

Timing of First N Application in Spring



1. **Decision driven by Weather forecast (www.met.ie) prior to making fertiliser N applications**
2. **Paddock trafficability before spreading**
3. **Soil temperature $>5^{\circ}\text{C}$ and rising**
4. **Check grass growth predictions (Grass10 Newsletter, PastureBase Ireland, Farming Forecast)**
5. **Target fields most likely to respond to an early N application:**
 - a. **Perennial ryegrass / recently reseeded fields**
 - b. **Drier, free draining fields**
 - c. **Fields with a grass cover of greater than 400 kg DM/ha or 6 cm grass**
 - d. **Fields with optimum soil fertility, i.e. good P and K status, $\text{pH} > 6.2+$**
6. **Optimise the use of cattle slurry.**
 - a. **LESS (low emissions slurry spreading) techniques**
 - b. **Target slurry applications to fields with low P & K levels & low grass covers ($<1,000$ kg DM/ha) and low soil P and K**
 - c. **20 m³/ha (2,000 gals/ac) by low emission application will supply ~ 20 kg/ha (16 units/ac) of available N**
 - d. **25 m³/ha (2,500 gals/ac) by low emission application will supply ~ 25 kg/ha (20 units/ac) of available N**
 - e. **Manage slurry application to ensure that no more than 2,000 gal/ac in first application and 2,500 gal/ac in second application**
7. **Where silage ground is unavailable for grazing in spring, reserve some slurry for low P and K silage ground and apply in mid-February. Dilute if you have to.**
8. **Use protected urea (NBPT)**
9. **Link your early N application strategy with spring feed budget for the farm**
10. **Calibrate the fertiliser spreader**

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	3 rd Feb (N applied)				16 th March (N applied)		
	15 th March (1 st defoliation - + 40 days)				23 rd April (2 nd defoliation - + 38 days)		
Total N Rate		2020	2021			2020	2021
	Kg N/ha	N Response			Kg N/ha	N Response	
<u>30</u>	0	-	-		30	14.3	19.4
	15	14.5	13.5		15	28.0	32.5
	10	15.9	17.0		20	22.4	20.9
<u>60</u>	0	-	-		60	13.2	16.0
	30	10.2	8.3		30	26.8	26.2
	20	12.6	10.5		40	20.2	24.2
<u>90</u>	0	-	-		90	10.7	12.4
	45	5.4	6.4		45	23.2	26.9
	30	7.3	10.4		60	17.8	20.9

