Farming Connect Management Exchange

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Normandy, France

Hedges: A Renewable Source of Energy

November 2016

1 Background

Having spent my childhood in the countryside I have always had a keen interest in land management. Having completed my HNC qualification in agricultural management at Cannington College, Somerset I pursued my dream of becoming a livestock farmer. I started out with rented land and establishing a flock of early lambing ewes and a fire wood processing business. As the business became more established, in 2012 I have been able to purchase a 126 acre dairy farm to establish a herd of jerseys. I believe in the sustainable use of resources and practices and so made the decision in 2016 to start converting the farm to organic.

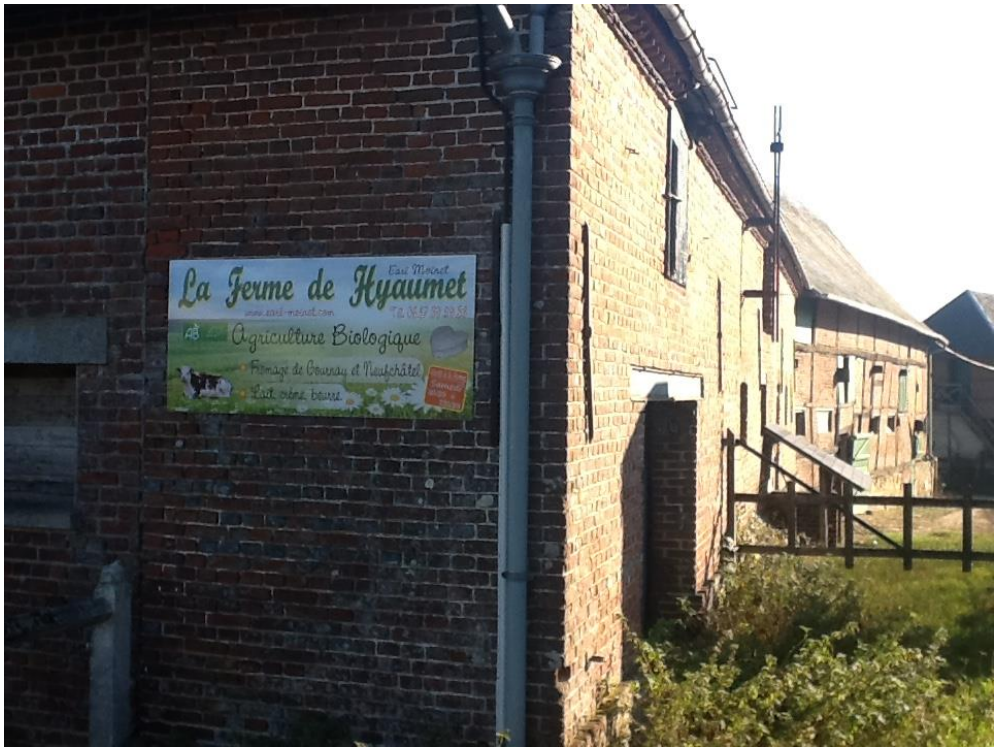
Having a farm woodland and wood fuel business I wanted to explore methods to use the network of hedges on the farm for bio fuel. By doing some research on the computer I became aware that such management practices were taking place in France. I decided to carry out my Farming Connect Management Exchange studies in the Bocage area of Upper Normandy as the undulating densely hedged region has many similarities to South West Wales. My aim of visiting the area was to meet with farmers to see the various management techniques used in managing their hedges to produce bio fuel. I also wanted to see how the hedge fuel could be used on farm as well as being sold into a co-operative.

2 Itinerary

Sunday 27th November;

Traveled to Normandy and met my hosts at Ferme de Hyaumet late afternoon. I planned with my hosts Laurent & Veronique an itinerary of visits.

