

European Biogas Association

Fertilizer WS

Combining safety and innovation in digestates

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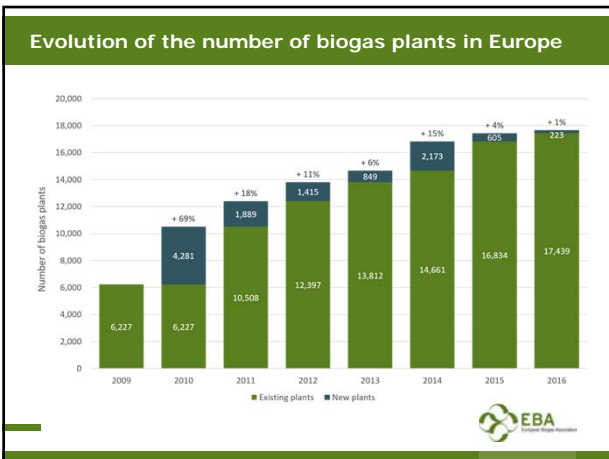
EBA
European Biogas Association

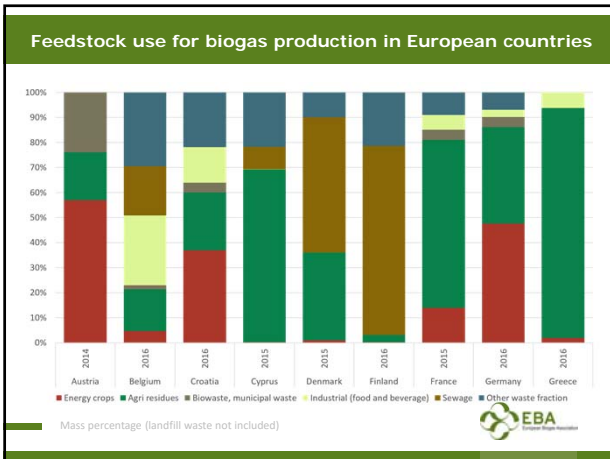
26 countries – 36 National Organisations
58 Companies – representing >7,000 stakeholders

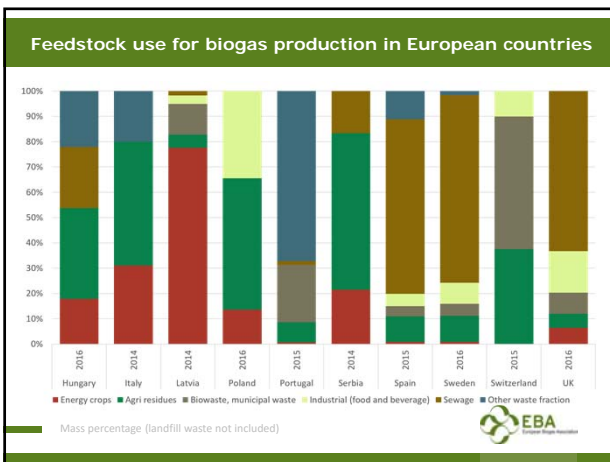


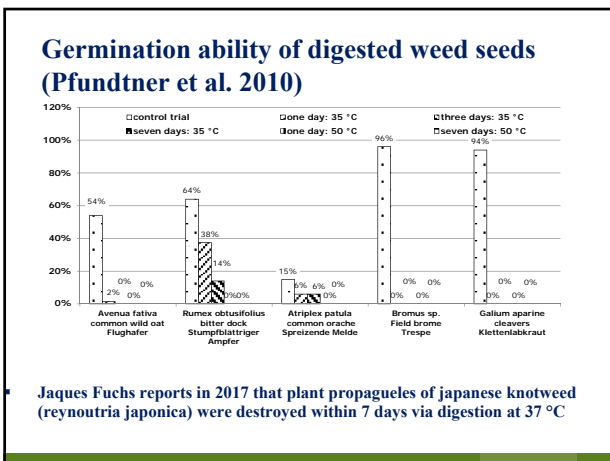
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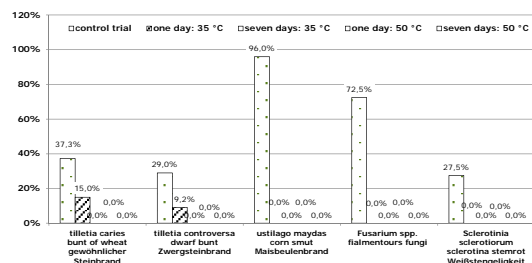




