

**T**HE concept of a crop that is grown for energy rather than food or fibre is very new; research began as recently as the 1970s. It's only in the last 10 years, however, that energy crops have been grown commercially, driven by rising oil prices and concern over the environmental impact of burning fossil fuels. Energy crops can be grown to produce liquid biofuel or solid biofuel.

The past few years have seen the area of energy crops grown for solid biofuel in Ireland rise to over 3,000ha, approximately 2,500ha of miscanthus and 500ha of willow.

Both willow and miscanthus are supported by the Department of Agriculture bioenergy scheme, which provides grant aid towards the cost of establishing these crops. The bioenergy scheme has recently been extended until 2012. The Government has plans to supply a considerable proportion of our energy needs from our native renewable resources and bioenergy is destined to play a big part. Most biomass is sourced from the forestry sector but large additional supplies will be needed to supply our ambitious bioenergy targets, hence the need for additional sources of biomass such as energy crops.

Both crops are intended primarily for combustion. The largest potential markets are the three peat burning power

“ A miscanthus pilot demo programme offers up to 50% grants for biomass boilers fuelled by miscanthus



ABOVE: Willow harvesting.  
MAIN PICTURE: Miscanthus harvesting.



stations in the midlands, which need to replace 30% of their peat fuel with biomass by 2015. There is considerable scope for energy crops to supply the domestic and commercial heat markets.

A large number of biomass boilers and stoves have already been installed in Ireland. These are fuelled by wood chips and wood pellets but large additional sources of biomass will be required for the significant expansion in this market, which needs to happen if national targets are to be met.

Both energy crops can be supplied in chip form and recent research at Oak Park has shown that pellets of good quality can be made from both miscanthus and willow.

Provision of both heat and electricity from biomass (biomass CHP — Combined Heat and Power) could offer an additional significant market for energy crops.

#### Recent developments:

The Government has recently announced new supports for bioenergy, with tariffs of up to 14c/KWh for biomass CHP and 9.5c/KWh for energy crop

combustion. The tariffs are index-linked and should provide improved support for the energy crop market.

The Government has also announced a miscanthus pilot demonstration programme which offers up to 50% grants for biomass boilers fuelled by miscanthus.

Hopefully, this programme will encourage a miscanthus heat market as there is a range of boilers suitable for burning miscanthus.

Both announcements come on the back of significant recent developments for energy crops, including:

- The start of biomass co-firing in Edenderry power station with 9% co-firing achieved in 2009
- The development of a significant market for miscanthus briquettes, which are now being produced at a number of locations around the country.

Energy crops are relatively new and, consequently, our knowledge of them is limited compared with other crops. The emerging energy crops industry needs research support to enable it to develop. Research into energy crops is being car-

ried out by Teagasc as well as at third level institutions. Much of the Teagasc research is carried out at the Crops Research Centre at Oak Park, with projects on energy crop agronomy, harvesting, storage and combustion.

Research on the greenhouse gas balance of energy crops is being carried out at Johnstown Castle in Wexford, while economists within Teagasc are conducting research on the economics of energy crop cultivation.

#### KEY POINTS | energy crops

- Energy crops are an expanding sector in Irish agriculture.
- Biomass from energy crops is needed to reduce our dependency on imported fossil fuels and reduce our emissions of greenhouse gases.
- Recent market developments and Government supports should help the energy crops sector to play a significant role in the Irish agriculture and energy sectors.

# Why Irish forests are world

With timber prices at an all-time high, forestry is becoming a highly profitable farm enterprise



**Niall Farrelly**  
Forestry researcher,  
Teagasc, Athenry

**R**ECENT Teagasc research identified key factors linked to exceptional production levels in Ireland. The study, which primarily looked at Sitka spruce, indicates that provided adequate moisture and nutrients levels are met, tree species can thrive and be very productive in Ireland.