Cronfa Amaethyddol Ewrop ar gyfer Datblygu Gwledig: Ewrop yn Buddsoddi mewn Ardaloedd Gwledig
European Agricultural Fund for Rural Development: Europe Investing in Rural Areas
Llywodraeth Cymru Welsh Government

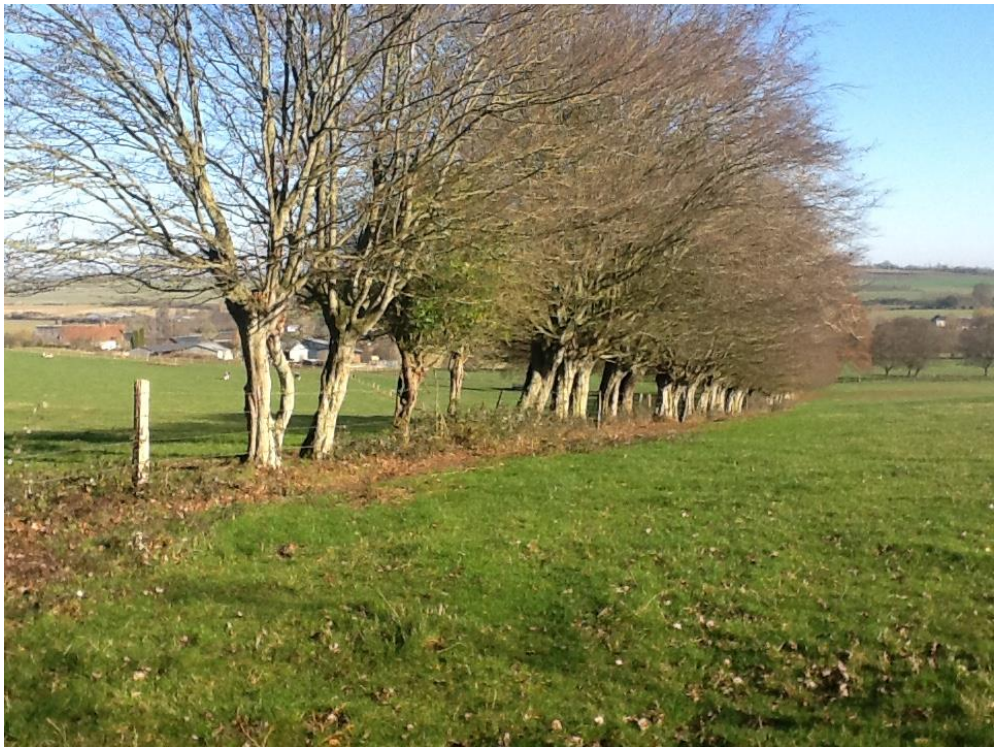


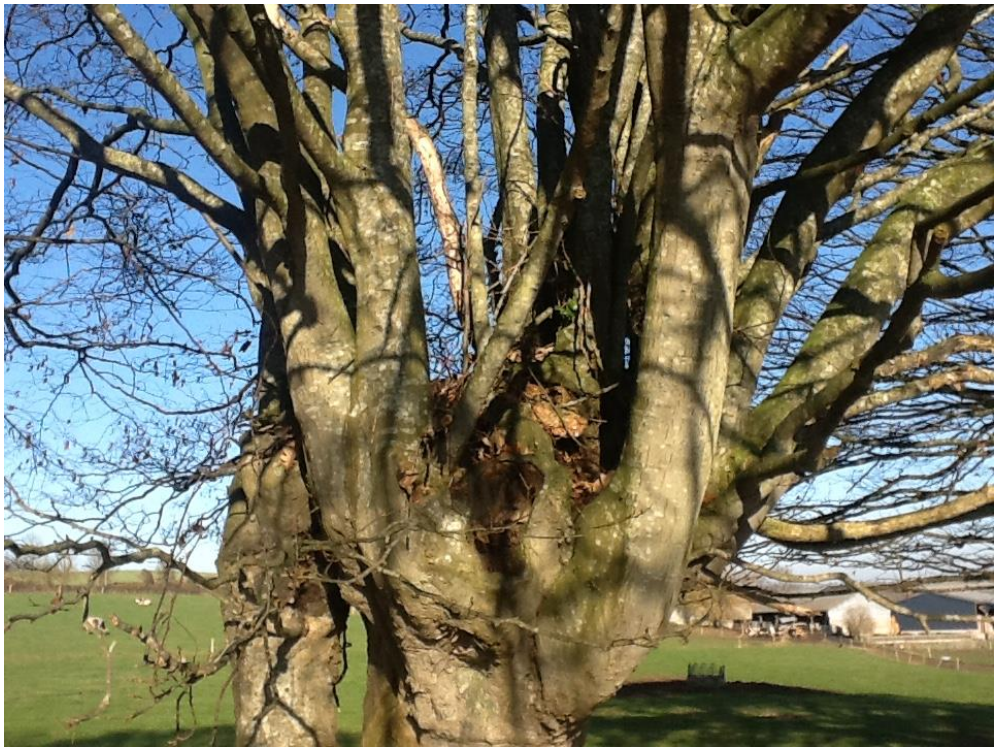
(Host farm La Ferme de Hyaumet)