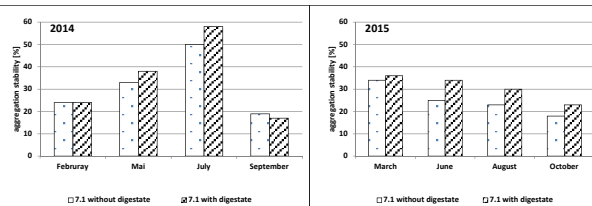




Germination ability of digested plant pathogens (Pfundtner et al. 2010)



Influence to the aggregat stability of soil (Hülsbergen 2016, Petz 2010)



- Multiannual application brings:
 - Lower bulk density of soil ~ 13 %
 - Increase of field capacity ~ 15 %



Main nutrient content of unprocessed compared to solid fraction of digestate (source: EBA)

Main nutrient content of raw digestate n > 2 000				
		10 % quantil	average	90 % quantil
[%]				
[% of EM]	DM	3	6	9
	C _{org}	0,6	1,6	3
	N _{total}	0,13	0,3	0,5
	NH ₄ N	0,04	0,2	0,4
	K ₂ O	0,06	0,14	0,23
	P ₂ O ₅	0,05	0,1	0,15
Solid fraction of separated digestate n > 100				
[%]				
[% of EM]	DM	20	35	86
	C _{org}	4	10	30
	N _{total}	0,4	0,6	1
	NH ₄ N	0,01	0,1	0,25
	K ₂ O	0,15	0,5	1,3
	P ₂ O ₅	0,2	0,6	1,3

**heavy metal content within untreated digestate
(source: EBA) n > 1.000**

		Analyzing results (EBA)			Possible limit value of fertilizer reg.	Not reached
[mg/kg DM]	Substance	Min.	Average	Max.		amount + (%)
	Cr	0,1	15,1	107	≤ 100	3 (0,3 %)
	Cr VI				≤ 2	
	Cd	0,0	0,4	2,4	≤ 1	44 (4 %)
	Pb	0,0	5,8	71,6	≤ 120	1 (0,0 %)
	Hg	0,0	0,1	2,8	≤ 1	1 (0,1 %)
	Ni	0,2	13,7	800	≤ 50	20 (1,8 %)
	Zn	2,7	311	1.720	≤ 800	35 (3,1 %)
	Cu	0,9	87,5	1.770	≤ 300	41 (3,6 %)
	C ₂ H ₅ N ₃ O ₂ (Biuret)				Not present	So far not analyzed
As (Arsenic)				< 40		

Digestion and upgrading of digestate expects fast development

- Digestate is indeed a bulky organic fertilizer however it brings value for plant nutrition and soil properties therefore also raw digestate sure shall be part of fertilizer regulation
- Anaerobic Digestion is the important last step of circular economy and bioeconomy recovering nutrients
- Promising studies are going on developing upgrading of digestate
- We also expect further development in Anerobic digestion through research, companies and plant operators



A few points

- CMC 2: avoid the use of „untreated“ waste material
- CMC 4 u 5: proposed time temperature profile will hinder development
 - *include a validated process for time temperature profile*
- PFC 3 Soil Improver: Also bulky fertiliser bring benefits to soil:
 - *no minimum limit value for DM and Corg. but DM and Corg. shall be declared*
- PFC 6 Plant biostimulants: humification helps avoid plant stress
 - *Add under point 1 humification*
- PFC´s: Change sanitation requirements for the product as received to: „Shiga-toxin producing E.coli species shall not be present in the EU fertilizing product“
- REACH regulation: exemption for digestate otherwise operators would not register digestate as fertilizer but remain under waste regime



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Thank you
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