Annex 1

CAP'2ER SECTION

(to be used in FRANCE, ITALY and ROMANIA)
also in SPAIN (upon advisers' choice)

4.a. presentation of the tool (Cap2ER) & the assessment process

Two levels of assessment in CAP'2ER®

CAP'2ER® Level 1

- A simplified analysis
- 30 activity data / 1 hour to collect data and to present results to farmers
- To develop an observatory
- To highlight the link between practices and environment

CAP'2ER® Level 2

- A Complete analysis
- 150 activity data / half day/one day to collect data and to present results to farmers
- To simulate mitigation practices
- To build individual carbon action plans

farm-level inputs,
one-year equivalent
(LCA approach)
(animals, feeding, surfaces, ...)

↓

set of equations
(upon IPCC)
set of assumptions

↓

calculated **farm-level parameters**
(GHG, nitrogen balance, biodiversity...)

Farm assessment process – how it works:

- **the advisor*** visit a farm or **get in contact with a farmer** (e.g. phone / on-line)

***previously trained to collect data, fill in data (on paper, in Excel, in CAP'2ER), interpret the results)**

- collect input data: **30 data** for Level 1 (in **Demo farms**) or **150 data** for Level 2 (in **Innovative farms**)

- **get the diagnosis** and **explain it to the farmer** (printer-friendly pdf).

- **draw conclusions + identify measures** (adapted feeding strategies, etc.) to be taken in order to:
  - **reduce farm-level GHG**
  - **maintain / <u>increase</u> the farm efficiency**

- **explain the demo farmers** the benefits of applying the **identified optimisation measures**
- **explain & assist the innovative farmers** on applying the **identified optimisation measures** (action plans)

Demo farms:
- first round of assessments (2022)
- targeted by dissemination / awareness / promo actions
- second round of assessment (2024)

Innovative farms:
- first round of assessments (2022)
- implementation of measures / mitigation plans
- monitoring throughout the project

Before the meeting with the farmer

For easy questioning the farmer should be asked to prepare:

- **Documents** for the **inputs** used along the year (e.g. purchased animals, feed, fuel)
- **Herd registers** (e.g. lambing, artificial inseminations)
- Milk/meat **production records**
- **Fertilizations** applied along the year
- **Manure** data (bought/sold)
- etc

Also, the advisor should get prepared:

- Know very well **the tool** to be used
- Know **the averages** of a typical local farm (e.g. milk yield, animals: surface ratio, etc.)
- Know the **normal range of** the sheep breed **parameters** (e.g. feed intake, live weight..)
- Know the **conversion factors** (milk to cheese, milk consumption by lambs, ...)
- etc.

4.b. Data collection (sheep data only)

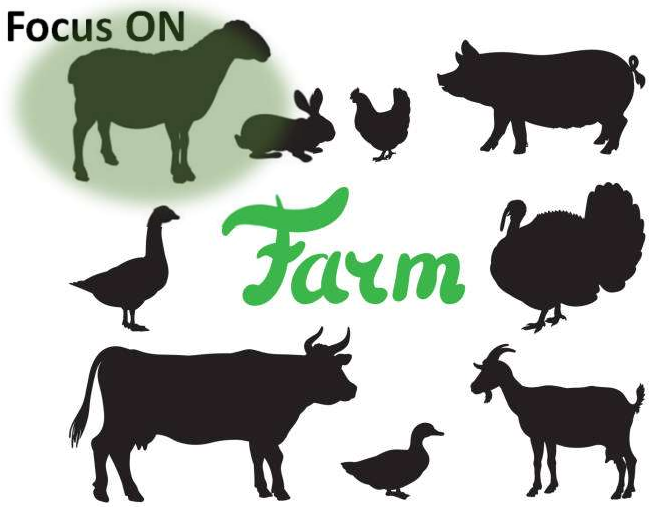
Demo farms

Utilised Agricultural Land (UAL)
Natural grasslands
Temporary grasslands

parameter # 1
parameter # 2
parameter # 3
.
.
.

