Manure Standards

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WP2 Guidelines for manure sampling and analysis

Reporting by September 2018 Latvia

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Interreg Baltic Sea Region

EUROPEAN UNION

EUROPEAN REGIONAL DEVELOPMENT FUND

EU STRATEGY FOR THE BALTIC SEA REGION FLAGSHIP

Sampling plan - Spring 1

Manure Standards

Farm No.	Sub No.	Animal group	Manure type	No. of samplers	No. of labs	Ex animal	Ex housing	Ex storage	Total No./No. taken
1	-	Dairy cattle (<6t milk)	Solid	1	1	-	1	1	2
2	-	Dairy cattle (<6t milk)	Solid	1	1	-	1	2	3
3	-	Suckler cows	Deep litter	1	1	-	1	1	2
4	-	Dairy cattle (8-10t milk)	Slurry	1	1	-	1	1	2
5	-	Sheep	Deep litter	1	1	-	1	1	2
7	a	Dairy cattle (>10t milk)	Solid	1	1	-	1	1	2
7	b	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
8	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
8	b	Dairy cattle (>10t milk)	Solid	1	1	-	1	1	2
9	-	Dairy cattle (8-10t milk)	Slurry	1	1	-	1	1	2
10	-	Dairy cattle (8-10t milk)	Solid	1	1	-		1	1
11	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
11	b	Beef cattle	Slurry	1	H1 S2	-	1	2	5
13	-	Suckler cows	Deep litter	1	H1 S2	-	1	2	5
15	-	Dairy cattle (8-10t milk)	Slurry	1	1	-		1	1
16	a	Dairy cattle (6-8t milk)	Slurry	1	1	-		1	1
16	b	Heifer (>6 months)	Solid	1	1	-	1	1	2

Sampling plan - Spring 2

Manure Standards

Farm No.	Sub No.	Animal group	Manure type	No. of samplers	No. of labs	Ex animal	Ex housing	Ex storage	Total No./No. taken
18	-	Dairy cattle (6-8t milk)	Slurry	1	1	-	1	1	2
19	a	Dairy cattle (>10t milk)	Slurry	1	1	-		1	1
19	b	Dairy cattle (>10t milk)	Solid	1	1	-		1	1
19	c	Heifer (<6 months)	Solid	1	1	-	1		1
19	d	Heifer (>6 months)	Solid	1	1	-	1	1	2
20	a	Fattening pigs	Slurry	1	1	-		1	1
20	b	Sows	Slurry	1	1	-	1		1
21	a	Dairy cattle (8-10t milk)	Solid	1	1	-	1	1	2
21	b	Heifer (<6 months)	Solid	1	1	-	1	1	2
21	c	Heifer (>6 months)	Solid	1	1	-	1	1	2
22	-	Dairy cattle (8-10t milk)	Slurry	1	1	-		1	1
23	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
23	b	Beef cattle	Solid	1	1	-		1	1
24	a	Dairy cattle (8-10t milk)	Slurry	1	1	-		1	1
24	b	Dairy cattle (8-10t milk)	Solid	1	1	-		1	1
25	-	Dairy cattle (>10t milk)	Slurry	1	1	-		1	1
26	-	Sheep	Deep litter	1	1	-	1	1	2

Sampling plan - Summer 1

Manure Standards

Farm No.	Sub No.	Animal group	Manure type	No. of samplers	No. of labs	Ex animal	Ex housing	Ex storage	Total No./No. taken
1	-	Dairy cattle (<6t milk)	Solid	1	1	-	1	1	2
2	-	Dairy cattle (<6t milk)	Solid	1	1	-	1	1	2
3	-	Suckler cows	Deep litter	1	1	-	1	1	2
4	-	Dairy cattle (8-10t milk)	Slurry	1	1	-	1	1	2
5	-	Sheep	Deep litter	1	1	-	1	1	2
7	a	Dairy cattle (>10t milk)	Solid	1	1	-	1	1	2
7	b	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
8	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
8	b	Dairy cattle (>10t milk)	Solid	1	1	-	1	1	2
9	-	Dairy cattle (8-10t milk)	Slurry	1	1	-	1	1	2
10	-	Dairy cattle (8-10t milk)	Solid	1	1	-		1	1
11	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
11	b	Beef cattle	Slurry	1	1	-	1	1	2
13	-	Suckler cows	Deep litter	1	1	-	1	1	2
15	-	Dairy cattle (8-10t milk)	Slurry	1	H1 S2 Lab2 1	-	1	2	4
16	a	Dairy cattle (6-8t milk)	Slurry	1	1	-		1	1
16	b	Heifer (>6 months)	Solid	1	1	-	1	1	2

