Combine implementation in western France

Harvesting roadside grass in Brittany : Aile and CC22 study the logistics aspects

Manchester 09/09/2015

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COMBINE

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Harvesting area tested in western France

Roadside :
The verge (security pass)

Old rail way /
Hiking trail

Roadside :
The verge, the ditch and the bank (security pass)

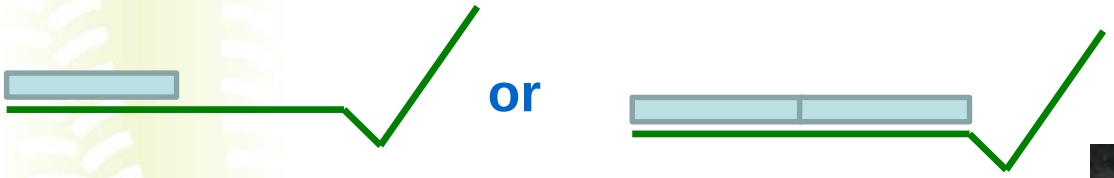
Interchange, Grade separate intersection

Motorway service area

French mowing habits on road side

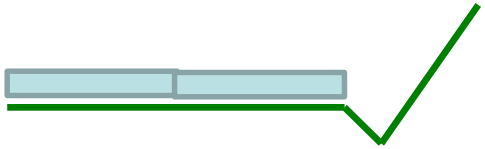
Harvesting times and corresponding areas