Including dehydrated forages
Purchased straw

parameter # 30



Innovative farms

parameter # 1
parameter # 2
parameter # 3
.
.
.
parameter # 150

GENERAL ADVICES during data collection:

- be **prepared to cope** with misunderstandings
- **focus on** essential inputs
- **be efficient** (don't interview **longer** than needed)
- **collect as much** as possible (esp. Level 2)

& after the data collection:

- **hand your data** to the person doing data processing

or

- proceed with the **software run**
- don't forget to **give the farmer a feed-back**

Specific advices for the data collector:

- ail the **input data = one year basis** (**calculations needed**)

- know the **sheep farm basis**: - the **usual** animal load / surface
  - the **average** milk production (for the area, production system, race...)
  - the **usual** feed consumption
  - the **common**/widespread feeding strategies in the area

- **be prepared for conversions**: e.g. milk production is sold as cheese, the farmer report the cheese sells => milk: cheese yield ratio to be used to convert in litres of milk (/head, /farm...)

- **be prepared to extrapolate the feed consumption** / head / season => whole year, whole farm (if data are not available)

- ask **supplementary questions** when you notice biases / errors
  e.g. declared milk production way too low
  e.g. way too many / way too few animals / a certain surface
  (maybe it's real => look for the reason / but maybe it's a misunderstanding => clarify)

Pay attention – input data are clustered

SURFACE DATA:

Utilised Agricultural Land (UAL)	25.4	ha
Natural grasslands	25.4	ha
Temporary grasslands	0.0	ha
Forage crops	0.0	ha
Annual crops	0.0	ha
Other areas	0.0	ha
Individual pastoral areas	13.6	ha
Collective pastoral areas	9.2	ha
Additional areas	0.0	ha
Total livestock Unit (LU) on farm	47.0	

WARNING:

- **only** surface for **sheep**
- clarify **collective** areas

WARNING:

check whether the values are within the range of breed / production system:

- male/female **ratio**
- culling **rate**
- **prolificacy**

ANIMALS DATA:

Milk sheep herd		
Main breed	Manech tête rousse	
Number of ewes	352	heads
Number of rams	0	heads
Number of renewal ewe lambs	50	heads
ncluding number of purchased ewe lambs	0	heads
Number of sold milk lambs	189	heads
Average weight of milk lambs	11.0	live weight/lamb
Prolificacy rate	103%	%
Total annual sheep milk production	34,184	liters/an
Fat content	65.7	g/l
Protein content	51.2	g/l

Pay also attention to the 3F:

FEED/FERTILIZATION/FUEL DATA

Inputs used by sheep herd		
Electricity consumption	4,874	kWh/year
Fuel consumption	3,699	liters/year
Mineral nitrogen used	0	unit N/year
Organic nitrogen imported	0	unit N/year
Purchased concentrates	43.4	tons/year
Including cereals	23.7	tons/year
Including soybean meal	0.0	tons/year
heep concentrate - Protein content <=20%	8.0	tons/year
sheep concentrate - Protein content >20%	10.6	tons/year
Including dehydrated concentrates	0.0	tons/year
Including minerals and vitamins	1.03	tons/year
Purchased forages	28.0	tons DM/year
Including dehydrated forages	2.0	tons DM/year
Purchased straw	9.0	tons/year

WARNING:

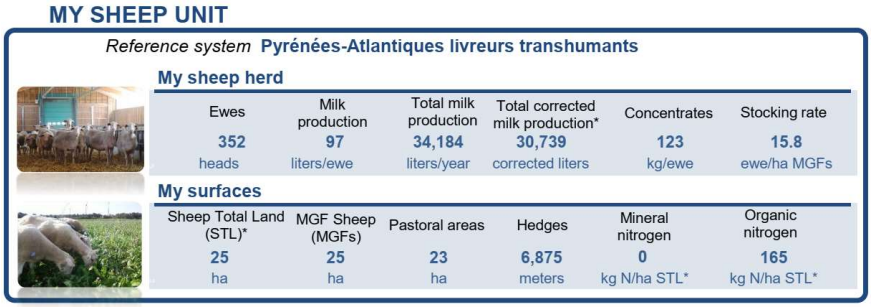
Breed characteristics

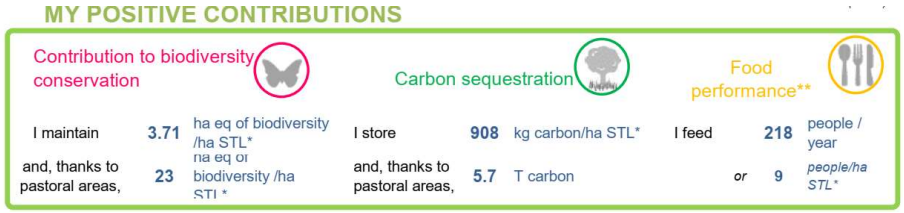
- feed **intake / category**
- protein % by **age**

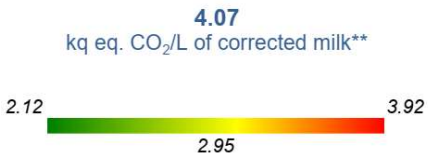
Electricity and fuel = **only** for sheep

4.c. guidelines on the results analysis and interpretation (Cap2ER)
(Results and Solutions)

User friendly inputs' recap

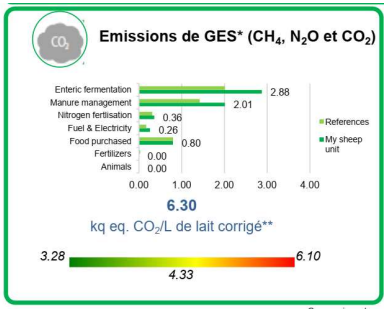


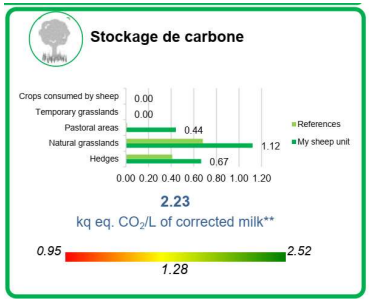


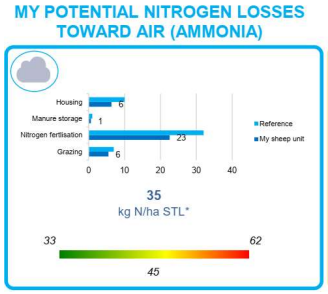


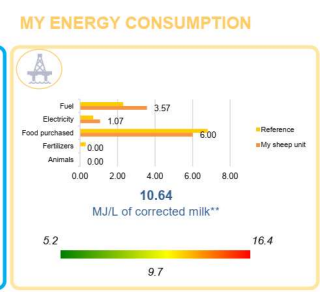
Positive results check

Be aware of the values here





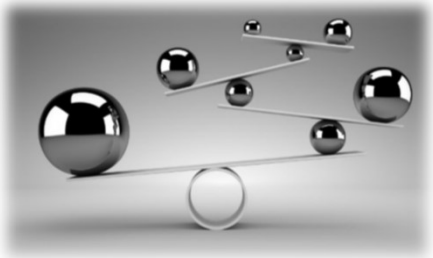




INPUTS
Concentrates and forages
Fertilizers
Imported manure
Purchased ewe lambs
Symbiotic fixation
Atmospheric deposition

OUPTPUTS
Milk
Sheep meat
Wool
Exported manure

Balance for:



Minimizing the GHG emissions

Maintaining or (even better) improving the farm efficiency

SWOT analysis:

=> FIND THE BEST SOLUTION FOR THE FARMER, e.g:

Change feeding strategy
=> higher efficiency

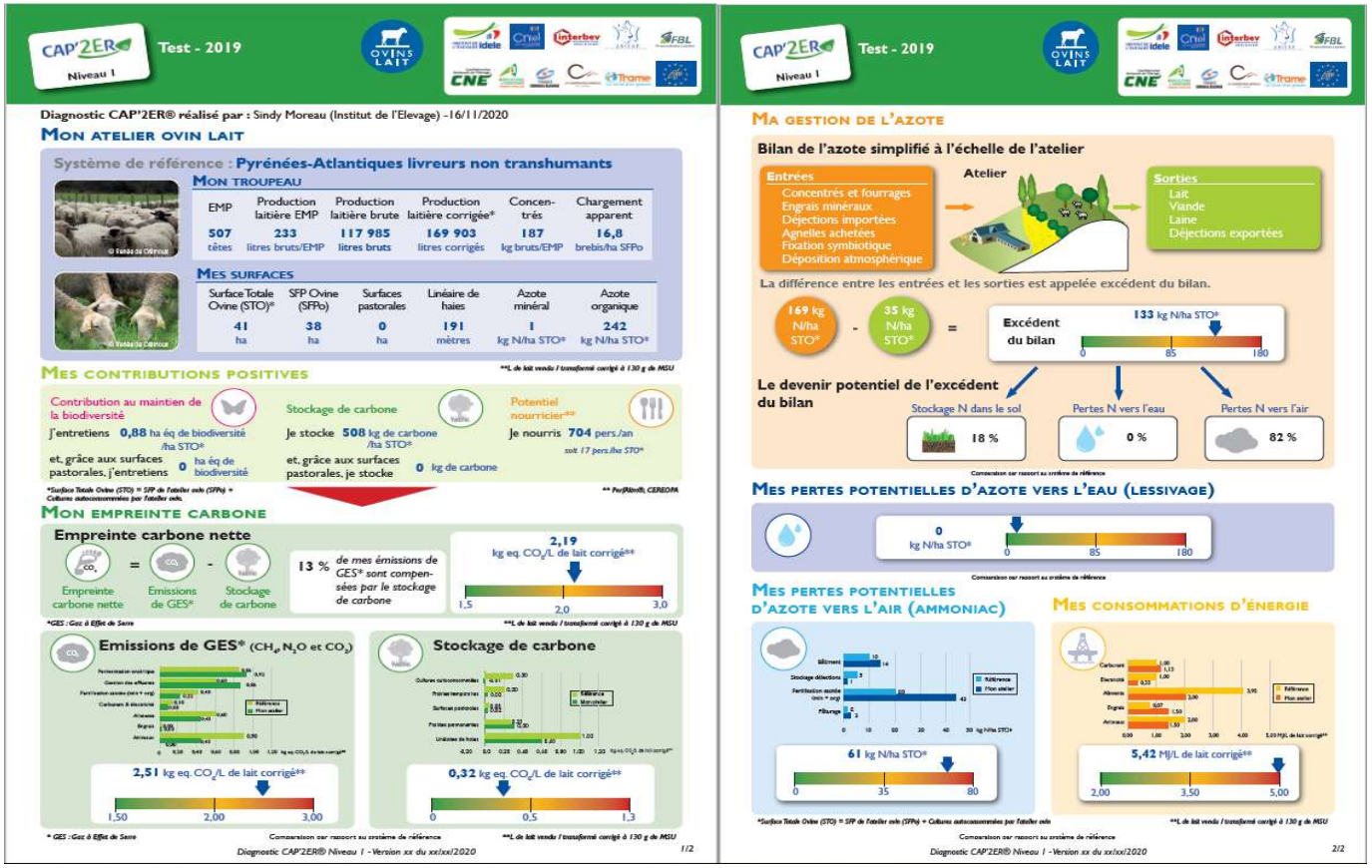
less GHG / unit of product

Improve reproductive performances
=> higher efficiency

less GHG / unit of product (e.g. milk)

Investment in manure equipment
=> no headaches & ...

reduce GHG (e.g. bio-fuel)



CAP'2ER® Niveau 1 Test - 2019

Diagnostic CAP'2ER® réalisé par : Sindy Moreau (Institut de l'Elevage) -16/11/2020

Mon atelier ovin lait

Système de référence : **Pyrénées-Atlantiques livreurs non transhumants**

Mon troupeau

EMP	Production laitière EMP	Production laitière brute	Production laitière corrigée*	Concentrés	Chargement apparent
507 têtes	233 litres bruts/EMP	117 985 litres bruts	169 903 litres corrigés	187 kg bruts/EMP	16,8 brebis/ha SFPo

Mes surfaces

Surface Totale Ovine (STO)*	SFP Ovine (SFPo)	Surfaces pastorales	Linéaire de haies	Azote minéral	Azote organique
41 ha	38 ha	0 ha	191 mètres	1 kg N/ha STO*	242 kg N/ha STO*

