



Integrating fodder in dairy nutrition

Konrad Schreiber - LVH (la vache heureuse)



Schreiber Konrad LVH – Integrating fodder in dairy nutrition & sustainable management –
Workshop on “ Plant Proteins - Agronomic practices and environmental benefits” -Bucarest, June 12th 2018

What is LVH ?

What is an happy cow ?





**Anton SIDLER –
French Pioneer Farmer**

**LVH MISSION : Private company / start up
Increase Agricultural income
Elaborate solutions for Protein autonomous Farms
Living soil management : no-till & permanent cover crop
Implement adapted environmental friendly solutions
Fodder diversification and healthy herd**

Innovative and creative solution for a better crop management by LVH (la vache heureuse)

New Mixed flowering summer crops

- More proteins for Maize silage
- Less to 0 Chemical inputs

Faba bean, Hairy vetch, LabLab and Cowpea for Protein and flowers

Sun Flower for biodiversity (bees) and Hard Fiber for ruminants

Maize for Corn or fodder

Maïs et plantes compagnes - 2018

Parcelle : *Schleitweg* **Commune :** *Wittenheim*

Itinéraire technique :

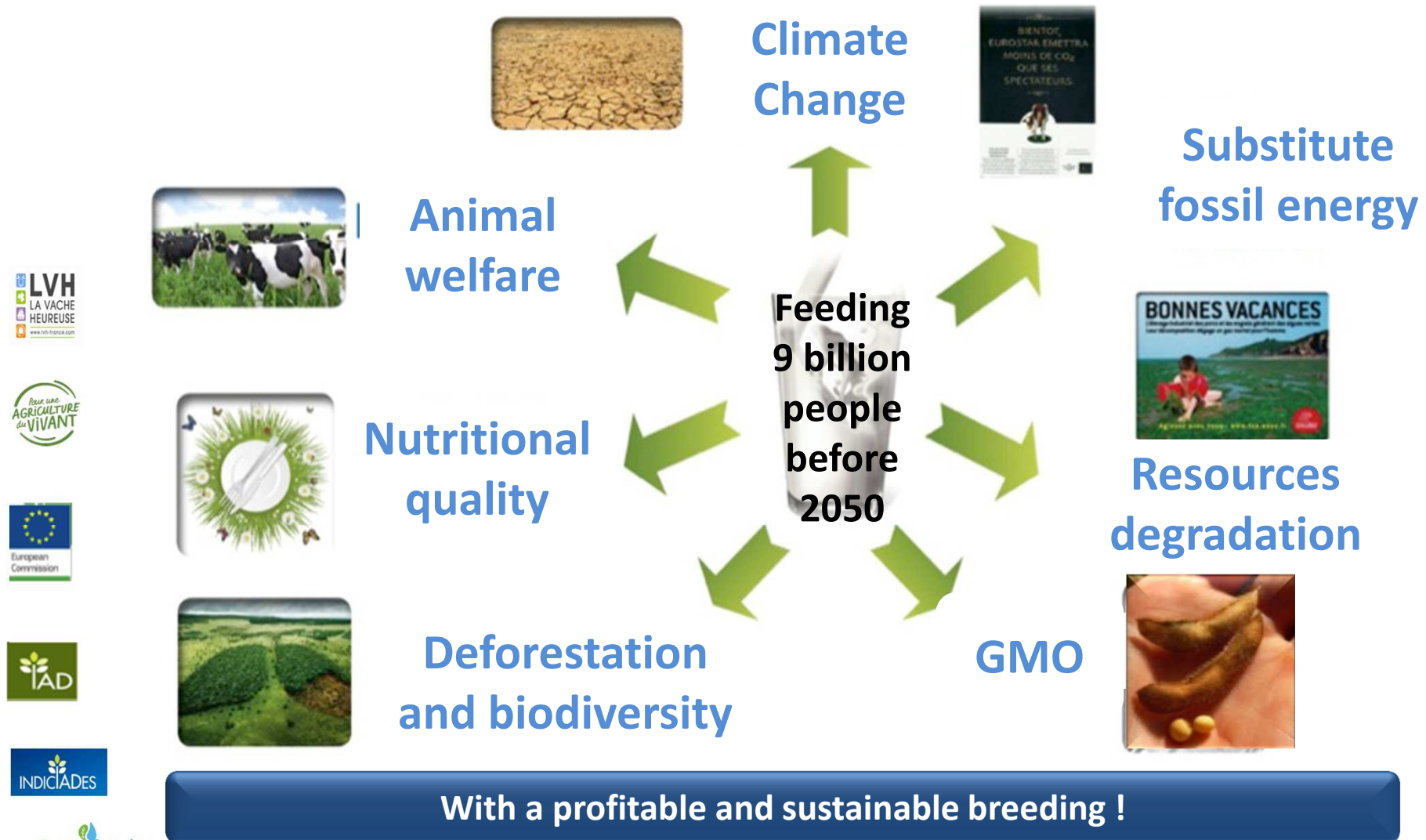
- Maïs ☐ Grain ☒ Ensilage
- Travail du sol : *TCS disque*
- ☐ Profond ☒ superficiel ☐ absence
- Semis : *02/05/2018*
- Fertilisation (date, produit, quantité)
 - *Urea 27/04/18*
 - *670 Ammon 09/05/18*
- Désherbage (date, produit, dose)
 - *objectif*

Composition du mélange :

- Maïs
 - Variété : *Doré 17 Pioneer*
 - Densité : *92000* gr/ha
- Féverole : *75* kg/ha
- Vesce : *4* kg/ha
- Lablab : *8* kg/ha
- Cowpea : *8* kg/ha
- Tournesol *4,5* kg/ha