Yield class is the expression used to compare productivity among species or for different sites or soil quality. The higher the yield class, the greater the productivity of the plantation, and the greater the height and diameter of the trees. The study found that production levels for all species on farm forest

**Comparison** of average growth rates ( $m^3 ha^{-1} yr^{-1}$ ) for managed forest plantations in farm forest plantations in Ireland versus UK, Sweden, North America and the Tropics

Region	Average
Canada-all species	1.0
USA-all species	2.6
Sweden-all species	3.3
UK-conifer	11.0
UK-broadleaved	5.0
IRE-conifer (excluding Sitka spruce)	17.7
IRE-broadleaf	7.8

plantations in Ireland were above the average for the UK, Sweden, Canada and USA. The national average yield class for conifers was  $17.7m^3 ha^{-1} yr^{-1}$  (17.7 cubic metres of wood per hectare per year — roughly equivalent to 17 tonnes per ha per annum) and broadleaves was  $7.8m^3 ha^{-1} yr^{-1}$  compared with  $11.0m^3 ha^{-1} yr^{-1}$  and  $5.0m^3 ha^{-1} yr^{-1}$  for the UK.

On average, growth in Europe and north America is much slower; average production in Sweden is  $3.3m^3 ha^{-1} yr^{-1}$  and  $2.6m^3 ha^{-1} yr^{-1}$  for the USA. Production in Sitka spruce plantations is among the highest reported for the species anywhere in the world (4-34), averaging  $21.2m^3 ha^{-1} yr^{-1}$  (yield class 22).

The results indicate that production levels on privately owned plantations for all species are very favourable, particularly for conifer species and especially Sitka spruce.

One of the key identifiers of land quality is whether land has been enclosed or unenclosed (enclosed land has been fenced). Enclosed land offers significantly increased levels of production — up to  $6m^3 ha^{-1} yr^{-1}$  greater than yields on unenclosed land. Soil type is another easily identifiable site quality characteristic and is a good indicator of potential productivity. Well drained soils, which have been traditionally used for pasture or arable crops, show excellent rates of production. Even poorly drained soils offer excellent production rates.

Vegetation cover gives an indication of the extent to which essential nutrients are available for forest growth and can be more reliable than soil chemical analysis. Vegetation is also a predictor of species suitability and potential productivity. Flushed vegetation (such as grass rush communities, composed of *Juncus spp.*) indicate good sites for Sitka spruce production; heather sites (*Calluna and Erica spp.*) will result in low yields and should be avoided



## TIPS for more productive plantations

Here are a few simple tips for maximising the productivity of new plantations:

- **Provenance/planting stock:** The origin of the seeds is crucial to the performance and quality of tree species. For Sitka spruce, choose Washington or Oregon provenances; these areas are fast growing and can result in increased production of up to  $2m^3 ha^{-1} yr^{-1}$  to  $4m^3 ha^{-1} yr^{-1}$ . Contact your Teagasc forestry development officer for recommended seed sources for other species.
- **Site selection:** Consider planting enclosed rather than unenclosed land. This will result in increases of up to  $6m^3 ha^{-1} yr^{-1}$  for Sitka spruce, higher rates of for-

est premium and faster returns.

- **Soil types:** Well drained soils offer greater choice in terms of species selection and are very suitable for a range of conifer and broadleaved species. Average growth rates on well drained brown earths and grey brown podzolics can be in excess of  $24m^3 ha^{-1} yr^{-1}$ . Poorly drained soils offer less potential for species selection, but yields of Sitka spruce on gley soils can also be impressive, averaging  $22m^3 ha^{-1} yr^{-1}$ .

- **Drainage:** Soils with stagnant water tables should be avoided as they inhibit nutrient uptake and respiration of the root system.

- **Vegetation:** Examine the vegetation of the potential forest site. Enclosed land that has been in agricultural production should be very productive.

Land out of production for many years should retain some inherent nutrient status, while the potential productivity of wasteland can be assessed using vegetative indicators.

Grass species, herbs, bramble, gorse, ferns and soft rush and weeds associated with pasture all indicate potentially good yields. Avoid heather, cottongrass, cowberry, sedges and blueberry; these vegetation types are associated with lower productivity.

# ld beaters



## FARMERFOCUS — James Bennett



Liam Kelly, Teagasc forestry development officer, and James Bennett, Mountrath, Co Laois, discussing thinning with a harvesting contractor.

James Bennett, a forest grower in Mountrath, Co Laois, planted forestry on rough grazing land in 1989.

He was surprised at the rapid growth of his Sitka spruce crop on this marginal agricultural land. Production rates are very impressive (> yield class 24).

James undertook a first thinning in 2002, when the crop was aged just 13 years. He is now preparing for his third thinning.

The crop has provided supplementary income to his sheep and cattle enterprise, as James has realised, significant positive returns from all thinning operations.

"Any farmer with marginal agricultural land should consider forestry as an enterprise," he said.