Mes contributions positives

Contribution au maintien de la biodiversité
J'entretiens **0,88** ha éq de biodiversité /ha STO*
et, grâce aux surfaces pastorales, j'entretiens **0** ha éq de biodiversité

Stockage de carbone
Je stocke **508** kg de carbone /ha STO*
et, grâce aux surfaces pastorales, je stocke **0** kg de carbone

Potentiel nourricier**
Je nourris **704** pers./an
soit 17 pers./ha STO*

Mon empreinte carbone

Empreinte carbone nette = Emissions de GES* - Stockage de carbone

13 % de mes émissions de GES* sont compensées par le stockage de carbone

2,19 kg eq. CO_2/L de lait corrigé** (1,5 – 2,0 – 3,0)

Emissions de GES* (CH_4, N_2O et CO_2)

2,51 kg eq. CO_2/L de lait corrigé** (1,50 – 2,00 – 3,00)

Stockage de carbone

0,32 kg eq. CO_2/L de lait corrigé** (0 – 0,5 – 1,3)

Diagnostic CAP'2ER® Niveau 1 - Version xx du xx/xx/2020 1/2

CAP'2ER® Niveau 1 Test - 2019

Ma gestion de l'azote

Bilan de l'azote simplifié à l'échelle de l'atelier

Entrées
- Concentrés et fourrages
- Engrais minéraux
- Déjections importées
- Agnelles achetées
- Fixation symbiotique
- Déposition atmosphérique

Atelier

Sorties
- Lait
- Viande
- Laine
- Déjections exportées

La différence entre les entrées et les sorties est appelée excédent du bilan.

169 kg N/ha STO* - 35 kg N/ha STO* = Excédent du bilan **133** kg N/ha STO* (0 – 85 – 180)

Le devenir potentiel de l'excédent du bilan

Stockage N dans le sol	Pertes N vers l'eau	Pertes N vers l'air
18 %	0 %	82 %

Mes pertes potentielles d'azote vers l'eau (lessivage)

0 kg N/ha STO* (0 – 85 – 180)

Mes pertes potentielles d'azote vers l'air (ammoniac)

61 kg N/ha STO* (0 – 35 – 80)

Mes consommations d'énergie

5,42 MJ/L de lait corrigé** (2,00 – 3,50 – 5,00)

Diagnostic CAP'2ER® Niveau 1 - Version xx du xx/xx/2020 2/2

a brief (two-A4 pages) nice looking & **condensed report**

which has **to be explained to the farmer**

which (beside the inputs) is **the base for mitigation measures**

which **can be printed / forwarded, etc.**

FOLLOW UP

A detailed presentation of the studied farm: number of animals, production, surfaces, etc.

CAP'2ER Niveau 1 — Cas concret - 2020

Diagnostic CAP'2ER® réalisé par : Moreau Sindy - Formation CAP'2ER Niveau 2 - 24/06/2021

MON ATELIER OVIN LAIT

Système de référence : Pyrénées-Atlantiques livreurs non transhumants

MON TROUPEAU

EMP	Production laitière EMP	Production laitière brute	Production laitière corrigée**	Concentrés	Chargement apparent
500 têtes	225 litres bruts/EMP	112 266 litres bruts	108 812 litres corrigés	319 kg bruts/EMP	17,6 brebis/ha SFPo

MES SURFACES

Surface Totale Ovine (STO)*	SFP Ovine (SFPo)	Surfaces pastorales	Linéaire de haies	Azote minéral	Azote organique
42 ha	36 ha	0 ha	1 496 mètres	6 kg N/ha STO*	161 kg N/ha STO*