1st pass / Mai-June / flowering orchard grass



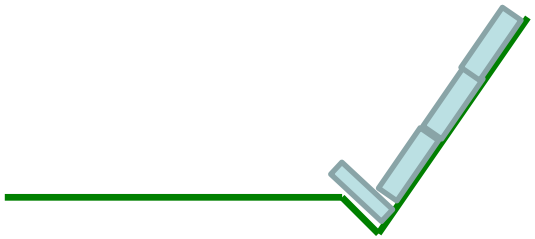
or

2nd pass / middle end of August



1,60m width

3rd pass September-October-November

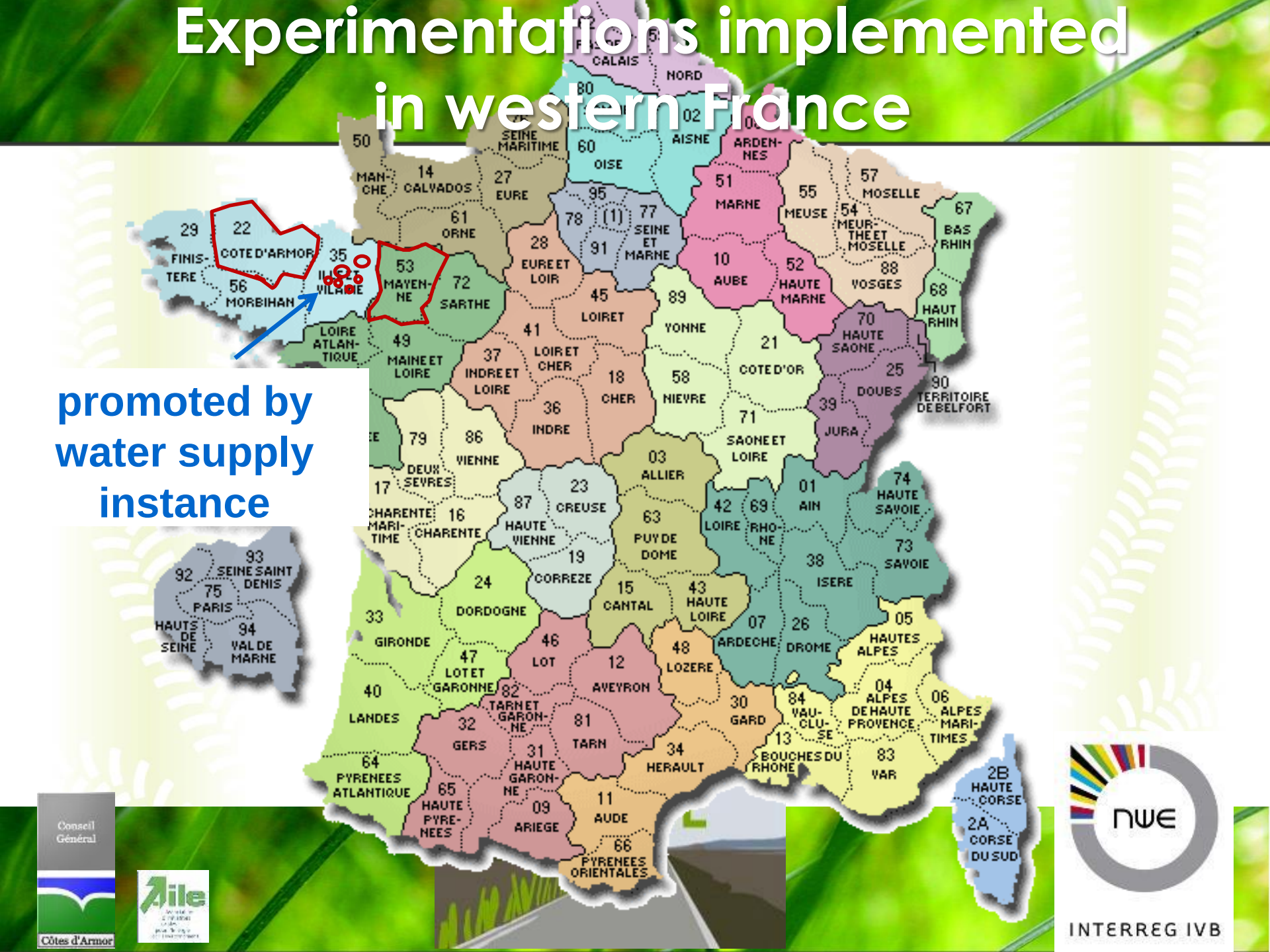


1,20m / 1,25m width

km* = km driven


S.A.R.L. E.V.A

Experimentations implemented in western France



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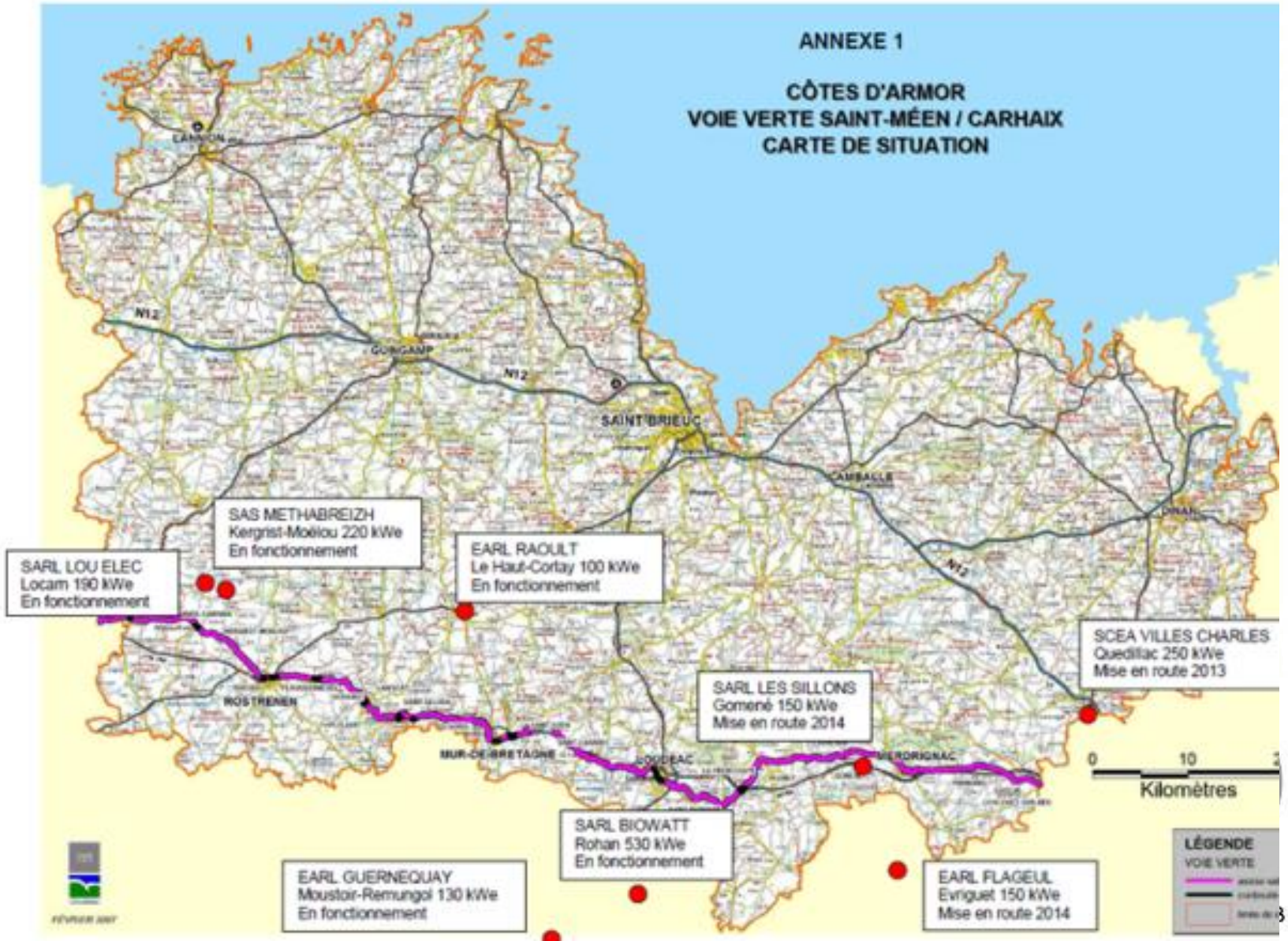
Logistic costs : classic trailer