Monday 28th November

Had a tour of host's organic farm. At Ferme de Hyaumet they produce milk for cheese making from a herd of 80 traditional Normandy cows. The farm prides itself in being self-sufficiently sustainable and relies on minimal purchased inputs. Cereals and forage are all produced on farm with the main forage for the cows being hay. The grass/clover leys produce up to three cuts and are all made into hay using a barn drying system that uses hot air created by a cavity roof. Hay is needed to produce the desired milk quality to produce the unique flavours and traits for the on farm cheese.

The farm is exploring how it could further improve the efficiency of its current heating system. I was shown around the farm to look at the network of hedges and the species that were growing. Hornbeam, alder, oak, chestnut, hawthorn and blackthorn were present in the hedgerow. Currently the farms heating system is open fires and oil fired boiler. It produces its own logs by coppicing horn beam in rotation. The plan is to replace the oil fired boiler with a wood chip boiler and use chipped hedge cuttings to fuel it. I was able to see a plan of how the network of farm hedges were to be divided up for a rotation and some sites had been selected for hedge planting to increase the amount of hedge length on the farm.



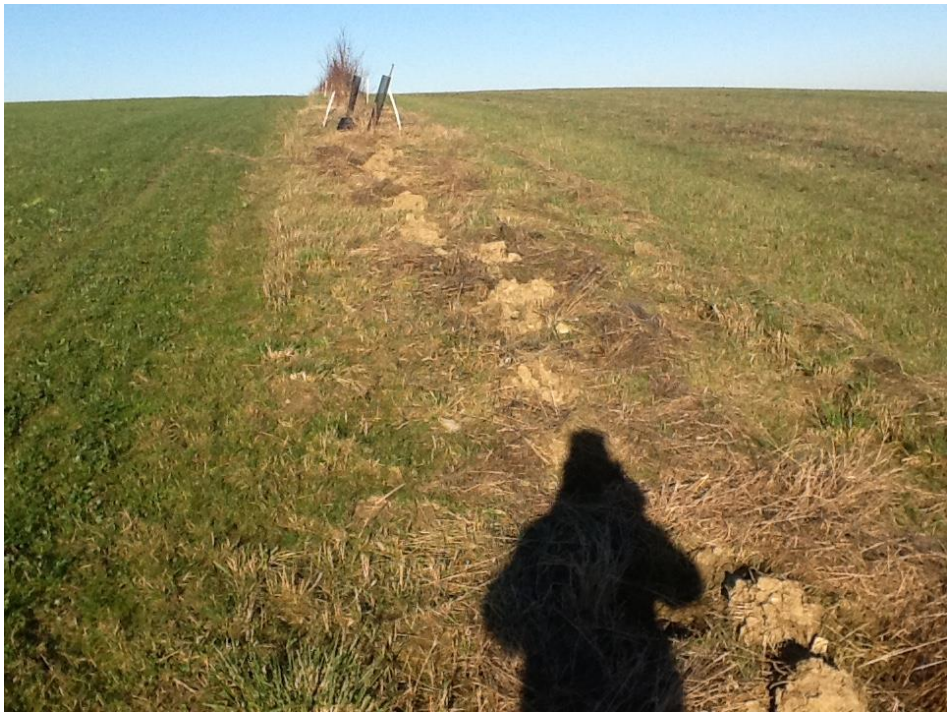


(Hornbeam in pollarding rotation)