MES CONTRIBUTIONS POSITIVES

**L de lait vendu / taux butyreux corrigé à 130 g de MGV

Contribution au maintien de la biodiversité

J'entretiens 1,1 ha éq de biodiversité/ha STO*

et grâce aux surfaces pastorales 0 ha éq de biodiversité

Stockage de carbone

Je stocke 440 kg de carbone /ha STO*

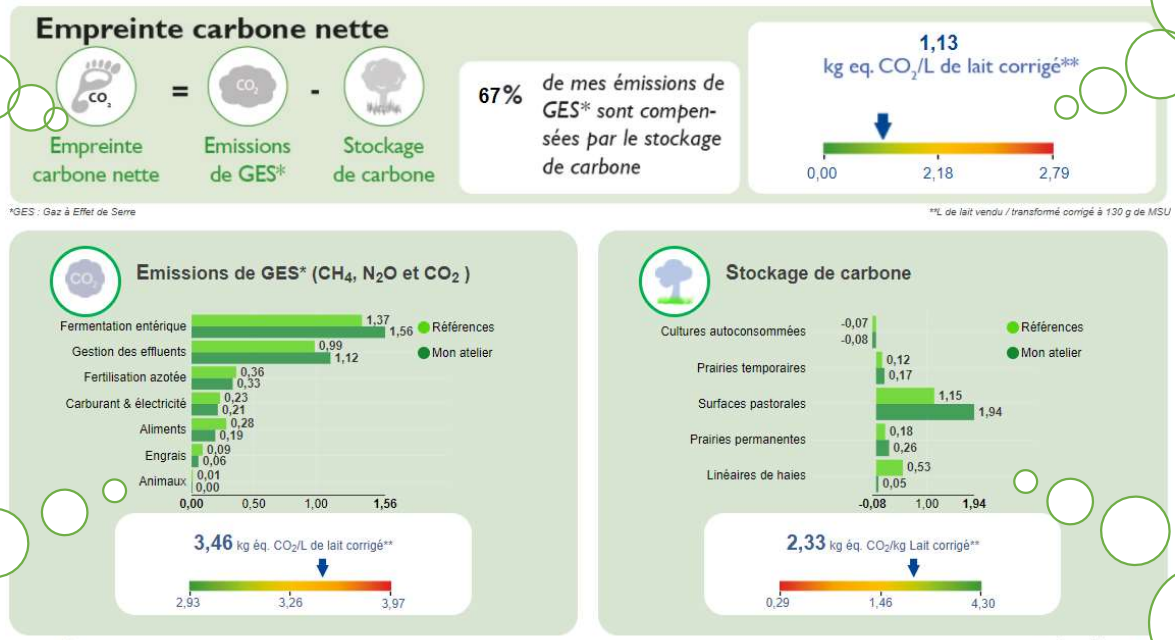
et grâce aux surfaces pastorales 0,0 T de carbone

Potentiel nourricier***

Je nourris 693 pers./an soit 17 pers./ha STO*

Positive contributions: contribution to maintaining biodiversity, carbon storage, food performance and Contribution of pastoral areas

Distinction between net carbon footprint and greenhouse gas emissions, related to carbon storage



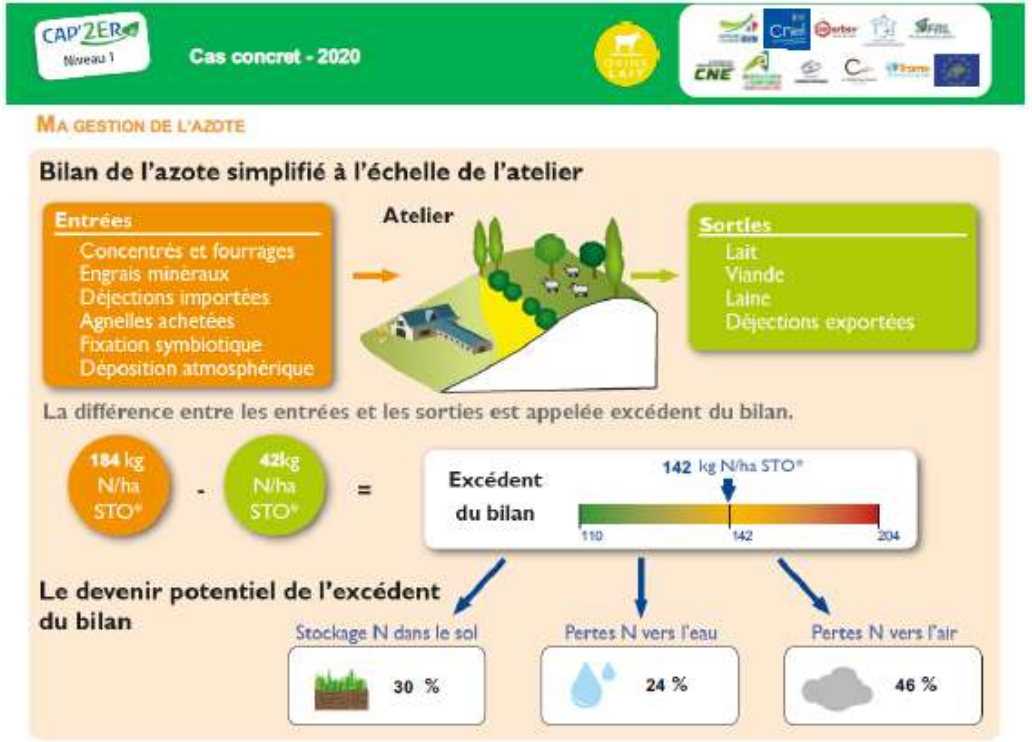
Net carbon footprint result and comparison to a benchmark