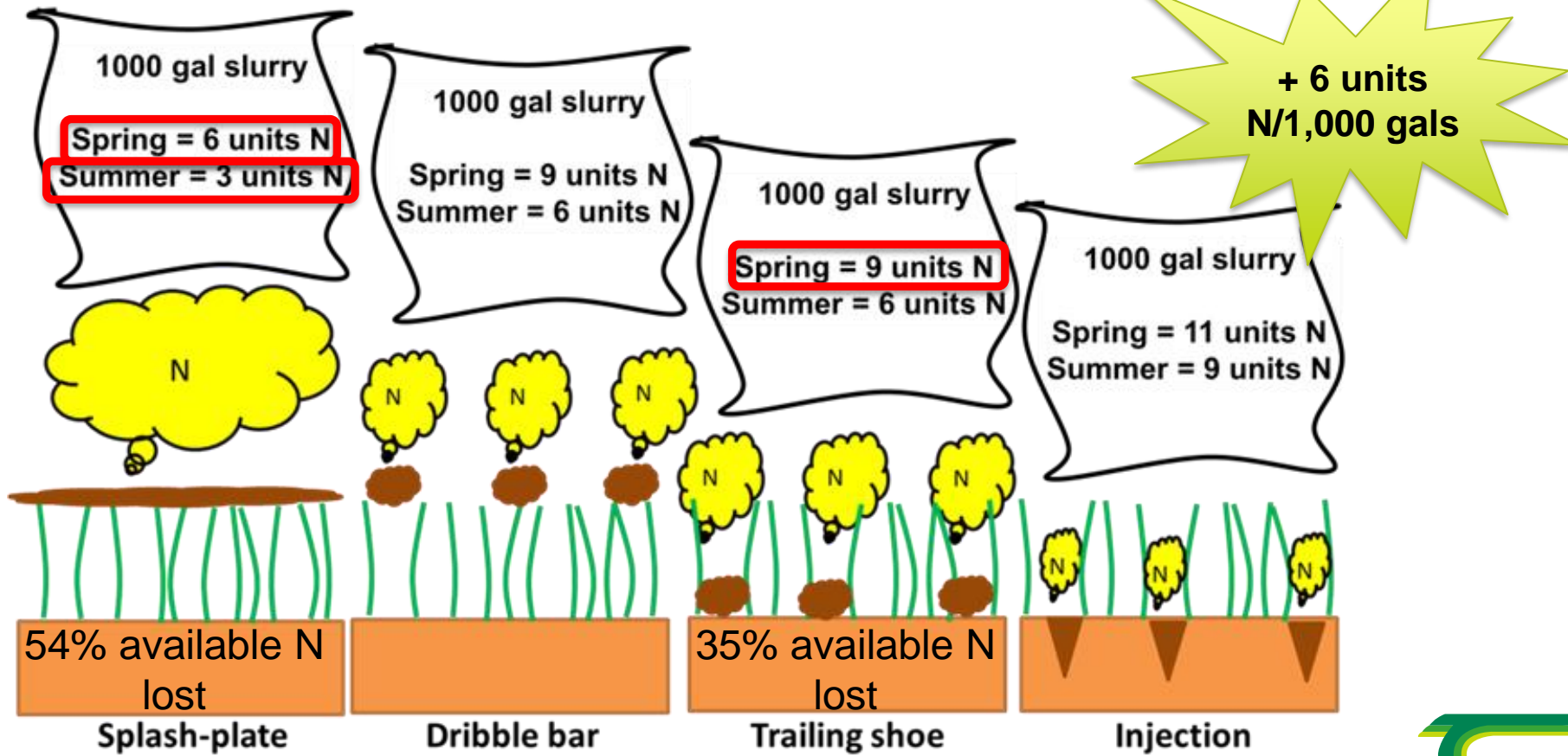
Spring N Application Schedule Summary

Fert/Slurry Split	Month	Product	Rate	1 st 40% of Farm Area	15% of Farm Area	15% of Farm Area	3 rd 30% of Farm Area
1	January	Cattle Slurry	2,500 gals/ac 20 units N/ac (25 kg N/ha)	2,500 gals/ac (20 units N/ac – 25 kg N/ha) Lower covers (<1000 kg DM/ha)			23 units N/ac (29 kg N/ha)
		Protected Urea (NBPT)	23 units/ac (29 kg N/ha)			23 units N/ac (29 kg N/ha)	
2	February	Cattle Slurry	2,500 gals/ac 20 units N/ac (25 kg N/ha)		2,500 gals/ac (20 units N/ac – 25 kg N/ha) Mid-February after grazing	2,500 gals/ac (20 units N/ac – 25 kg N/ha) End-February after grazing	
	March	Protected Urea (NBPT)	40 units N/ac (50 kg N/ha)	40 units N/ac (50 kg N/ha)	40 units N/ac (50 kg N/ha)	23 units N/ac (29 kg N/ha)	40 units N/ac (50 kg N/ha)
Total N by 1 st April ²		Slurry + Fertiliser N ² Units/ac (kg/ha)		60 units N/ac (75 kg N/ha)	60 units N/ac (75 kg N/ha)	66 units N/ac (83 kg N/ha)	63 units N/ac (79 kg N/ha) (Total 62 units N/ac (78 kg N/ha ³))

Spring N Application Schedule- Heavy Soils

Fert/Slurry Split	Month	Product	Rate	1 st 33% of Farm Area	2 nd 33% of Farm Area	3 rd 33% of Farm Area
1	February ¹	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)	(46 units N/ac (58 kg N/ha) (Can be completed in 2 splits)	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)
	March/early April	Protected Urea (NBPT)	35 units N/ac (44 kg N/ha)	23 units N/ac (29 kg N/ha)		23 units N/ac (29 kg N/ha)
Total N by 15th April²		Slurry + Fertiliser N³ Units/ac (kg/ha)		43 units N/ac (54 kg N/ha)	46 units N/ac (58 kg N/ha)	43 units N/ac (54 kg N/ha) (Total³ 44 units N/ac (56 kg N/ha⁴))⁵

When & How to Maximise Slurry N?



N-P-K Value of Cattle Slurry?

