

**atf**

animal  
task  
force

A European Public-Private Partnership



**EAAP**

European Federation of Animal Science



## 2<sup>nd</sup> one-day symposium of the Animal Task Force & the EAAP Commission on Livestock Farming Systems

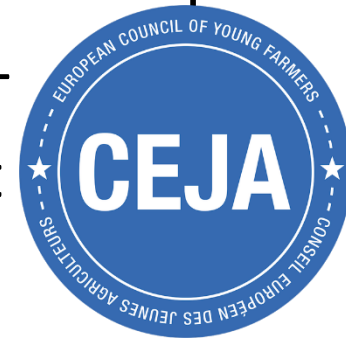


**Livestock emissions  
and the COP26 targets**

GHG emissions mitigation in practice  
– at farm gate : feed systems,  
increased soil carbon sequestration  
and energy production

PhD Anne-Catherine Dalcq

Young farmer –  
CEJA vice-president





## *Permanent grasslands*

⇒ Respect of optimal livestock level for no overgrazing

Rotational grazing

Dairy cow : 2,5 UGB/ha (spring), variable in function of rains in the summer / Beef cow : 4 UGB/ha

- Carbon sequestration

- Production of rich forage (crude protein in the spring (20% protein, 100 g DVE), sugars with the sun), with lower milk congestion unit (=1,11) (< corn silage (=1,25) and grass silage (= 1,33))

! Droughts

Irrigation?

Trees?



## *Lucern*

- No nitrogen fertilisation
- Higher content of crude protein in lucern (20% protein, 70 DVE)

Production even if  
droughts!



## *Temporary grasslands*

= mix of varieties of grasses and leguminous plants  
> 3 years

- Carbon sequestration from > 3 years
- Lower nitrogen fertilisation (80 N <<<< 140 N + 80 N + 50 N)
  
- Higher content of crude protein in the forage
  - ➔ mean % protein for all harvests : 19%, 80 DVE
  - ➔ DVE 1st cut, 2022 = 93 vs. classical forage (only R-G) = 61

! Droughts

But more resistant than a rye-grass

Irrigation?

Trees?



## *Forage intercrops*

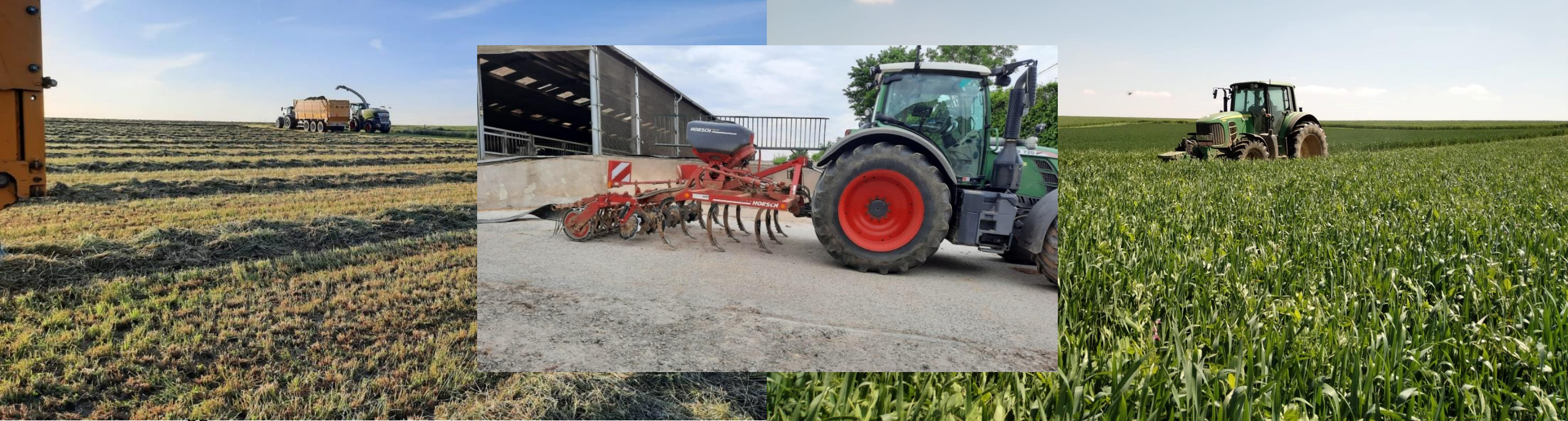
= mix of cereals (triticale & oat) and leguminous plants (pea, vetch)

Sowing in September



Harvest in the Spring

- No nitrogen loss from the previous crop (wheat)
  - Low nitrogen fertilisation (80 N)
  - Production of forage : less rich than grasses and leguminous
- Ok for young animals and beef cows



## *No tillage practices*

After 3-4 old temporary grasslands or forage intercrops for the soil preparation for sowing of corn silage  
Less carbon release

Not possible in each parcel

Causes :

- Drought

Solutions :

- Earlier harvest of forage intercrops
  - Early first passage of the machine on all the parcels
- ... New things need trial-and-error and importance of the climate!