The next CAP challenges

Agriculture as the main tool against climate global warming



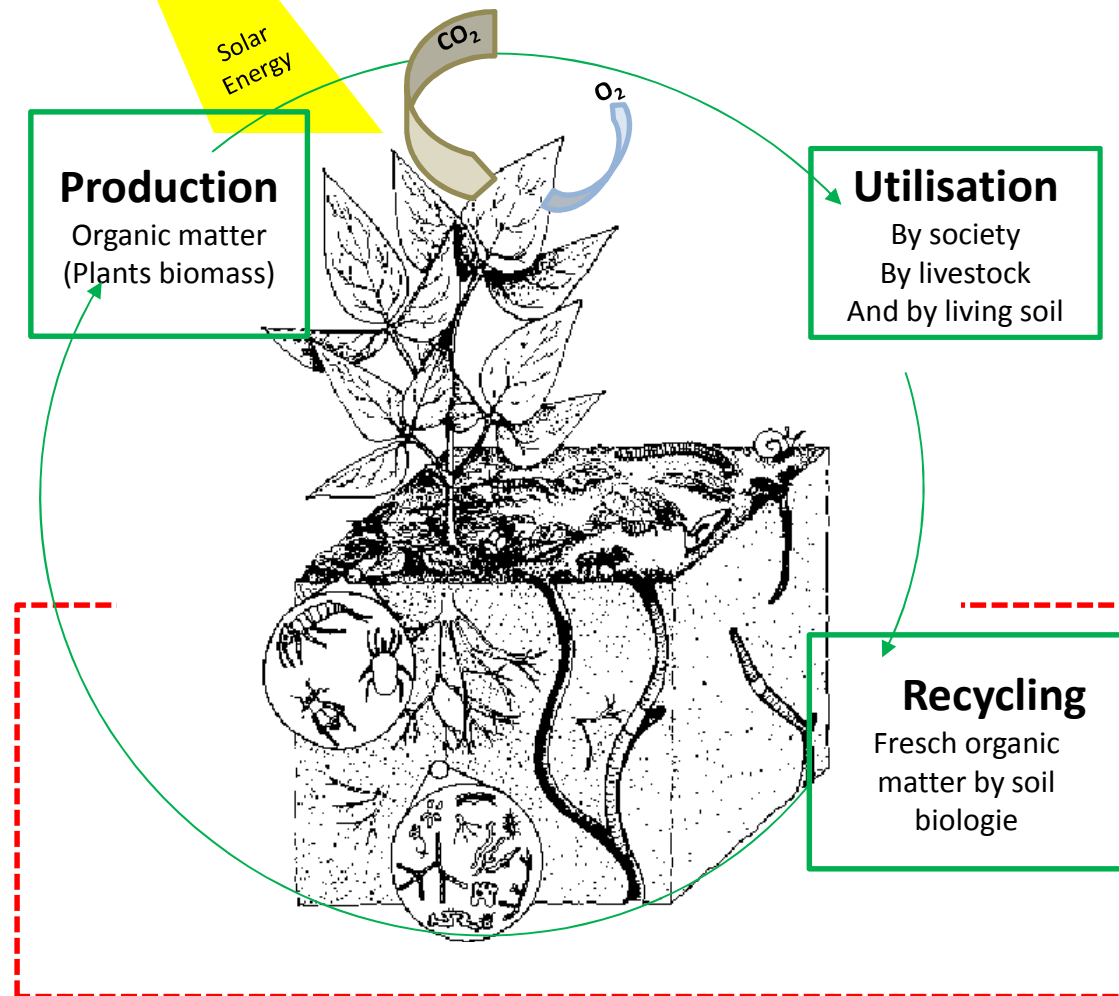
Sustainable development: The farmer's answer



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SOLUTION : COPYING THE ECOSYSTEM CYCLE FOR A SUSTAINABLE AGRICULTURE

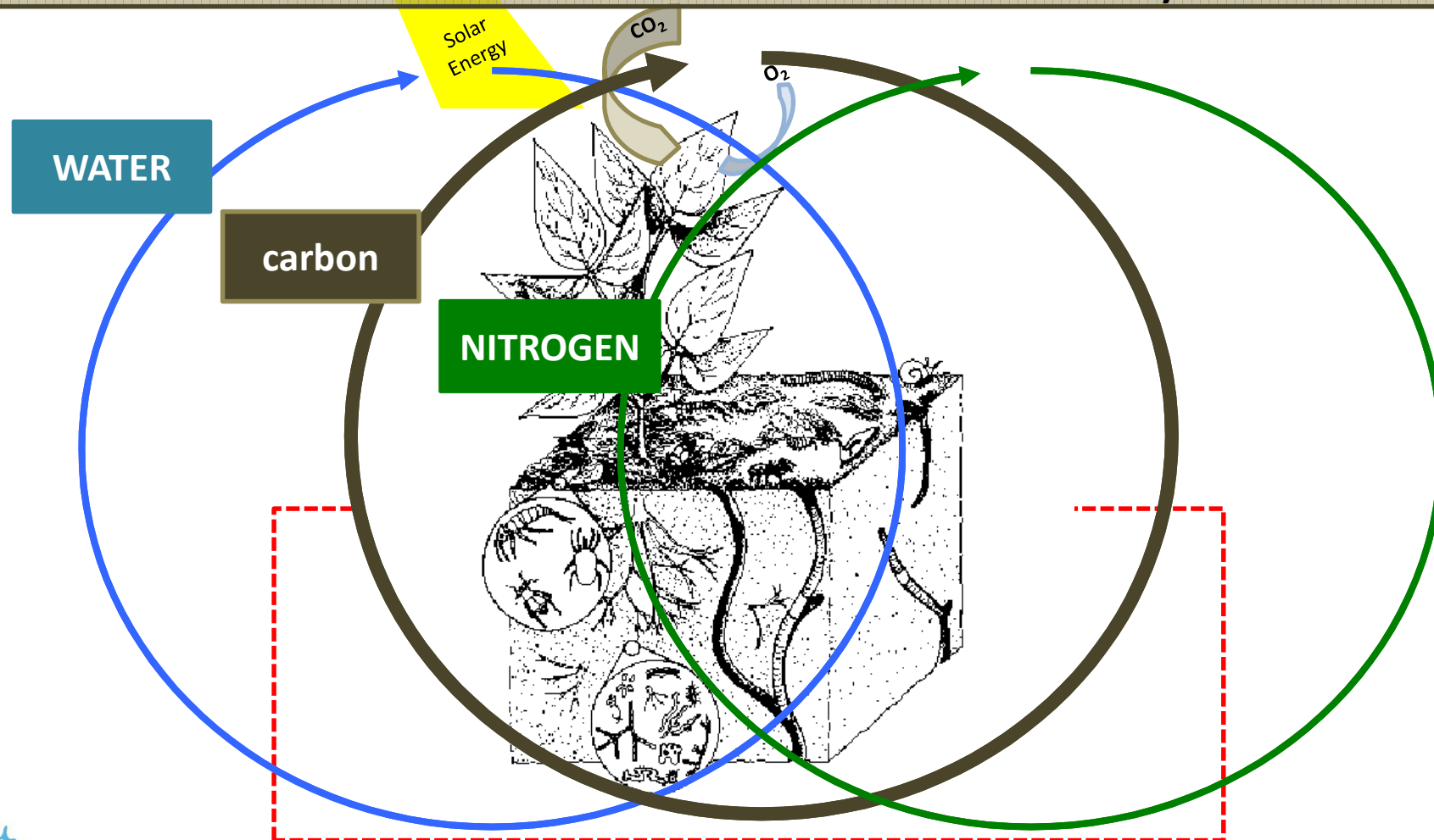
With no CO₂ in atmosphere, only 0,04 %, plants and soil product all live over the earth !