The effect of slurry DM on the N, P & K Values of cattle slurry			
DM %	N kg/m ³ (units/1,000 gals)	P kg/m ³ (units/1,000 gals)	K kg/m ³ (units/1,000 gals)
2	0.4 (4)	0.21 (2)	1.4 (13)
4	0.7 (6)	0.35 (3)	2.3 (21)
6	1.0 (9)	0.5 (5)	3.5 (32)
7	1.1 (10)	0.6 (6)	4.0 (36)

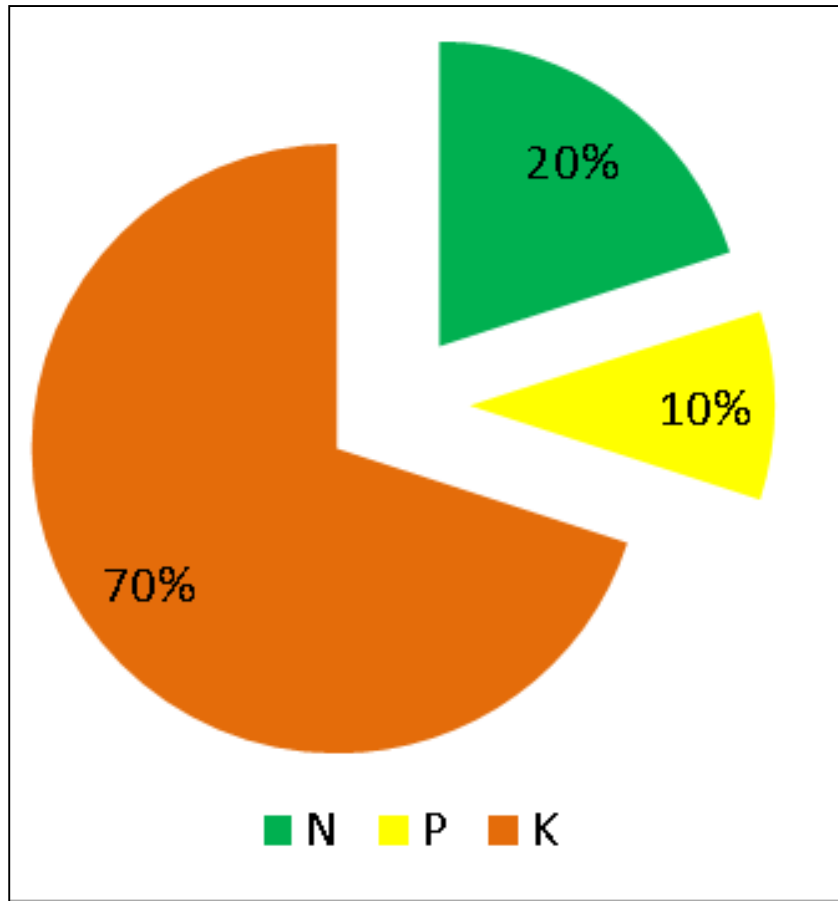
- Slurry DM – 10 fold variation
- Slurry dilution with water?
- Test slurry nutrient levels



Where should I spread slurry?

Where can I best maximise the value of slurry nutrients?

Nutrient Profile



Crop P & K Needs

- Soil Analysis
- Fertiliser Plan
- Crops
 - Grass Silage
 - Slurry - Balanced Fertiliser
 - Adjust slurry application rate based on slurry DM