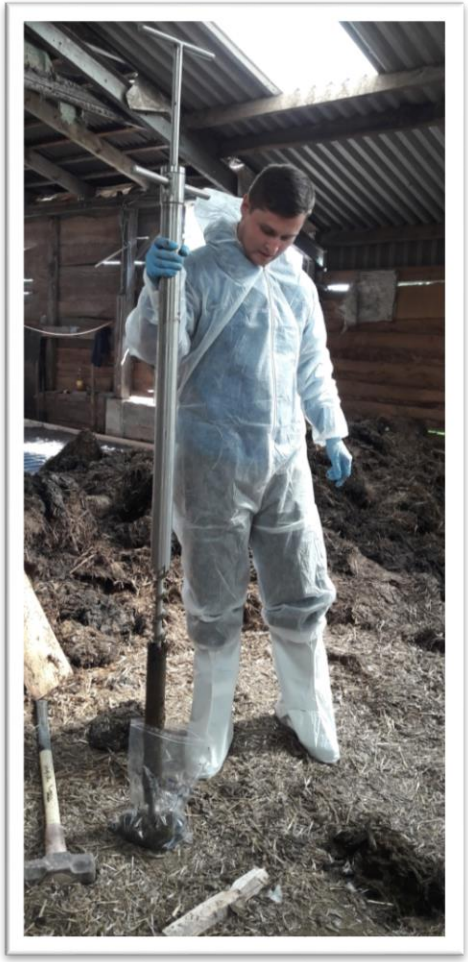
Sampling plan - Summer 2

Manure Standards

Farm No.	Sub No.	Animal group	Manure type	No. of samplers	No. of labs	Ex animal	Ex housing	Ex storage	Total No./No. taken
18	-	Dairy cattle (6-8t milk)	Slurry	1	1	-	1	1	2
19	a	Dairy cattle (>10t milk)	Slurry	1	1	-		1	1
19	b	Dairy cattle (>10t milk)	Solid	1	1	-		1	1
19	c	Heifer (<6 months)	Solid	1	1	-	1		1
19	d	Heifer (>6 months)	Solid	1	1	-	1	1	2
20	a	Fattening pigs	Slurry	1	1	-		1	1
20	b	Sows	Slurry	1	1	-	1		1
21	a	Dairy cattle (8-10t milk)	Solid	1	H1 S2	-	1	1	3
21	b	Heifer (<6 months)	Solid	1	1	-	1	1	2
21	c	Heifer (>6 months)	Solid	1	H1 S2	-	1	1	3
22	-	Dairy cattle (8-10t milk)	Slurry	1	1	-		1	1
23	a	Dairy cattle (>10t milk)	Slurry	1	1	-	1	1	2
23	b	Beef cattle	Solid	1	1	-		1	1
24	a	Dairy cattle (8-10t milk)	Slurry	1	1	-		1	1
24	b	Dairy cattle (8-10t milk)	Solid	1	1	-		1	1
25	-	Dairy cattle (>10t milk)	Slurry	1	1	-		1	1
26	-	Sheep	Deep litter	1	1	-	1	2	3

Major changes from original plan

- No major changes from spring sampling.
- Originally only planned to analyse samples in one lab. Later some samples were decided to be sent to another lab. During spring 2 ex storage samples were analysed in both labs twice. During summer 4 random ex storage samples alysed in both labs.
- Few solid manure samples were taken with manure auger and with fork and bucket.
- Climate – too hot, farmers couldn't do anything with storages, when they could all started emptying at same time.



Reflections on sampling instructions

- For solid manure and deep litter samples we used fork and bucket – no problems to follow instructions. Also tried manure auger – very large sample size, but worked better than we expected. Will have results comparing both later.
- For slurry samples took all samples from stirred storage. In some cases problems with stirring. Did not try to take during spreading.
- Possibly include distance from side of storage for slurry sampling from storage?
- Include info why should sample from ex housing or ex storage?

Reflections on simple and extended templates

- In some cases asks different things than needed in models – there is need for convesations or recalcualtions.
- For excel version should have option to hide unneeded sections of survey.
- Since surveying has started and most countries have them translated, preferable to not make minor changes to templates.

Analyses

- No major differences in P and K during spring and summer sampling.
- Greatest difference in pH, organic matter and dry matter.
- Large NH_4 content in pig manure, in some cases NH_4 larger than total N. Reason due to determination methods.
- For samples where analysed in two labs largest difference in total N, other parameters very close.

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