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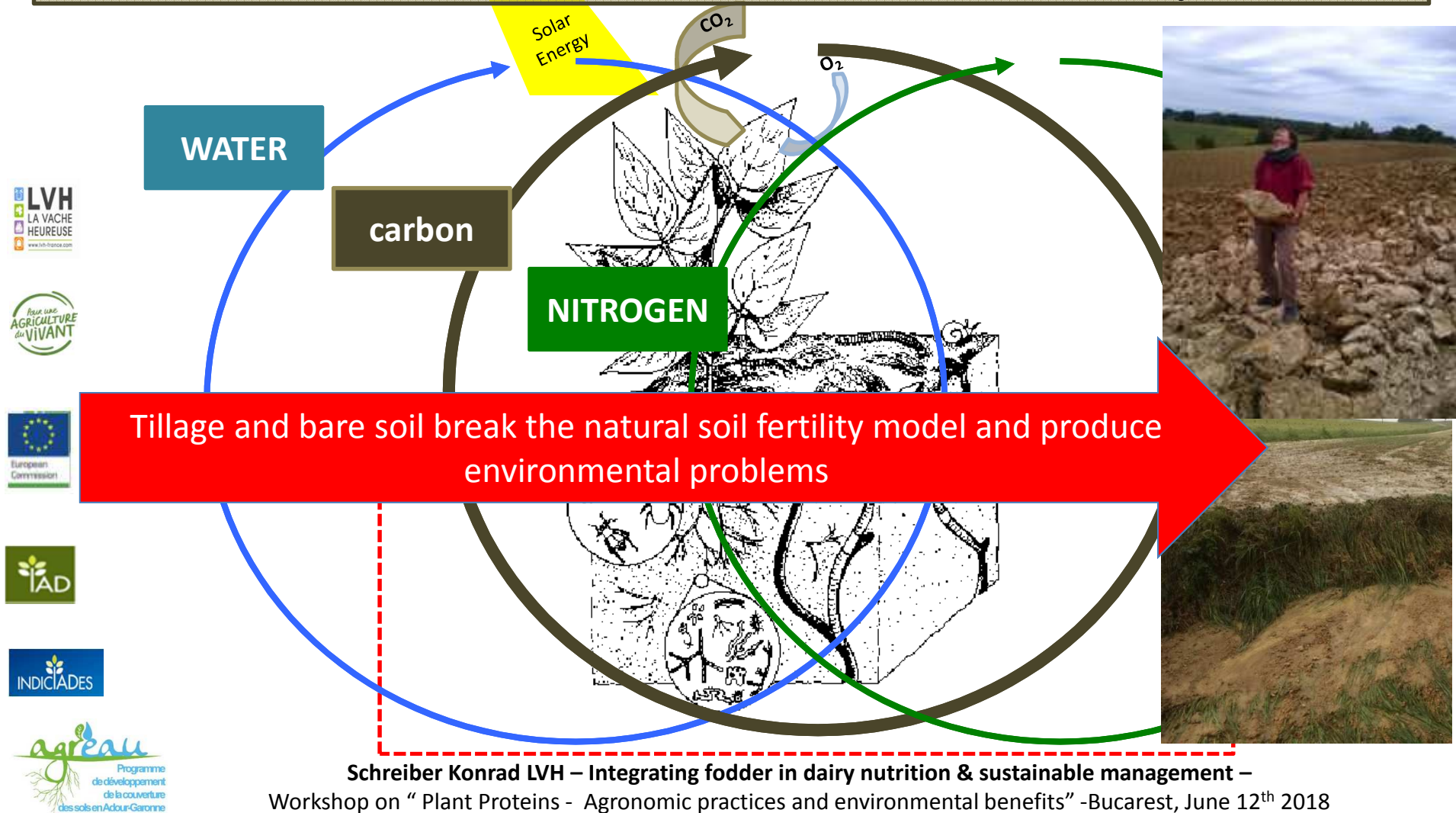
Water, carbon and nitrogen cycles are dependant on plants and living soil
Farmers have to cover and feed soil to increase sustainability



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Example from real life

LVH French Farmers in action !



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WHEN FEEDING SOIL FARMERS INCREASE SOIL FERTILITY AND STORE CARBON -1-



**AFTER WHEAT
SEEDING FIRST COVER CROP
SEEDING SECOND COVER CROP
IN OCTOBER (photo)**



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WHEN FEEDING SOIL FARMERS INCREASE SOIL FERTILITY AND STORE CARBON -2-

Result : Winter cover crop : cereal and
legume against nitrogen leaching



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WHEN FEEDING SOIL FARMERS INCREASE SOIL FERTILITY AND STORE CARBON -3-

RESULT IN MAY
BEAUTIFUL BIODIVERSITY



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WHEN FEEDING SOIL FARMERS INCREASE SOIL FERTILITY AND REACH AUTONOMY IN PROTEIN PLANTS -4-



**RICH PROTEIN COVER CROP HARVEST
NO-TILL DOUBLE CROPPING SYSTEM (first crop)**

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WHEN FEEDING SOIL FARMERS INCREASE SOIL FERTILITY AND REACH AUTONOMY IN PROTEIN PLANTS -5-

**RESULT IN JULY
BEAUTIFUL MAIZE**



**CORN PRODUCTION AFTER COVER CROP HARVEST :
DOUBLE CROPPING (second crop)**

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FEEDING SOIL AND BEING AUTONOMOUS IN DAIRY FARM



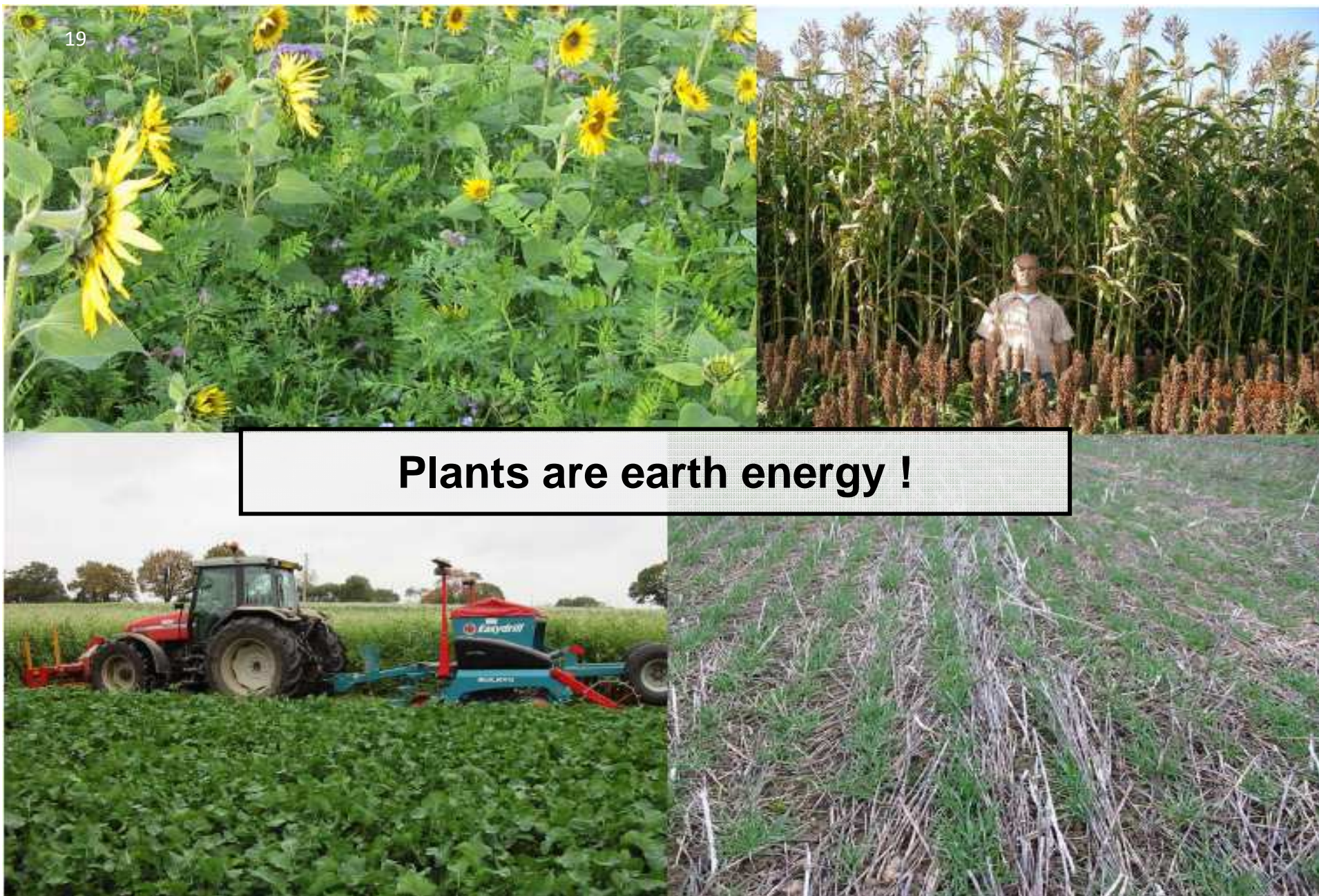
**MORE THAN 150 PIONEERING FARMS IN FRANCE
THE MOST IMPORTANT ISSUE IN FRANCE
REGARDING DAIRY FARMS**