Derogation Requirement 2021

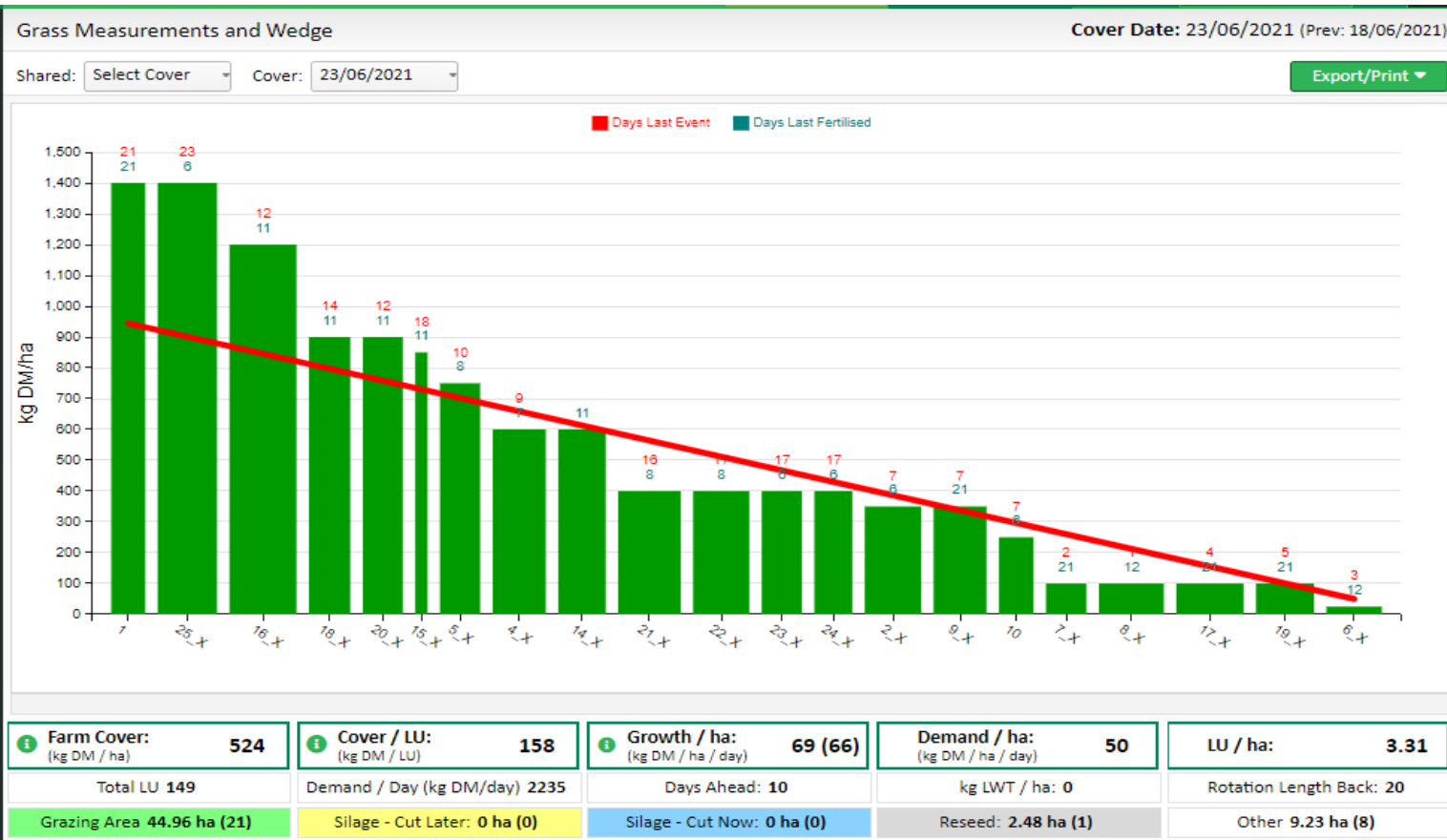
- All slurry post 12th Jan 2021 to be spread by LESS Equipment
- Own machine or
- Contractor receipted



Slurry Management- Key Challenges Summary

- Recognition of slurry value NPK
- Measurement of Slurry Value
- Application rates(s)
 - Targeting based on soil test/crop
 - Farm structure/Fragmentation
- Application date(s)
 - Storage capacity
 - Labour/convenience
 - Early Spring Grazing- LESS

Mid-Season N Application- Rotation Length



Mid Season N Application- Challenges

- Measuring growth rate is key
 - Grass wedge
 - Rotation length
 - Stocking rate
- Fertilizer strategy
 - “Following the cows” or “kg per month”
 - Variation in rotation length
 - Potential for >10% reduction mid-season
- Farm mapping
- Spreader calibration

Mid-Season N Application- Clover



	GO-150 ¹	GO-250	GC-150	GC-250
Nitrogen fertiliser spread (kg/ha)	151	248	152	248
Total grass (t DM/ha)	14.0	15.2	14.9	15.3
Concentrate fed (kg/cow)	582	586	580	578
Silage made (kg DM/cow)	910	1116	1060	1144
Milk yield (kg/cow)	5,300	5,375	5,578	5,574
Milk solids yield (kg/cow)	446	454	465	472

¹GO-150 = perennial ryegrass-only receiving 150 kg N/ha; GO-250 = perennial ryegrass-only receiving 250 kg N/ha; GC-150 = perennial ryegrass-white clover receiving 150 kg N/ha; GC-250 = perennial ryegrass-white clover receiving 250 kg N/ha

Clover: Key Challenges

- Establishment Management
 - Soil Fertility
 - Grazing Management
 - Nitrogen Strategy
 - Seeding Method and rate
- Feed Budget
 - Feed Security/silage
 - Spring and Autumn covers
 - Reseeding schedule
- Animal management
 - Performance
 - Digestive health