

Implications of N banding for dairy farms

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**Base assumptions included in the development of organic N excretion bands
based on an average of 2015 to 2021**

Milk Yield bands		Representation		Milk yield kg	Milk fat %	Milk protein %	Concentrate Kg DM
		Supplier %	Milk %				
<4,500	2015	25	15	3,797	4.0	3.47	711
	2016	30	17	3,717	4.04	3.42	703
	2017	23	12	3,697	4.02	3.44	751
	2018	24	12	3,671	4.05	3.44	948
	2019	18	8	3,687	4.11	3.50	739
	2020	18	8	3,561	4.13	3.51	730
	2021	15	6	3,548	4.19	3.51	666
4,501-6,500	2015	66	72	5,379	4.02	3.50	807
	2016	63	71	5,336	4.10	3.46	820
	2017	66	71	5,431	4.08	3.48	905
	2018	63	67	5,469	4.12	3.47	1,215
	2019	67	68	5,523	4.15	3.53	980
	2020	65	68	5,540	4.18	3.54	953
	2021	66	68	5,599	4.21	3.53	966
<6,501	2015	9	13	7,144	3.93	3.43	1,285
	2016	7	12	7,127	4.01	3.41	1,324
	2017	11	17	7,155	3.99	3.44	1,381
	2018	13	22	7,186	4.06	3.44	1,724
	2019	15	24	7,162	4.08	3.49	1,445
	2020	16	25	7,109	4.11	3.50	1,399
	2021	19	26	7,017	4.13	3.49	1,402

National Herd Statistics

Band I <4500kgs = 15% farms

Band II 4,501 – 6,500kgs = 66% farms

Band III <6501kgs = 19% farms

- Proportion of farms in Band III is increasing over time.
- Large range of farm type and technical efficiency within each band.

Herd Genetic Profile vs Band

Animal Group	Num of Cows	Milk Kg Fat Prot	% %	Surv% CI Days	Milk % Cont	Fertility % Cont	Calv % Cont	Beef % Cont	Maint % Cont	Mgmt % Cont	Health % Cont	EBI €
Cows with EBI	99	168			€ 50	€ 45	€ 30	€ -8	€ 6	€ 1	€ 4	€ 129
Missing EBI*	1	8.4	0.03	1.3	34.7%	31%	20.6%	-5.6%	4.1%	0.9%	3%	
Total Cows	100	8.2	0.04	-2.3								



Month	Litres			Fat %			Protein %			SCC ('000)			Total Cows	
	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020
Jan	0	0	N/A	0	0	N/A	0	0	N/A	0	0	N/A	107	99
Feb	9,601	15,974	-39.9%	4.52	4.51	0.01	3.34	3.28	0.06	215	102	113	106	120
Mar	56,108	53,742	4.4%	4.5	4.5	0	3.11	3.07	0.04	118	108	10	109	130
Apr	77,828	80,871	-3.8%	4.12	3.98	0.14	3.23	3.3	-0.07	82	103	-21	108	124
May	80,984	92,974	-12.9%	3.85	3.84	0.01	3.37	3.34	0.03	111	156	-45	105	124
Jun	75,717	90,031	-15.9%	3.82	3.87	-0.05	3.25	3.33	-0.08	66	119	-53	105	123
Jul	75,717	90,031	-15.9%	3.82	3.87	-0.05	3.25	3.33	-0.08	66	119	-53	105	123
Aug	75,717	90,031	-15.9%	3.82	3.87	-0.05	3.25	3.33	-0.08	66	119	-53	105	123
Sep	75,717	90,031	-15.9%	3.82	3.87	-0.05	3.25	3.33	-0.08	66	119	-53	105	123
Oct	75,717	90,031	-15.9%	3.82	3.87	-0.05	3.25	3.33	-0.08	66	119	-53	105	123
Nov	34,201	47,005	-27.0%	4.42	4.45	0.2	3.66	3.64	0.02	156	124	32	100	113
Dec	15,813	9,590	64.9%	4.42	4.34	0.08	3.71	3.54	0.17	129	113	16	100	112
Total	588,677	97,484	-1.5%	4.11	4.08	0.03	3.39	3.39	0	123	126	-3	104	120

5660 litres = 5830kgs

Animal Group	Num of Cows	Milk Kg Fat Prot	% %	Surv% CI Days	Milk % Cont	Fertility % Cont	Calv % Cont	Beef % Cont	Maint % Cont	Mgmt % Cont	Health % Cont	EBI €
Cows with EBI	110	37			€ 59	€ 66	€ 22	€ -14	€ 14	€ 3	€ 3	€ 154
Missing EBI*	0	9.3	0.13	1.8	32.3%	36.4%	12.1%	-7.8%	7.9%	1.8%	1.8%	
Total Cows	110	7.3	0.1	-3.5								