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NEW FARMING PRACTICES SOIL PROTECTION AND FEEDING STRATEGY





Plants are earth energy !

Explaining our strategy : Reaching autonomy in protein in dairy farms Soil feeding to better feed COWS



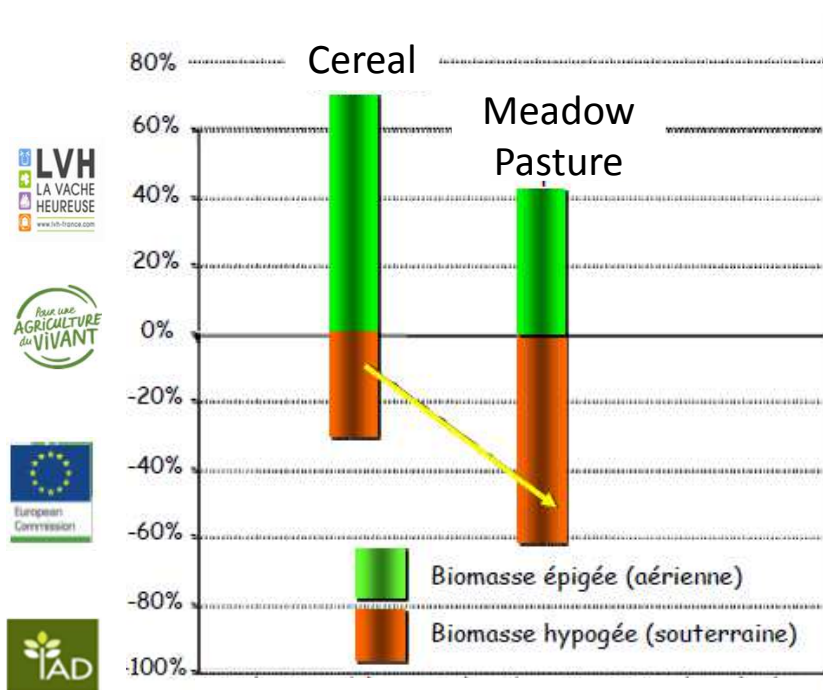
Methodology : Feeding soil to feed livestock

Production intensification for yield improvement

To protect environment, and produce milk

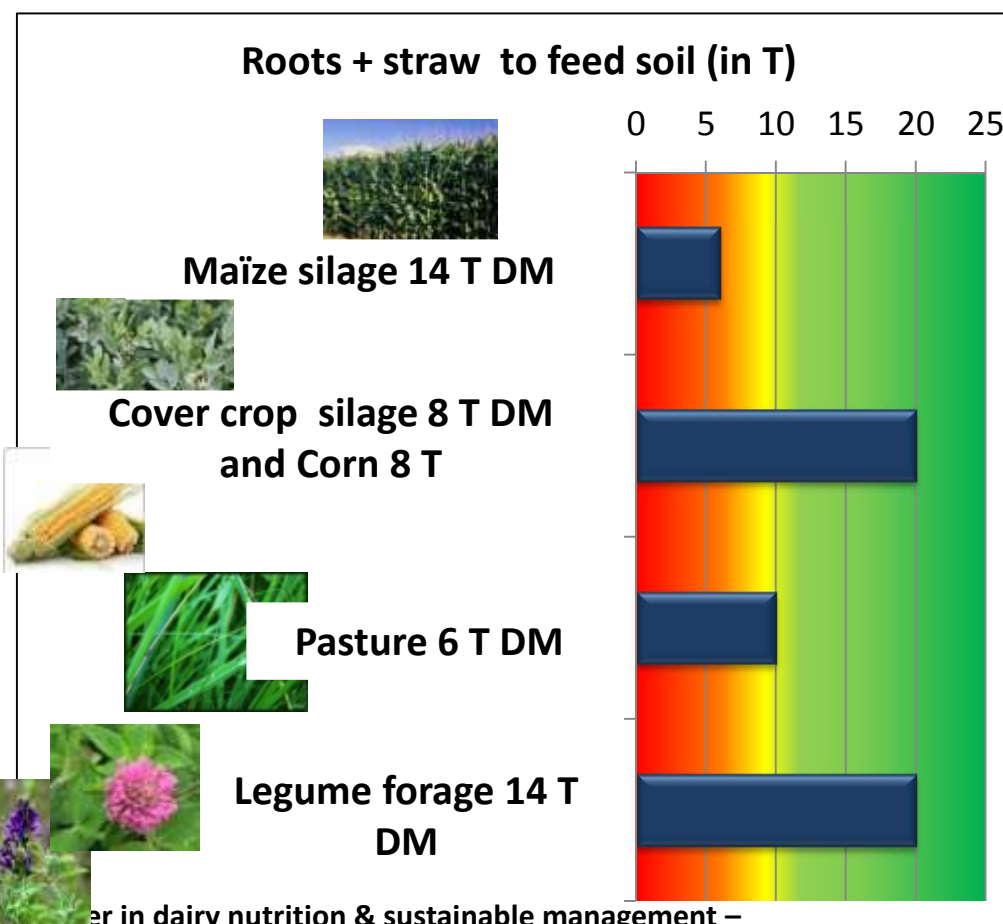
Feed soil with Carbon in autumn (straw and roots)

Feed soil with Nitrogen in spring (legumes, fertilizer...)