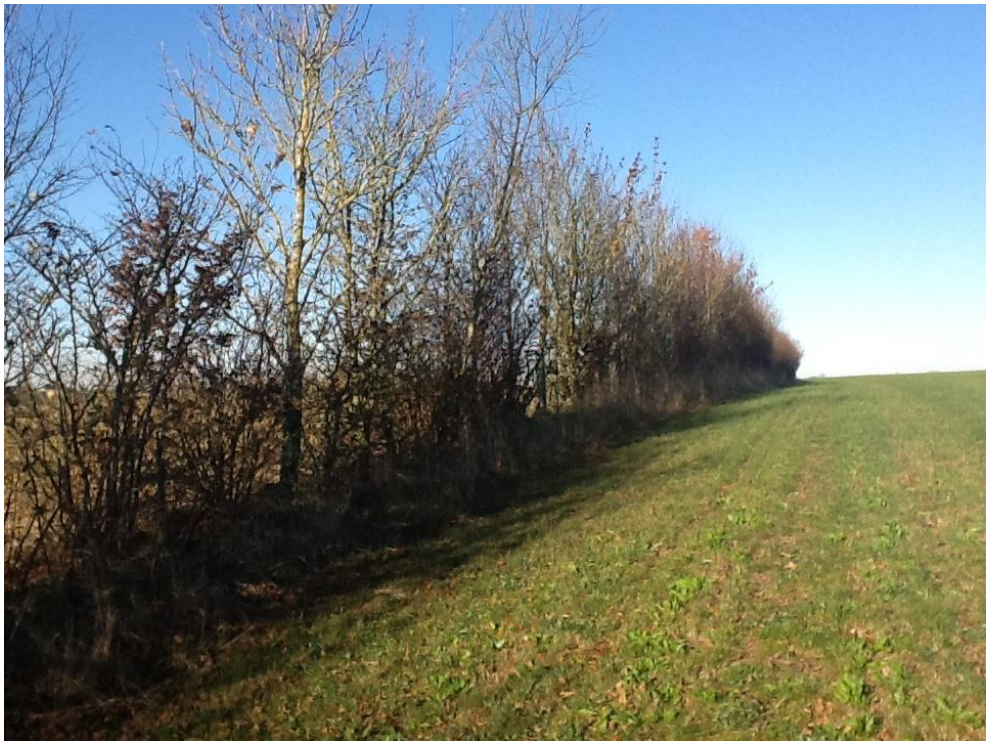
Tuesday 29th November

Travelled to a tree nursery, Nord Seine Foret to collect a mixture of hedge plants consisting of hornbeam, alder, oak and hawthorn. Started planting and looked at hedges previously planted in 2013 & 2003.

(Local tree nursery specialist)