Month	Litres			Fat %			Protein %			SCC ('000)			Total Cows	
	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020	Diff '20-'21	2021	2020
Jan	0	0	N/A	0	0	N/A	0	0	N/A	0	0	N/A	85	72
Feb	10,117	17,898	-43.5%	4.64	4.64	0	3.72	3.55	0.17	109	114	-5	96	91
Mar	66,595	66,091	0.8%	4.53	4.47	0.06	3.37	3.25	0.12	153	120	33	107	92
Apr	91,698	87,946	4.3%	4.17	3.86	0.31	3.41	3.35	0.06	143	107	36	109	93
May	96,178	85,757	12.2%	3.84	3.84	0	3.48	3.44	0.04	126	102	24	109	93
Jun	86,523	78,117	10.8%	3.9	3.87	0.03	3.45	3.51	-0.06	86	93	-7	109	93
Jul	81,812	78,117	4.7%	3.9	3.87	0.03	3.45	3.51	-0.06	86	93	-7	109	93
Aug	81,812	78,117	4.7%	3.9	3.87	0.03	3.45	3.51	-0.06	86	93	-7	109	93
Sep	81,812	78,117	4.7%	3.9	3.87	0.03	3.45	3.51	-0.06	86	93	-7	109	93
Oct	81,812	78,117	4.7%	3.9	3.87	0.03	3.45	3.51	-0.06	86	93	-7	109	93
Nov	37,780	47,005	-20.2%	4.42	4.45	0.2	3.66	3.64	0.02	156	124	32	100	113
Dec	12,733	12,659	0.6%	4.42	4.34	0.08	3.71	3.54	0.17	129	113	16	100	112
Total	682,812	617,657	8.8%	4.26	4.16	0.1	3.59	3.57	0.02	128	121	7	102	90

6694 litres = 6895kgs

Maximum Cow Equivalents under new Nitrates Regulation

Band	Land	Cow No's – 250kg N/HA	Cow No's – 220kg N/HA
Previously (89kg N)	50Ha	140	N/A
< 4500kgs (80kgN)	50 HA	156 (+16)	137 (-3)
4501 – 6500kgs (92kg N)	50 HA	135 (-5)	119 (-21)
> 6501kgs (106kg N)	50 HA	117 (-23)	103 (-37)

Management Options

Action	Pro's	Con's
Extra Land	<ul style="list-style-type: none">• Feed security if currently purchasing forage	<ul style="list-style-type: none">• Cost – Rental & Running• Additional workload• Distance• Availability of land
Contract Rearing	<ul style="list-style-type: none">• Reduces labour requirement• Simplifies system	<ul style="list-style-type: none">• Biosecurity Risk• Sourcing technically efficient rearer
Milk to calves	<ul style="list-style-type: none">• Easy to identify milk volume reduction• Little change in cow management	<ul style="list-style-type: none">• Disease risk – Johnes• Labour – time sensitive• Not suitable on every farm
Export Slurry	<ul style="list-style-type: none">• Easy to identify required export volumes	<ul style="list-style-type: none">• Significant cost to the farm – loss of nutrients (N,P,K)• Identify suitable farm
Early dry off	<ul style="list-style-type: none">• Reduced workload	<ul style="list-style-type: none">• Reduced farm income• Risk of over conditioned cows

Management Options

Action	Pro's	Con's
Reduce meal feeding mid-season	<ul style="list-style-type: none"> • Saving on concentrate costs • Improve level of grass utilised 	<ul style="list-style-type: none"> • May not deliver the milk yield reduction required • Difficult to achieve at higher stocking rates / drought conditions
Calving Pattern – Autumn Calving	<ul style="list-style-type: none"> • Reduction in production costs • Reduction in labour requirements 	<ul style="list-style-type: none"> • Familiar with the system • Liquid Milk Contract / Bonus
Keep cull cows on the farm	<ul style="list-style-type: none"> • May reduce the annual yield per cow figure if culls are dry (100 – 150kgs) 	<ul style="list-style-type: none"> • Increase winter forage requirement • Increase slurry and winter housing requirements • Adding to total farm Org N
Reduce cow numbers	<ul style="list-style-type: none"> • Better alignment with annual grass growth if the farm is overstocked 	<ul style="list-style-type: none"> • Reduced farm income

Farmer A – Individual Farm Example

Farm Size: 46.54 Ha

Cow Numbers: 110

Cow Performance: 6693kg (2022) 6646kg (2021) 6469 (2020)

2021 – 225 Kg Org N / HA

Feeding 136 ton concentrate (1236kg per cow)

Purchased 8 ton DM forage

Contract Rearing

Feeding Milk Replacer

Farmer A

Is there an opportunity to drop to band 2?