## *Home-made concentrates*

= mix of cereals (triticale, oat) & one leguminous plant (pea)

Sowing in September → Harvest in July-August → Rolling → Home-made concentrates (goal : 16% protein) for young animals

- Low nitrogen fertilisation
- Less protein importation
- Example of 2 parcels

0 N	80 N
6,6 t/ha, 17% protein (1,12 t protein/ha)	8 t, 14,5% protein (1,16 protein/ha)
→ 6,6 t concentrate	→ 8,8 t concentrate (with 10% soja) + 2,2t with 80 N = 1777€/8,8t Soja = 384€ for 800kg ==> 982€/t extra

# Manure



<b>BULLETIN D'ANALYSE D'AMENDEMENT ORGANIQUE.</b> (BA N° AO08/0418)			
Date d'échantillonnage: 31/07/2008	Références de l'échantillon: Lisier - vaches laitières	N° d'analyse: AO08/0418	
Date de réception: 31/07/2008	Catégorie: Lisier de bovins		
Date d'envoi: 12/08/2008	Echantillonneur: Stéphane Veragten		
Dates d'analyses: Du 31/07/2008 à 12/08/2008		Etat de l'échantillon à la réception: Bon	
Déterminations	sur matière fraîche	sur matière sèche	Statistiques ** (Moyenne)
Matière sèche	5,5 %		9,69 %
Cendres totales	1,79 %	32,67 %	29,99 %
Cendres insolubles	0,55 %	10,04 %	10,65 %
Chlorure	0,07 %	1,32 %	1,17 %
Matière organique totale	37 kg/T	67,33 %	70,01 %
Azote ammoniacal N-NH4+	1,38 kg/T	2,52 %	2,18 %
Azote organique N	1,48 kg/T	2,69 %	2,3 %
Azote total N	2,86 kg/T	5,21 %	4,36 %

Liquid manure  
 ➔ 2,86 UN  
 whose 1,38 directly accessible

Allows complete fertilisation of forage, partial fertilisation of crops

<b>BULLETIN D'ANALYSE D'AMENDEMENT ORGANIQUE.</b> (BA N° AO21/0095)			
Date d'échantillonnage: 3/06/2021	Références de l'échantillon: Fumier GIP	N° d'analyse: AO21/0095	
Date de réception: 3/06/2021	Catégorie: Fumier de bovins		
Date d'envoi: 7/07/2021	Echantillonneur: Arnaud Toegers		
Dates d'analyses: Du 3/06/2021 à 7/07/2021		Etat de l'échantillon à la réception: Bon	
Déterminations	sur matière fraîche	sur matière sèche	Statistiques ** (Moyenne)
Matière sèche	18,8 %		22,68 %
Cendres totales	5,68 %	30,16 %	32,04 %
Cendres insolubles	2,84 %	15,09 %	18,71 %
Chlorure	0,38 %	2,01 %	10 %
Matière organique totale	132 kg/T	69,84 %	67,96 %
Azote ammoniacal N-NH4+	0,010 kg/T	0,005 %	0,14 %
Azote total N	6,45 kg/T	3,42 %	2,51 %

Solid manure  
 ➔ 6,45 UN  
 whose 0,01 directly accessible  
 Progressive availability of the N (on 3 years)  
 Depends on the quality of the soil ➔ the « power of mineralisation »



## *Biomethanisation (a project)*



Decrease of N<sub>2</sub>O and CH<sub>4</sub> release

Complete fertilisation of crops possible

1 ton solid manure → 0,36 ton liquid digestate N of the original manure (40-50% mineral) & 191 kWh (value of the energy?)  
1 ton liquid manure → 0,58 ton liquid digestate & 51 kWh



1 ton of manure + corn silage (max 20%) + green organic waste → 900 kg liquid digestate 6 UN (mostly available) + 5000 MWh

= Solution for small and middle-size farms & share of work and responsibilities



Thank you!

Questions?

Contact : [annecatherine.dalcq@gmail.com](mailto:annecatherine.dalcq@gmail.com)