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Logistic costs

Harvesting operation & transport included if < 10km

Contract 3 years + 1

*20€ to 50€/km**
Service agreement

Classic trailer adapted

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Logistic cost : classic trailer

Telescopic
35€/h

Collected with a classic trailer,
transported with a semi-truck.

Semi-truck
60 à 90m3
70€/h soit 2,5€/km

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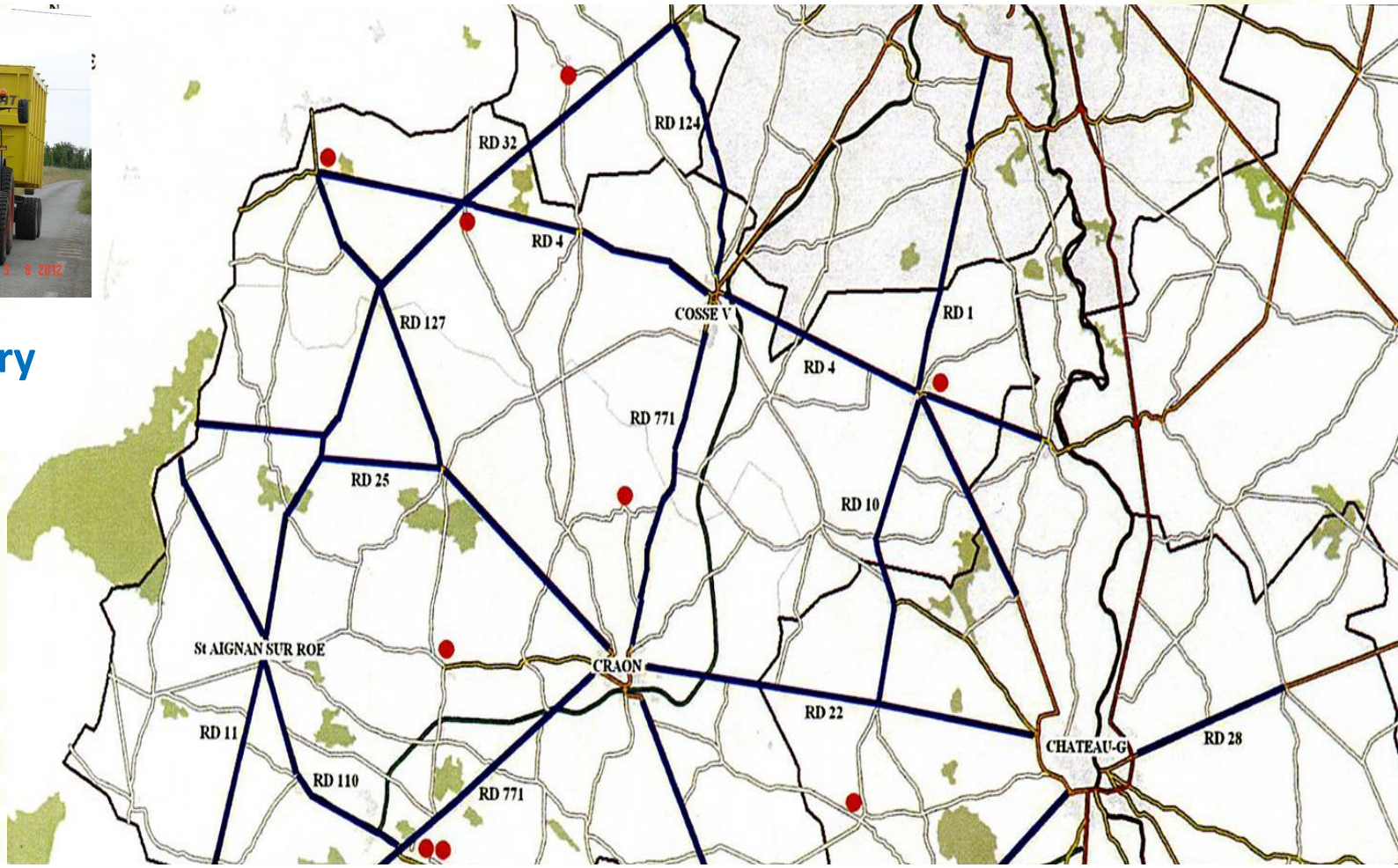
Logistic costs in Mayenne

