Spring Grass on the Dairy Farm-The Sustainable & Profitable Way

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An extra profit of €250 or more per cow together with benefits for water and air quality is achievable on average Irish Dairy farms when a sensible spring fertiliser and grazing plan is followed.

On Dairy farms, where cows can graze from early February, the grazed grass costs about half that of quality silage and less than a third of the cost of Dairy ration. Our National Farm Survey analyses show that Irish Dairy farmers grow about 10.5t (DM) of grass compared to 13.5t (DM) or more grown on research farms. Also, a trawl through grass growth figures of Dairy farmers using the PastureBase Ireland (PBI) online grass measuring programme (used by the more ambitious grassland farmers), shows their grass growth is high in the mid-year summer period, but noticeably a shortfall in the region of 2t of grass DM/ha is evident in the spring period. A shortfall of 2t (DM) grass herbage at farm level costs in the region of €500 per ha, or €200 to €250 per cow when stocked at 2.5 to 2.0 cows per ha.

Too many Dairy farmers underestimate the spring growth potential of grass, when fertiliser is applied correctly. Numerous grass and grazing trials, at various research centres on the island of Ireland form the basis of Teagasc Spring Dairy Grassland Management recommendations. Back in 1984, Moorepark trials (McCarthy) showed that the date in spring at which a given grass yield is obtained, could be brought forward by at least 3 weeks, when Nitrogen fertiliser was applied at the correct time. More recent trials (Moorepark, 2013 to 2016), show that by following the grassland management blueprint, important gains can be achieved at farm level, such as:

- Milksolids production (kg/ha) increased from 900 to 1260
- Meal feeding reduction per cow of 0.75t (equivalent to N reduction of 21kg/cow)
- Surplus (unused)Nitrogen reduced by 35kg/ha
- Nitrogen Use Efficiency (%) increased from 24 to 40

Also, these achievements will be significantly higher where clover forms part of the sward.

It's not as simple as more nitrogen and earlier, though! Achieving the correct balance will deliver the best results for production and the environment. Applying more Nitrogen than growth can support can be detrimental for the environment as well as the pocket. Again, PBI data shows us that too much Nitrogen is used/wasted in the mid-year period. Sometimes, fertiliser use far exceeds demand or does not allow for growth and grazing potentials, often leading to excessive cutting of surplus bales. Sometimes this silage is fed at times (especially in spring), when cows should be out grazing!

Typically, the first grazing rotation on the Dairy farm extends from early February (from the start of the spring calving) to early April. Most tuned-in Dairy farmers are well aware of the recommended Spring Grazing Plan as well as the many benefits from achieving the recommended grazing targets. However, spring grazing plans will fail on any farm that does not have an appropriate spring fertiliser plan to match it.

An agile spring fertiliser plan for the milking platform will be built around the following components

- Slurry application, possibly twice, using Low Emission Slurry Spreading (LESS)equipment

- An early first Nitrogen split, from late January (23units/acre max.)
- A second Nitrogen split, in March (46 units/acre max)
- Allowances for heavy/wet parts of the farm
- Monitoring of and reacting to re-growths, rainfall and soil temperature

On drier fields, early spring grass growth potential supports the application of 23 units of nitrogen from organic or chemical applications. Most farms will have about one third of the grazing area with covers of 600kg/ha or less. This area should be targeted for slurry spreading from mid-January. Apart from the acclaimed benefits to water protection and reduced Green House Gas Emissions, spreading slurry using the LESS system in spring allows more land to be spread and re-grazed by cows sooner than conventional spreading. Also, more slurry nitrogen is retained and available for grass growth (LESS gives an average nitrogen retention of 65% compared to 46% for splash-plate use). The target slurry application is 2,500 gallons/acre, to supply the 23 units/acre of nitrogen, to no more than one third of the grazing area. On many farms there will be another opportunity to apply a similar amount of slurry (2500gals/acre, using LESS), to a second third of the milking platform after grazing, by early March. Abide by the guidelines for Good agricultural Practice and the Nitrates Regulations when applying slurry at all times of the year.

Remember, when you get the slurry applied correctly, you must reduce the chemical (bagged) nitrogen use accordingly. The grazing area which does not receive slurry in early spring should receive 23 units of bagged nitrogen by early February, when soil temperature has reached 5°C or higher. Ideally, fertiliser nitrogen needs about 3 days with little precipitation following application to become safely incorporated into the soil.