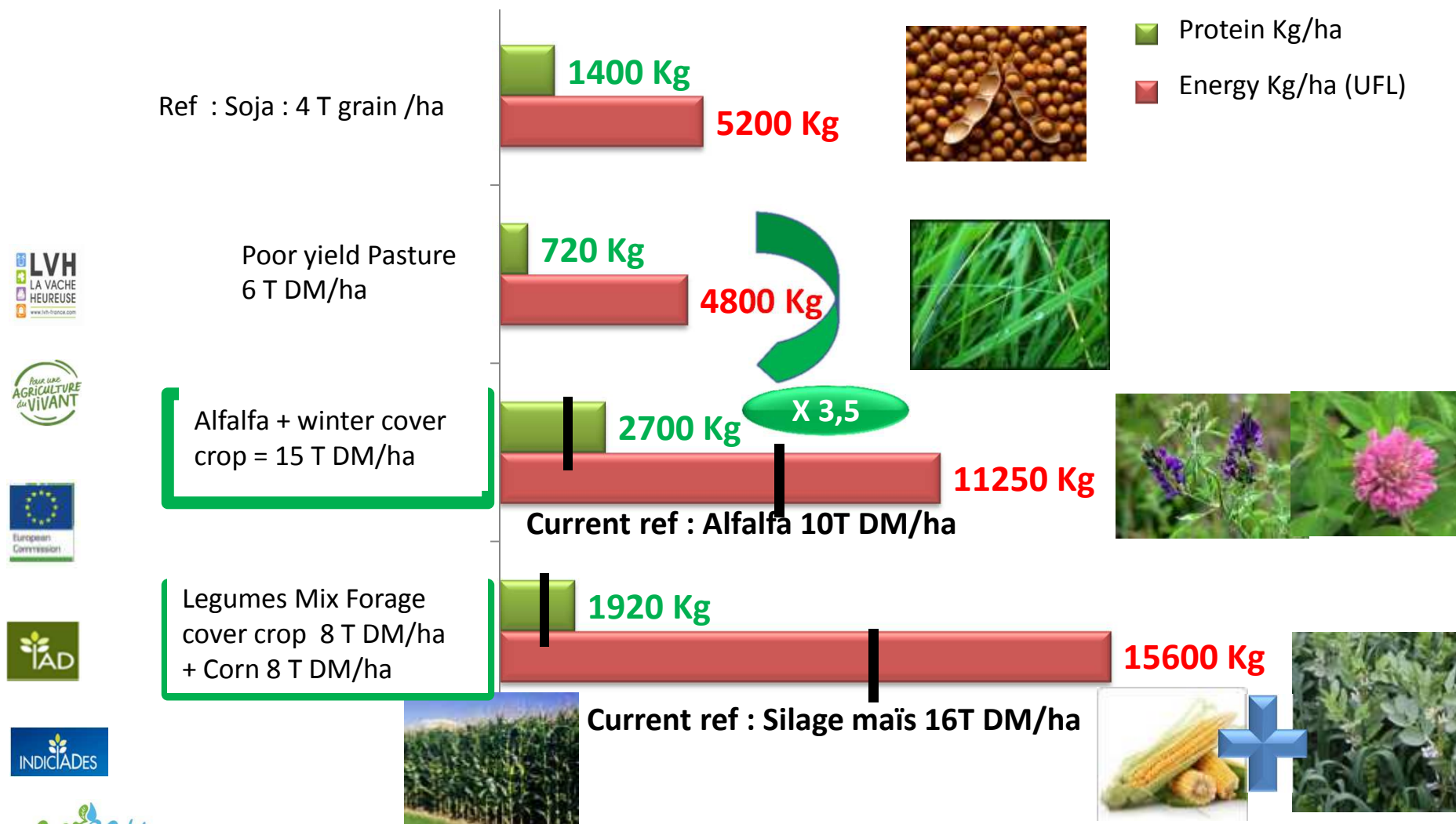
Source : Bolin et Sukumar, 2000

Feed soil increase yield !
And storage carbon to
protect environment



Key success factors to become autonomous in Protein fodder : Produce more Proteins with fodder than Soya on 1 ha LVH crop production

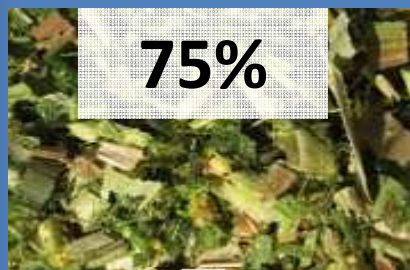
Produce **protein with fodder** and **energy with corn/cereals**



Core Elements for a better livestock nutrition – 1

To produce more than 9 000 L / Dairy Cow (LVH references, France)

Conventionnel Fodder managment



Maize
silage =
Energy
+ Fiber

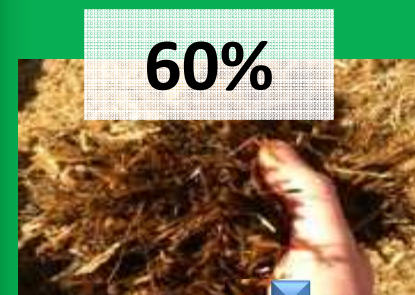


Soya
*50 à 70% from
nutrian cost*

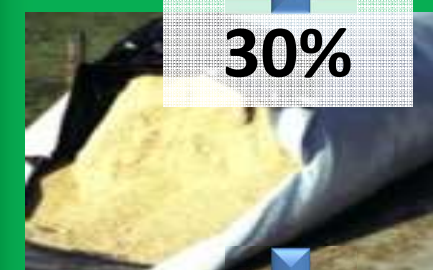


Hard
Rumen
fiber

New Fodder managment



Rich
Protein
Fodder
+ Fiber



Cereals
Energy
without
fiber



Hard
Rumen
Fiber



ing fodder in dairy nutriti

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Core Elements for cows nutrition - 2

To produce more than 9 000 L / Dairy Cow (LVH references, France)

Old Fodder management

Energy + Fiber =
Silage maize



Protein without
fiber = soya



Cow Rumen
Limiting Factor = limited
capacity
For 1 kg of DM
Fiber = 20%
Energy = 0,92 UFL
Protein = 14%

New Fodder management

Protein + Fiber =
Legume mix
Fodder (15 to 17% rich)