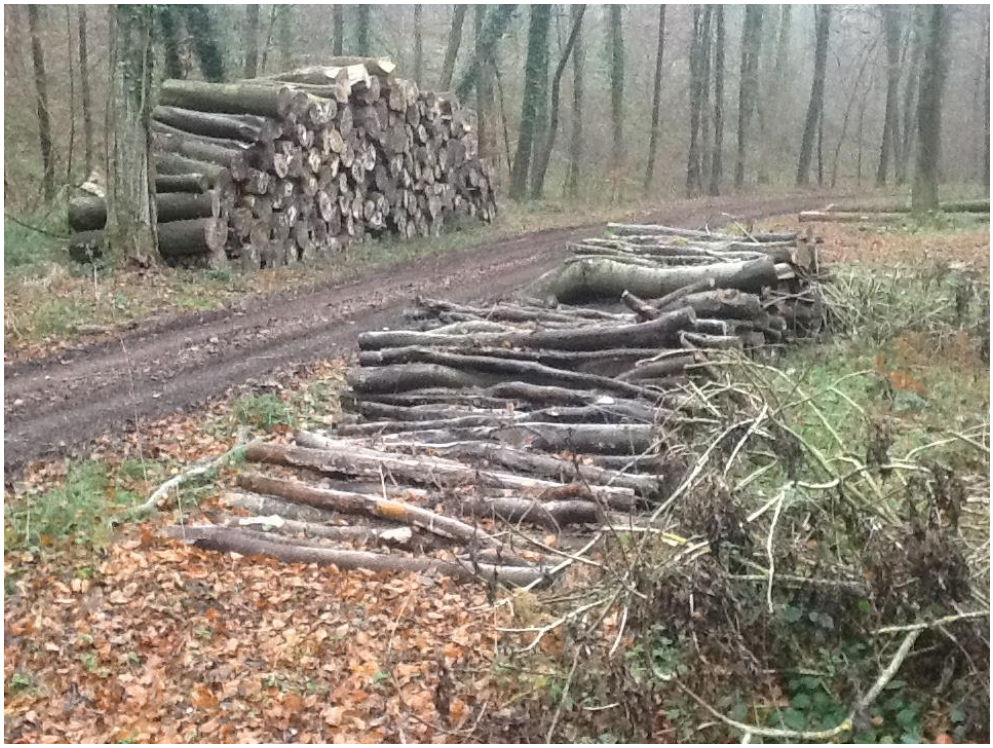


(Preparing site for new hedge planting)



(New hedge established in 2003)

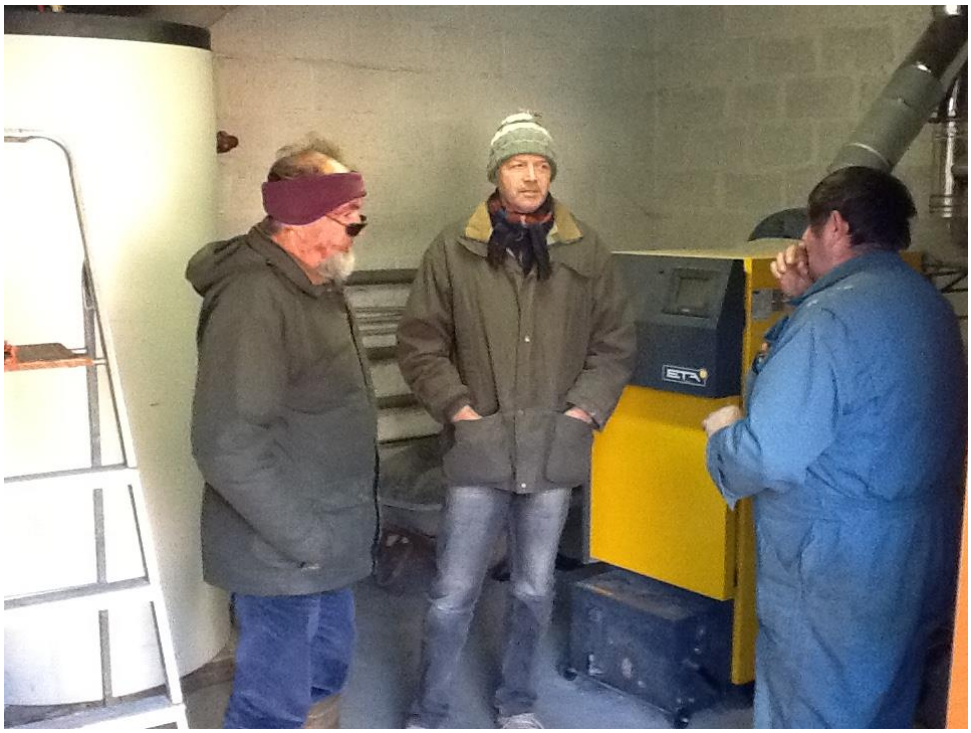
Using hedge material as bio fuel is in direct competition with forestry grown timber. I visited Foret De Lyons, a large forested area nearby to look at how the beach forest was managed for timber production.