- Presentation of the sources of GHG emissions and the final result
- Comparison of the sources and the final result with references

- Presentation of the sources of storage / destocking of C and the final result - Comparison of sources and final result to references

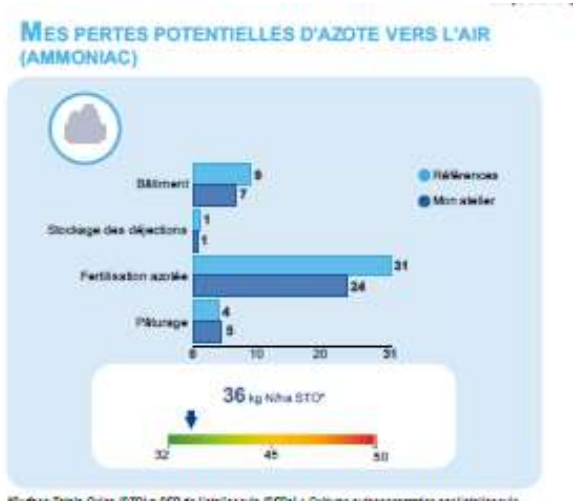
Realization of a nitrogen balance (nitrogen inflows - nitrogen outflows) to know the surplus of nitrogen produced by the studied workshop.

Balance sheet surplus result and comparison to a benchmark.



Excess nitrogen can come in different forms: nitrogen losses to water, nitrogen losses to air, or nitrogen storage in soil.

Potential nitrogen losses to air (ammonia): Nitrogen losses to the air include emissions of several nitrogen gases: NH3 (ammonia), but also N2O (nitrous oxide), NO (nitrogen monoxide) and N2 (dinitrogen). This graph only shows nitrogen losses to the air in the form of ammonia (NH3). The NH3 emission items and the overall result are presented, then compared to references, for an equivalent system



"Potential Nitrogen Losses to Water (Leaching)" expressed per ha UAA used by the herd

Fossil energy consumption:
Presentation of the sources of energy consumption and the final result,
Comparison of sources and final result with references (with equivalent system)

Don’t forget to do the follow-up...

first of all – these assessments (farm reports) **are the base for** action plans, national policies (e.g. subsidies), ...

But also **an interest for the farmers** – e.g. identification of the **sources of inefficiencies** (e.g. feeding inefficiency)
& for the advisor – e.g. **better “know the farm”** (in a systematic way) / **comparisons** with the average

e.g. high Nitrogen losses = inefficient use of dietary proteins, high specific consumption / product unit, high costs / products unit, economic losses etc.

→ advices to the farmer, for a better use of nitrogen feeds (which, btw, are expensive)

e.g. identify the outliers in the input data (comparing to other farms in the area / using same breed), and discuss the with the farmer, e.g.

→ “your reproduction parameters are lower than normal, this leads to both high GHG and economic losses...”
“let’s find a way to improve them...”

and therefore make sure there’s a win-win situation...