- Grass delivery points



30 kmx2 is the time to fill a caisson

If more than 30 km, grass delivered to farmers for co-composting

Logistic costs

Harvesting operation & transport included if < 10km

Approx 130K€
Invest + tractor 70K€

Tractor Min. Pwr 130hp, front PTO, front loader capacity 2,8T Mini.
Shredder cutting width 1.6m,
Aspiration turbine flow 240m3/min, pipe diameter 300mm.

Approx 280K€
invest

Shredder cutting width 1.2m,
Hook lift caisson

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Logistic costs

Extra transport if > 10km

Approx 120K€ invest

Switch between the filled to the empty hook lift caisson

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Economic results

Type of Road **Harvesting time**	**Green Lanes Côtes d'Armor,** **May – June**	**County Roads of Mayenne** **in May-June and August :**	**Municipal roads** **May-June and August**
Delivery system	Direct delivery or platform	Removable containers carrier	Direct delivery < 10km
Road distance covered	145	480	80
Distance travelled by mower (km*)	290	960	640 160 in May /480 August-Sept
Safety vehicule	No (green lane)	Yes	No
Intervenant	Contractor Gilles LEJOLY	Council employee CG53	Contractor EVA
Yield (t FM/km*)	**0,77**	**0,85** 1,0 in May and 0,6 in August	**0,63** 1,0 in May and 0,5 in August
Cost (€/km*) : ***Mowing without harvest***	**48** *28*	**48** *34*	**33** *29*
Cost (€/ton) :	**62**	**57**	**53**
Fuel spent per km* **per ton** ***Mowing without harvest***	9 l/km* 11l/t *4l/km**	7,5l/km* 9 l/t *3l/km**	7,5l/km* 9 l/t *3l/km**
Cost of litter pick up (€/km)	*No pick up*	**40**	*No pick up, but check it the 1st year*

The additional cost

How to grasp the calculation?

- How much costs the classic mow: reference point?
- Scale of the harvesting test? Comparison of 500km “classic mow” with 20km of harvesting experimentation
- A cost of treatment if there is no energy market
- Enhanced safety device
- Litter removal (when traffic higher)
- The deduction of traditional mowing costs
- The short and long-term benefits

Short and medium term benefits

Societal aspect and collective interest

Cleaned surroundings without litter on roads


Source : CG53

Territorial initiative networking communities and farmers

Long term benefits

- Environmental issue
  - Impoverishes the soil and improve plant diversity -> botanical studies (2018?)
  - Helps to reduce the [N] runoff
- Economic issue
  - Leveling of the verge, cleaning ditches, drain and purge of the nozzles : reducing work frequency?
  - Decreased number of passes/year for maintenance?

The return of experience from biogas farmers and communities dealing with the young spring grass

Recommendations for harvest

Technical aspects

– Grind as small as possible and avoid long grass

– Cutting height: 10 cm mini to avoid the presence of sand and soil

– Easier to pump if grass is a little wet

Product conservation in the farm

Making the silo / Compaction

Cover the grass

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First lessons from the farmer biogas producer

Technical aspect

–Methanogenic potential is correct in laboratory tests and comparable to grass silage (52 Nm3 CH4 / TMB)

–Despite the care taken at harvest, the grass length is too long

–MS% <= 35% to avoid leachate production and high compaction

Should we grind grass? Should we haylay grass to dry before ensiling? Should we unpack before incorporation?