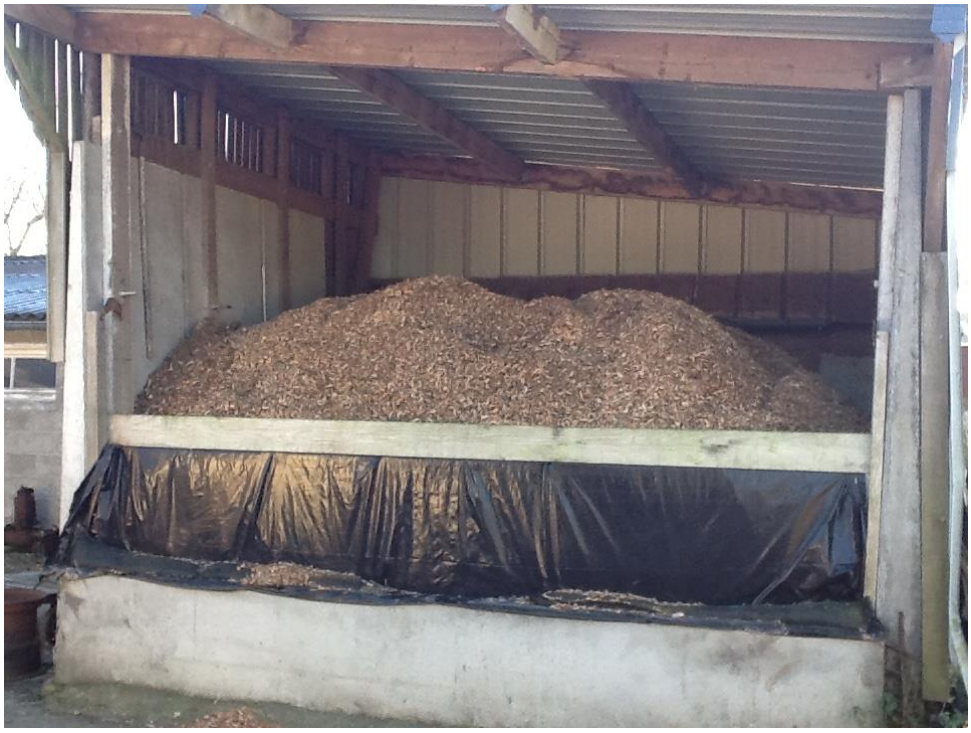


(Forest management at Foret De Lyons)

Wednesday 30th November

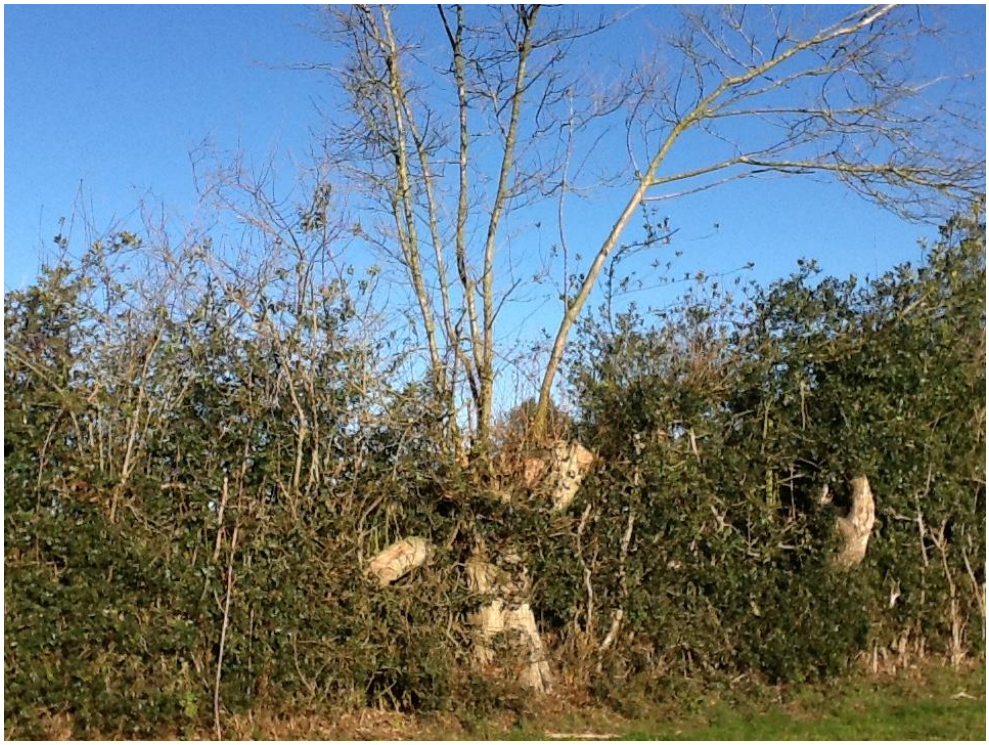
Visit with Mr Pinguet who runs an organic family dairy farm. This farm was able to showcase what could be achieved by using your own network of hedge rows to produce wood chip fuel. The farm house is heated self-sufficiently using the wood chip fuel. A wood chip boiler has been installed in an out building and can be remotely controlled by a mobile phone. The wood chip is stored in a bunker and automatically auger fed into the boiler.