Energy without
fiber = corn ou
cereal

Breeders must manage the fiber when they manage fodder



The impact on environment

Results



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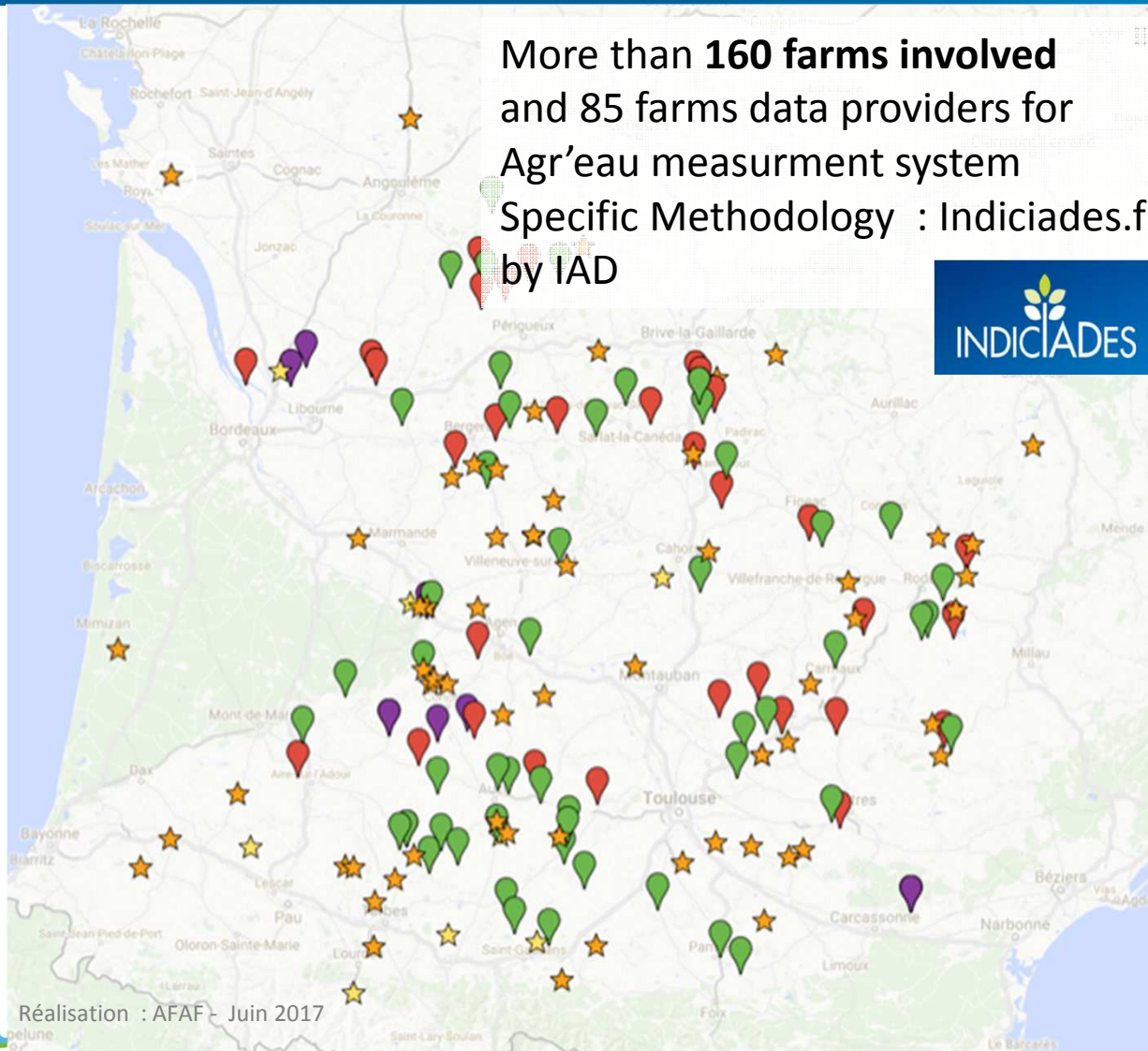


Agr'eau : A farmers network to measure environmental impact

More than **160 farms involved**
and 85 farms data providers for
Agr'eau measurement system
Specific Methodology : Indiciades.fr
by IAD



Une ferme pilote Agr'eau est une ferme "vitrine" de référence mettant en oeuvre des pratiques de conservation des sols et/ou d'agroforesterie avec une démarche agronomique maximisant la couverture végétale herbacée et arborée permanente des sols.



Réalisation : AFAF - Juin 2017



Légende :

- ★ Fermes vitrines uniquement (type C)
- Fermes avec suivi léger (type B)
- Fermes avec suivi poussé (type A)
- Fermes avec suivi viticulture
- ★ Fermes avec suivi maraichage

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Agr'eau : permanent soil cover by crops, cover crops and trees with tillage reduction

Une agriculture performante et durable qui optimise les ressources naturelles

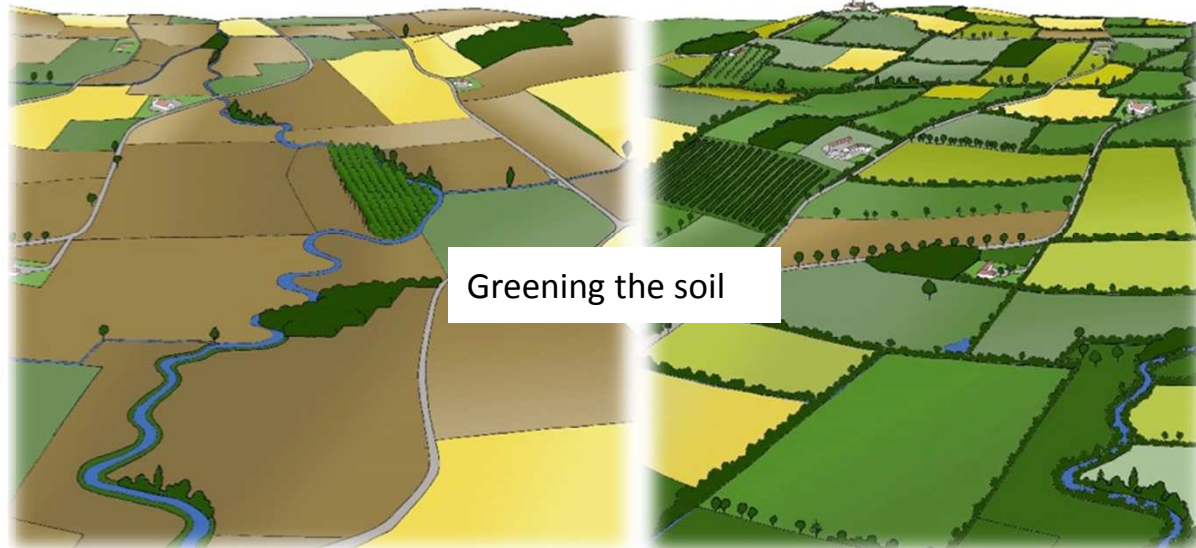
DES RESSOURCES NATURELLES



DES INTRANTS



DES PRODUITS



Greening the soil

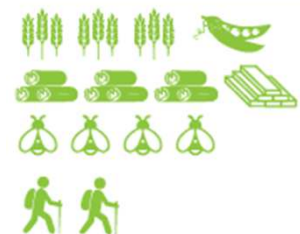
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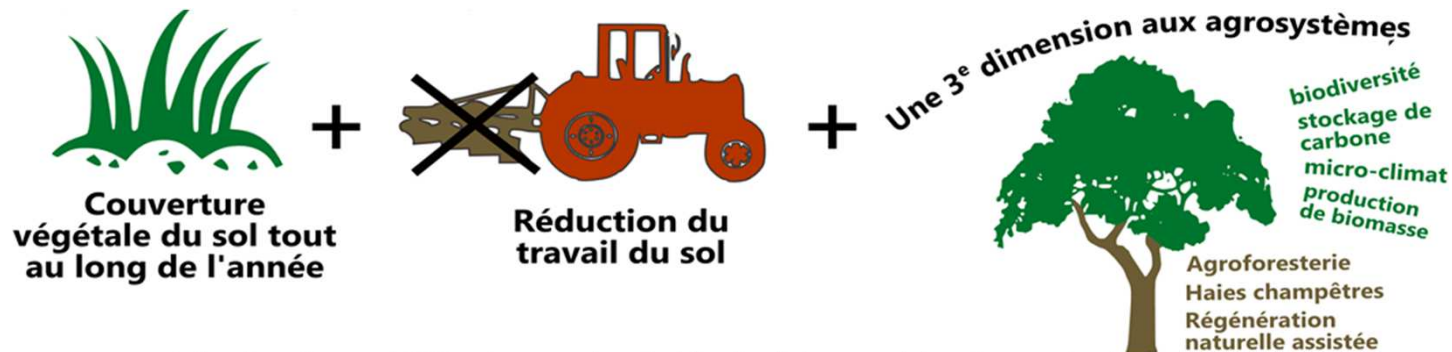