	Total Cows	Litres	Kg milk	kg / cow	Band	kg/hd
2022	110	715000	736,236	6,693	Band 3	106
2021	110	710,016	731,106	6,646	Band 3	106
2020	108	678,548	698,701	6,469	Band 2	92
average	109	701,188	722,013	6,604	Band 3	106

Changes to meet Stocking Rate with banding included

	170	220	250
Cows	-42	-20	-7
Hectares	26	9.6	2.8
m³ slurry	-1842	-872	-290

Stocking Rate Calculation

	Actual	Band Projection
Farm Stocking Rate =	225	265
Grassland Stocking Rate =	225	265

Volume of Slurry produced by cattle on farm in Jan, Feb, Oct, Nov and Dec

Weeks	16	18	20	22
m³	731	823	914	1005

The Stocking Rate Calculations are based on cattle livestock numbers from ICBF (above) and BPS areas.
 Other stock N can be entered manually, either by typing in the N Total figure in cell D23 or by entering the Average and the N kg/hd in cells B23 and C23
 The band calculation is based on milk production figures that you entered from the ICBF co-op performance report.
 Slurry volumes are based on 6-12 and 18-24 month old cattle for 0-1 and 1-2 year old's respectively.

Two management options considered by Farmer A

Reducing concentrate feeding levels

Mid-Season

- 1236kg fed per cow
- Reduce feeding rate from 1st May – 10th August (100 days)
 - 2kg per day * 100 days = **200kg concentrate**
- Likely response to additional concentrate mid-season=
 - 0.7kg milk per kg meal
- Therefore;
 - 200kgs concentrate * 0.7kg milk =
140kgs milk per cow

Assuming concentrate was being fed to increase production and not to fill a forage deficit

Feeding Milk to Calves

- **Replacements:**
 - 6 litres X 7 days = 42 litres per calf per week
 - 42 litres X 8 weeks = 336 litres per replacement heifer calf
 - 20 replacements X 336 = 6720 litres
- **Calves to be sold:**
 - 6 litres X 7 days = 42 litres per calf per week
 - 42 litres X 4 weeks = 168 litres per calf
 - 90 calves x 168 litres = 15120 litres
- **Total milk fed to calves:**
 - 15120 + 6720 = 21840 litres
 - Litres to kgs milk = 21840 * 1.03 = 22495
 - 22495 kgs milk / 110 cows = **204kgs per cow**

Farmer B

Farm Size: 83.79 Ha

Cow Numbers: 206

Cow Performance: 5567 (2022) 5896kg (2021) 6089 (2020) Band 2

2021 – 246 Kg Org N / HA

Feeding 240 ton concentrate (1165kg per cow)

Purchased 142 ton DM forage

Contract Rearing

Feeding Milk Replacer

Farmer B

	Total Cows	Litres	Kg milk	kg / cow	Band	kg/hd
2022	215	1162372	1,196,894	5,567	Band 2	92
2021	201	1,150,864	1,185,045	5,896	Band 2	92
2020	185	1,093,942	1,126,432	6,089	Band 2	92
average	200	1,135,726	1,169,457	5,838	Band 2	92

Changes to meet Stocking Rate with banding included			
	170	220	250
Cows	-77	-31	-4
Hectares	41.3	12.9	1.3
m³ slurry	-2920	-1174	-127

	Stocking Rate Calculation	
	Actual	Band Projection
Farm Stocking Rate =	246	254
Grassland Stocking Rate =	246	254

Volume of Slurry produced by cattle on farm in Jan, Feb, Oct, Nov and Dec				
Weeks	16	18	20	22
m³	1219	1371	1523	1676

The Stocking Rate Calculations are based on cattle livestock numbers from ICBF (above) and BPS areas.

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The band calculation is based on milk production figures that you entered from the ICBF co-op performance report.

Slurry volumes are based on 6-12 and 18-24 month old cattle for 0-1 and 1-2 year old's respectively.

Purchased Forage

- 142 Ton DM Forage purchased in 2021 ePM
 - Costing €18,360
 - Cost of this forage in 2022?
- Opportunity to normalise map area?
 - 142 ton / 10 ton DM/Ha = 14.2 HA

	Total Cows	Litres	Kg milk	kg / cow	Band	kg/hd
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2021	201	1,150,864	1,185,045	5,896	Band 2	92
2020	185	1,093,942	1,126,432	6,089	Band 2	92
average	200	1,135,726	1,169,457	5,838	Band 2	92

	Changes to meet Stocking Rate with banding included		
	170	220	250
Cows	-50	4	36
Hectares	27.1	-1.4	-13
m ³ slurry	-1914	128	1353

	Stocking Rate Calculation	
	Actual	Band Projection
Farm Stocking Rate =	211	217
Grassland Stocking Rate =	211	217

	Volume of Slurry produced by cattle on farm in Jan, Feb, Oct, Nov and Dec			
Weeks	16	18	20	22
m ³	1219	1371	1523	1676

Summary

- Overall – Stocking rate limits are to be calculated on an individual basis
- What should farmers do next?
 - Calculate their total nutrient density per Ha under new regulations
 - If their farm is projected to have excess nutrient load
 - There are a number of potential management actions to consider.
 - The feasibility and economics of each of these options should be carried out on an individual farm basis.