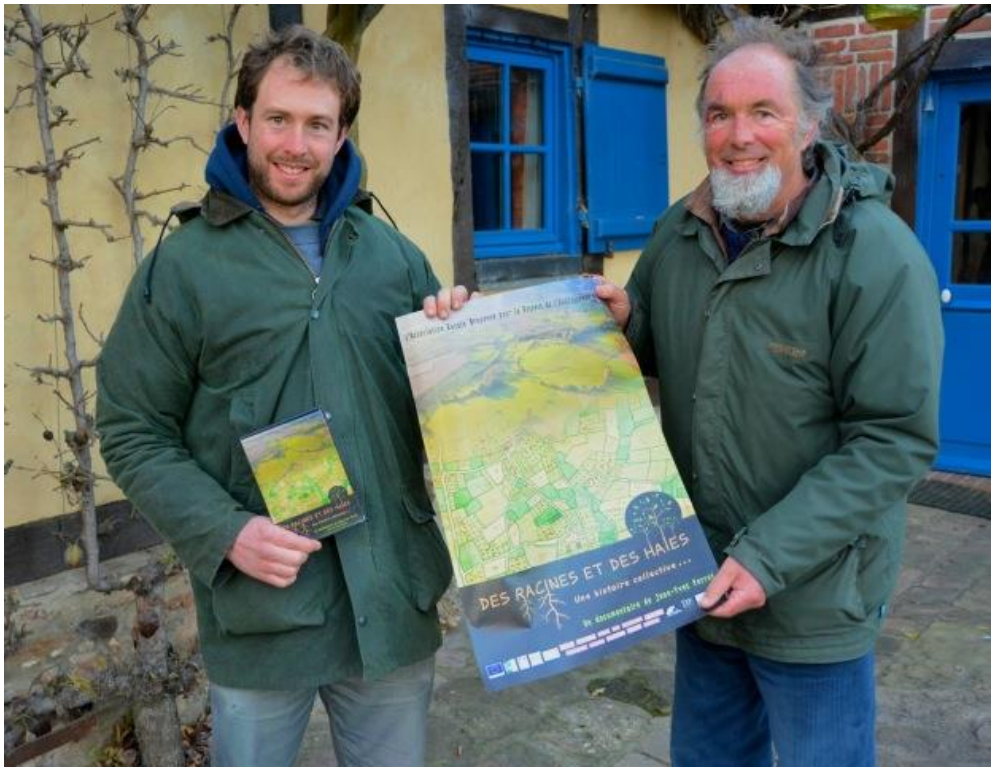
(Wood chip bio-mass boiler and wood chip hopper)