DES PRODUITS



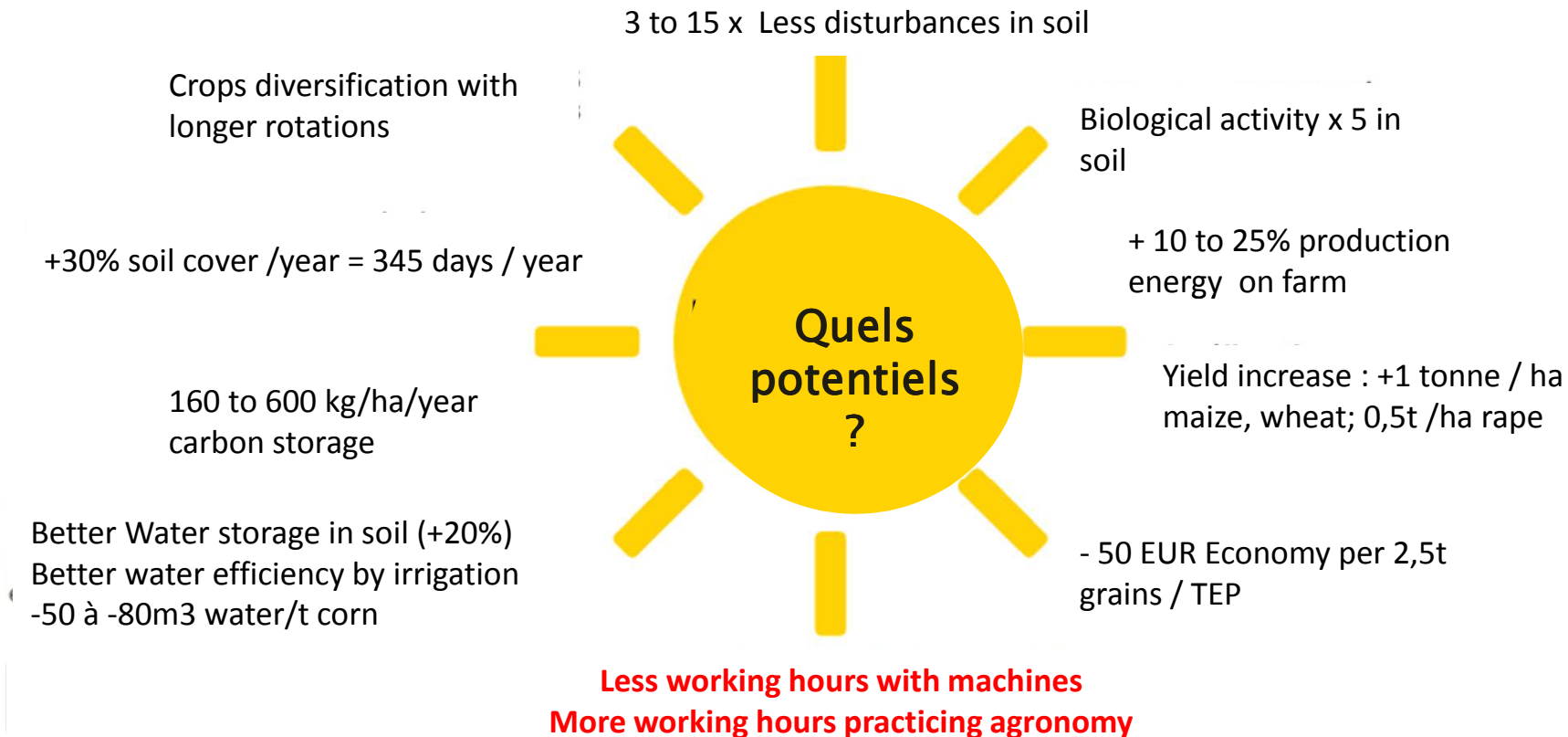
From a conventional agriculture
Poor in carbon and energy greening ...

... to a rich carbon and energy agriculture
More profitable



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Environmental impact resulted from soil covering, crops management and no till practices



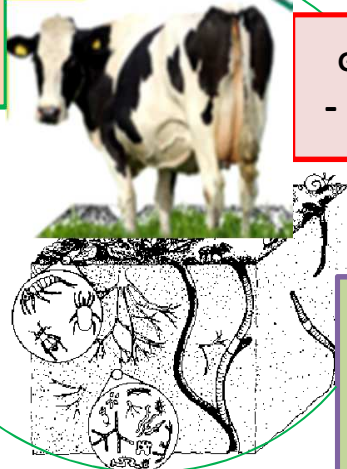
Results of the study conducted on 11 pilote farms followed up in the frame of the Agr'eau program compared to a reference farm practicing conventionnal agriculture – reference AFAF and Adour garonne region



**Anton SIDLER –
French Pioneer Farmer results**

« I produce food and my cows do not pollute ! »
1 TEP = 1 t C (source: ADEME)

Livestock
Production
+ 3,12 t
C/ha



GHG production
- 1,75 t C/ha

Soil carbon
storage
+ 0,4 t
C/ha

Food Production : + 3,12 t C/ha

GHG Emissions : - 1,75 t C/ha

Soil carbon storage : + 0,4 t C/ha

Net balance for our society : + 1,77 t C/ha



« Nothing is lost, I recycle everything ! »

Production : TEP
de matière organique
(biomasse végétale)

Utilisation : TEP
par la société,
par les animaux
et la vie du sol

Recyclage : TEP
de la matière
organique par les
communautés
biologiques du sol

Le sol vivant, préservé dans ses fonctions, limite fortement les problèmes environnementaux

Source: www.attra.ncat.org – By Preston Sullivan, NCAT Agriculture Specialist, September 2001

Sustainability is inside the Ecosystem cycle:
Production , Consumption, Recycling

Conclusion :