The second split of fertiliser nitrogen should be applied in late February or March. Growth potential will then support the use of 46 units/acre of fertiliser nitrogen. Any area receiving slurry at this stage should only receive half the rate of bagged nitrogen (23units/acre). All bagged nitrogen can be blanket spread, for both applications in spring. In addition to spring nitrogen, recent research shows a response, to very small amounts of sulphur on some soils, and to phosphorus on soils low in P. Where applied there was an increased level of nitrogen recovery. Protected Urea has been shown to be at least (if not more) effective at growing grass in spring as other forms of nitrogen. However, because of Protected Urea's huge benefit towards reducing ammonia losses and Green House Gas emissions, all Dairy farmers should aim to use it in spring.

Nitrogen Action plan for Drier Soils

Fertiliser/ Slurry Split	Month	Product	Rate	1st 33% of Farm Area	2nd 33% of Farm Area	3rd 33% of Farm Area
1	January / February	Cattle Slurry	2,500 gals/ac 20 units N/ac (25 kg N/ha)	2,500 gals/ac(20 units N/ac) Lower covers (<600 kg DM/ha)	23 units N /ac (29kg N/ha)	23 units N /ac (29kg N/ha)
		Protected Urea (NBPT)	23 units/ac (29kg N/ha)			
2	March	Cattle Slurry	2,500 gals/ac (25 kg N/ha)	46 units N/ac (57 kg N/ha)	2,500 gals/ac(20 units N/ac) Grazed areas/silage ground	46 units N/ac (57 kg N/ha)
		Protected Urea (NBPT)	40 units/ac (50 kg N/ha)		23 units N/ac (29 kg N/ha)	
Total N by 1st April [2]		*Slurry + Fertiliser N*	*65-70 units N/ac (80-86 kg N/ha)*	*66 units N/ac (82 kg N/ha)*	*66 units N/ac (83 kg N/ha)*	*69 units n/ac (86 kg N/ha)*
[1]Slurry by LESS & chemical fertiliser should only be applied once the open period commences [2]Combination of Protected Urea and cattle slurry available on farm						

For parts of the farm with heavy/wet soils, the timing and amount of slurry and bagged nitrogen application needs to be modified to allow for ground traffic-ability, potential growth and likely nitrogen recovery. The old rule of thumb states that "if you can't travel the land without rutting it with the tractor, then it's too wet for nitrogen".

Nitrogen Action plan for Heavy Soils

Fertiliser/ Slurry Split	Month	Product	Rate	1st 33% of Farm Area	2nd 33% of Farm Area	3rd 33% of Farm Area
1	Feb/Mar/ early April	Cattle Slurry	2,500 gals/ac (25 kg N/ha)	2,500 gals/ac (20 units N/ac) Driest land with lowest cover and some silage ground (Depending on land wetness and weather, this may be more or less than 33% of farm)		2,500 gals/ac (20 units N/ac) Areas that are trafficable & mostly silage ground (Depending on land wetness and weather, this may be less than 33% of farm)
		Protected Urea (NBPT)	35 units/ac (44 kg N/ha)	23 units N/ac (29 kg N/ha)	(46 units N/ac (57 kg N/ha) (Can be completed in 2 splits)	23 units N/ac (29 kg N/ha)
Total N by 10th April[2]		**Slurry + Fert N**	43-46 units N/ac (54-57 kg N/ha)	**43 units N/ac (54 kg N/ha)**	**46 units N/ac (57 kg N/ha)**	**43 units N/ac (54 kg N/ha)**
[1]Slurry by LESS & chemical fertiliser should only be applied once the open period commences [2]Combination of Protected Urea and cattle slurry available on farm *Not all paddocks (or parts of paddocks) may get an application before April 1st						

Realising that the economic response to early nitrogen use is high, ambitious Dairy farmers have found ways to achieve the target fertiliser spread dates and levels, as well as affording maximum protection to the environment. Some of these are worth listing:

- Use of a contractor to apply your slurry (LESS) and bagged fertiliser (blanket-spread)
- Use protected Urea as your bagged nitrogen source

- Use the PBI grass programme to monitor your grass covers, grass growth, grazing plan and your nitrogen plan
- Prepare a spring fertiliser plan for your Dairy farm, and follow it

Now is the right time to start the grassland management year - as you mean to go on!