Should we implement a trapping device of stone and metal ?

Experimentation in Belgium

Cost of experimentation
36€/T

Source : GR3
Grass as a Green Gas Ressource

Experimentation balance of the greenways

Ful consumption

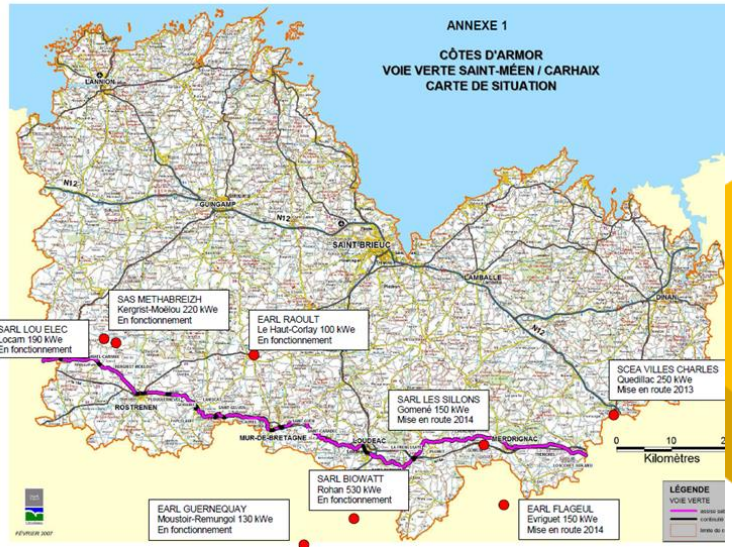
Liters of fuel	"Classic mow" without collect	Harvest
Liters/ km*	3	10
Liters/ton	6	19

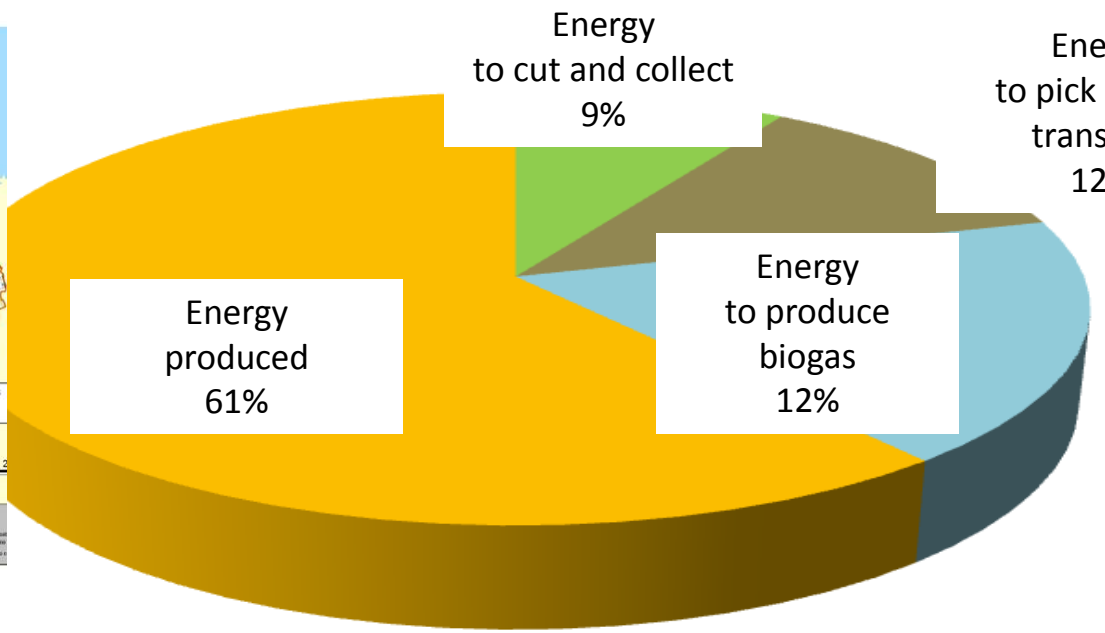
Energetic balance

1 ton of grass produce **520 kWh** of primary energy of biogaz.

For **1kWh** used, **2kWh** are produced ; **2,6kWh**

if classic mow fuel consumption is deducted





Recommendations for communities

How far to transport the material?

- Go and return distance corresponding to the filling time of a trailer or the hooklift caisson
- A radius of 30km

Thank you for your attention!