"Production is very impressive and timber is a commodity for which there is increased demand from the sawmilling and energy sectors."

## FARMERFOCUS — Jim McDermott

Jim McDermott planted rushy land in Creggs, Co. Roscommon, in 1990.

The land was enclosed and had previously been let but was very wet and difficult to work, yielding no real return.

"I planted the land in 1988 with Sitka spruce, as I was aware that forestry offered me an alternative income," said Jim. "I maintained an annual income through the forestry premium payment up to 18 years. After this, I started thinning, which provided another source of income."

He added: "I was interested in forestry as a investment and as a hobby. I was surprised by how fast the crop was growing, especially on marginal agricultural land."

Jim will carry out a second thinning this autumn.



Jim McDermott, Creggs, Co Roscommon, measures his crop in preparation for second thinning.

- **Stocking:** Make sure that there are sufficient trees, especially after a number of years of establishment. Tree numbers can be low due to vegetation competition, insect pests, diseases and frost damage.

High production levels depend on full stocking rates (few gaps). Reductions in tree numbers of up to 50% can result in lower production of 16%.

Any tree failures within the plantation should be replaced with new plants to ensure maximum site productivity. This will also allow for trees to be thinned and provide an early income as a result.

## botanic gardens

# The perfect time to harvest inspiration

Mid-summer is the ideal time to get out and visit open gardens

**Eileen Murphy**  
Teagasc

**T**HE most important thing to do in the garden this month is to enjoy the fruits of your labour. All that hard work planting, pruning, digging and weeding should have brought you the perfect garden. If it hasn't quite lived up to expectations, why not relax anyway.

There is also the option of continuing your interest and ambition by visiting open gardens, which can be an endless source of inspiration.

Favourites of mine include Mildred Stokes' award-winning garden at Killurney, Ballypatrick, Clonmel, Co Tipperary, and flower arranger, Carol Bone's small town garden in Bray, Co Wicklow. A guide to open gardens is available online at [www.gardensopen.ie](http://www.gardensopen.ie)

In 1995 the Department of Tourism began funding the Historic Gardens Restoration Scheme. Many historic gardens of world standard have been restored under this initiative.

While the individuality and personal plant choices of the garden owner accounts for a lot of the charm of the smaller gardens in the open garden scheme, even among the larger and more prestigious gardens it is fascinating to come across examples where the creative

“ When you return to your own home patch you will be inspired to look up the seed catalogues, draw up new schemes and convince yourself that, next year, you will finally achieve the perfect garden



Corina North's creation, Altamont, Co Carlow. It is now managed by the Office of Public Works.



**An occasional series by experts at the Teagasc college at the National Botanic gardens aimed at adding to the appearance and value of your farm**

force of one individual is strongly expressed.

Two outstanding examples come to mind. Mount Congreve in Kilmeaden, Co Waterford is the lifetime passion of the centenarian, Ambrose Congreve.

While it is now managed by a professional team of gardeners, this world renowned plant collection is open to the public free of charge, once a week. There is so much to see and enjoy that it would repay several visits over the growing season.

A different style of garden was created by Corina North in Altamont, Co Carlow. It has been handed over to the State and is now managed by the Office of Public Works (OPW).

Her love of the natural landscape, and the informal sympathetic style of the

planting, have resulted in a garden that is a soothing and peaceful haven. Gardens in cities should not be overlooked. Within strolling distance of Heuston Station are two fine gardens managed by OPW: the War Memorial Gardens at Islandbridge and the formal gardens at the Royal Hospital in Kilmainham.

The gardens at St Stephen's Green are European award winners, and if a small hidden gem is what you are looking for, seek out the Basin Garden at Blessington Street, only about 200 metres north of Dublin's O'Connell Street.

At all of these local authority and OPW gardens you may come across students of the Teagasc National College of Amenity Horticulture. If time permits while in Dublin, you must visit 'the brightest jewel', the National Botanic Gardens in Glasnevin.

With a 215-year history, it is currently experiencing a glorious era and is looking at its best at this time of year.

Many of the major structures have been restored, its research programme is expanding, the World Botanic Gardens Congress has just concluded in the gardens and plans are in place to expand the Teagasc teaching facilities and to introduce a new Level 8 Bachelor of Science programme in conjunction with Dublin City University.

When you return to your own home patch you will be inspired to look up the seed catalogues, draw up new schemes and convince yourself that, next year, you will finally achieve the perfect garden.

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