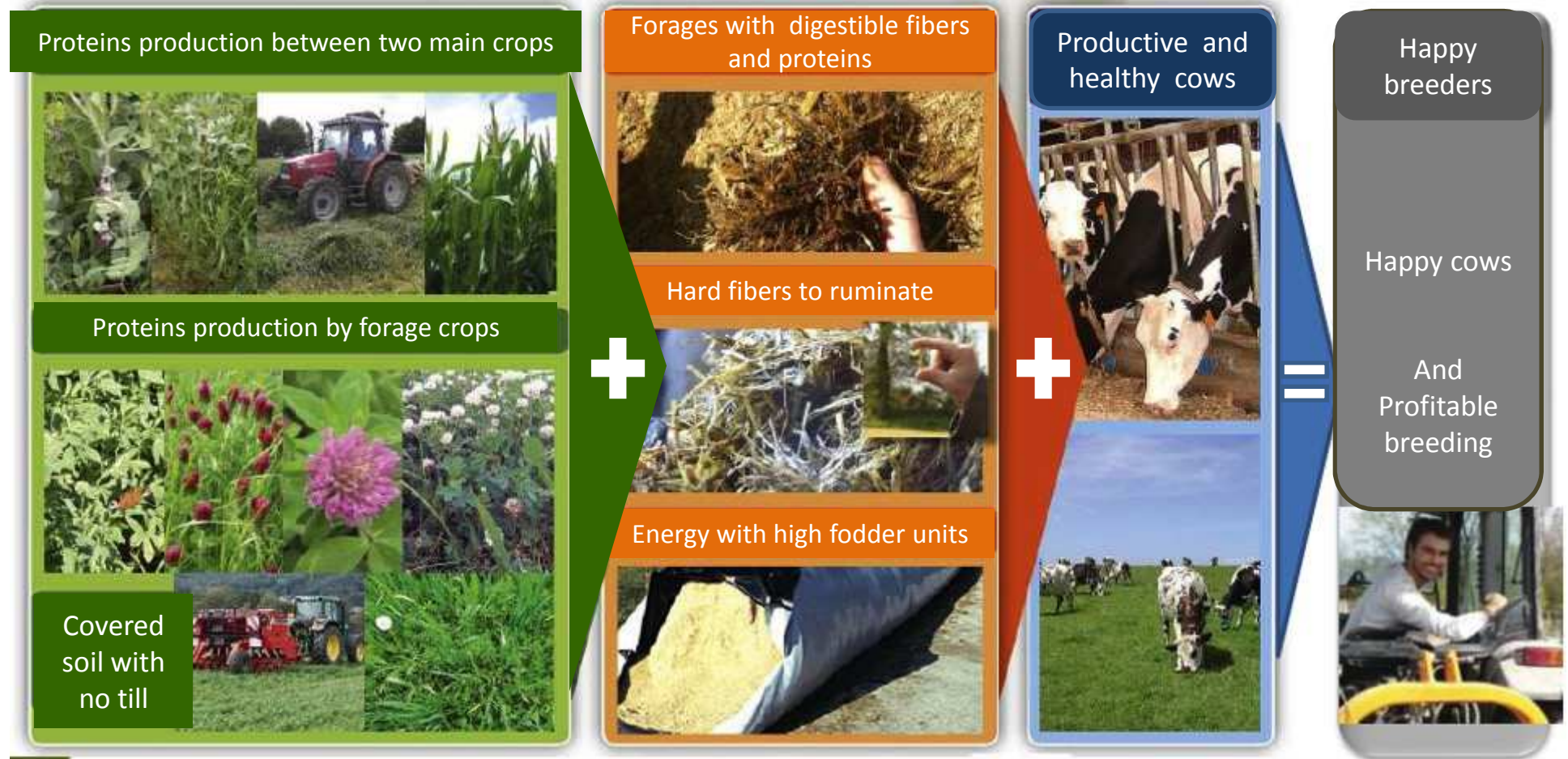
No pollution by enteric fermentation and livestock breeding
The current model does not take into account the productivity and soil health
Is our actual measurement system accurate ?

Perspective for the new CAP project

- 89 M cattles in EU representing +/-25% of the consumption of the 36 Mt of imported soybean
- High protein level forage feeding would reduce our dependancy on Soybean on about 10Mt
- 1 ha = +/- 4t soybean
- The future CAP protein plant could concern 7M ha soybean in EU and include policies to support high protein fodder production and valorization



Conclusion: there is a need to invent a new dairy systems to create a carbon sink !



Producers Work



And +...

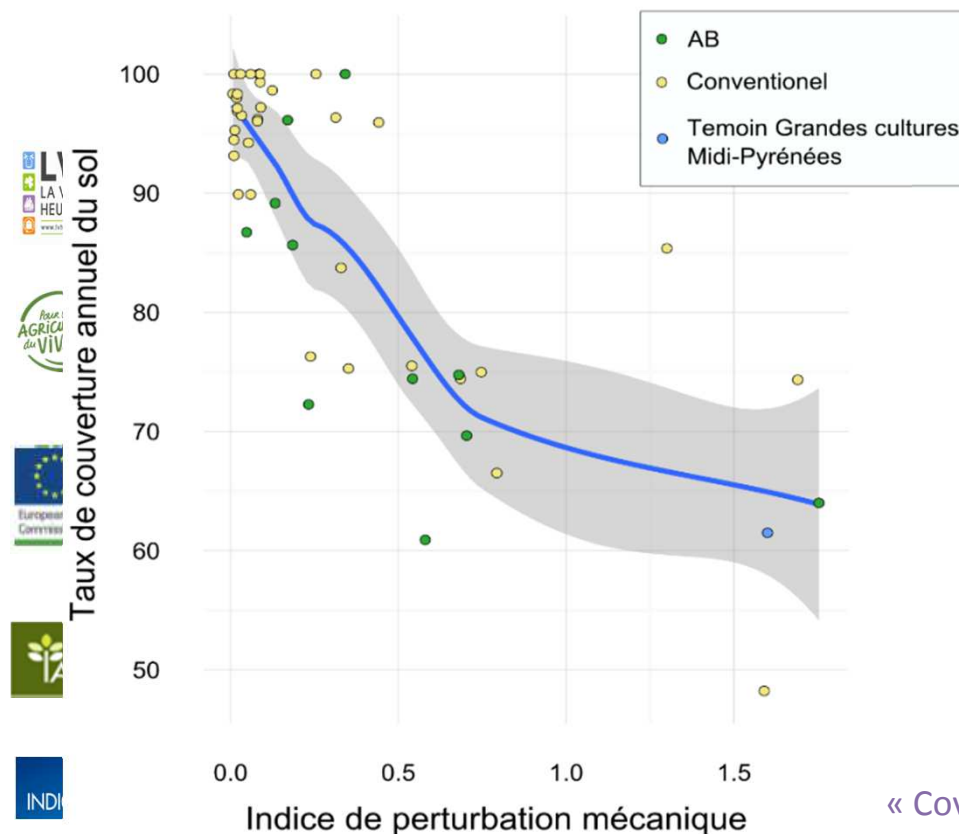
- ✓ **More biodiversity** (living soil, flowers, bees...)
- ✓ **More carbone storage in soil and plants**
- ✓ **Low inputs** (fertilizer, fuel, soya, grain)
- ✓ **Few nitrates and erosion**
- ✓ **Cows in better health**
- ✓ **More nature**
- ✓ **More profitability for the breeder**
- ✓ **Etc...**



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Pioneering Farmers Follow Up and Results

+ soil cover and – soil tillage



Ref. practice
150 days with bare soil



AGREAU practices
20 days with bare soil



« Covered soil + No tillage + Agroforestry »

Stéphane Gatti, agriculteur pilote du programme Agr'eau



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Pioneering Farmers Follow Up and Results

Ref : calculation with actualised humus bilan from Dupuis-Henin model, INRA, 1945, 1990, 2011

Humification > Minéralisation

Comparaison de l'évolution du stock de Carbone du sol (0 : 30 cm) en fonction des pratiques, des rotations culturales et des retours au sol des matières organiques fraîches et exogènes pour des rendements équivalents