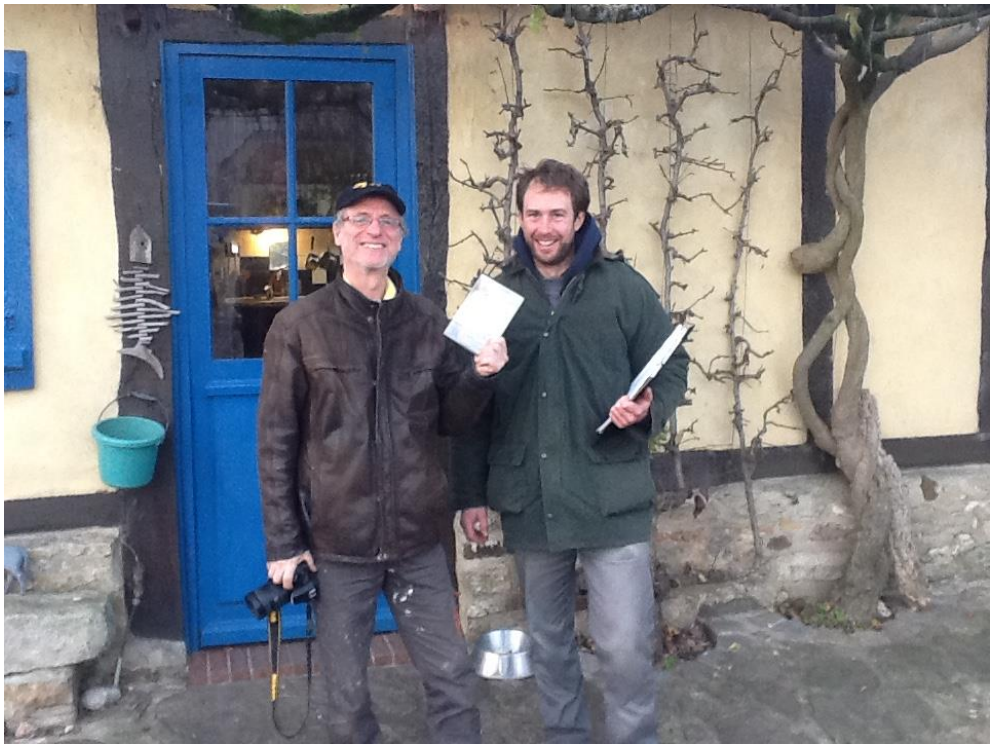
In order to produce enough wood chip for a season, 300m of hedge is pollarded. Mr Pinguet chooses to pollard at 2.5m over coppicing as the hedgerow is also required as a livestock fence. The hedgerows are set up in a planned 12 year rotation. This plan is a simple map of the farms hedges rows identifying by year the rotation pattern. All pollarding is carried out during the dormant season November - February. The pollarded material is left in field stacks ready for chipping in April. It is important that the material has no leaves present and no grass inclusion as it makes it unsuitable for the bio mass boiler and can cause the chips to self-combust during storage. The wood chip is barn stored over the summer to achieve an optimum 15% moisture. A hand held moisture meter is used to determine this before the chip is loaded in to the boiler hopper.



(Example of hedge pollarded 5 years ago)

Visited local film producer, Jean-Yves Ferret. ‘Burn hedges to save hedges!’ To raise awareness and promote the environmental benefits of this system he has produced a film ‘*Des Racines Et Des Haies*’. Supported by a local voluntary association, called Arbre. I watched the film which has been shown in many of the surrounding towns and villages to raise awareness of the ecological and financial advantages of this system. A version, sub-titled in English is planned.





(Jean-Yves Ferret film ‘Des Racines Et Des Haies’)

Thursday 1st December

Meeting with Denis Hernandez,
Consultant, Association les Defits Ruraux.

(Meeting with Denis Hernandez and I)

He explained in detail the work of CUMA, *Cooperative d'Utilisation de Materiel Agricole* which operates in Upper Normandy, the *departements de Seine-Maratime et de l'Eure*.
This co-operative borrows a wood chipper with grab from another cooperative, *Bois Bocage Energie*, in the *departement de l'Orne*.

CUMA was formed in 2012 to develop the use of hedge cuttings as a renewable energy source. Initially formed with 13 farmers, there are now over 50 and every demonstration of the benefits of using hedges as an energy source attracts new members. As a result of this expansion CUMA is now planning to purchase its own wood chipper with a capacity to chip 20 tonnes an hour with the help of an EU grant.

- Hedges will provide 5 tonnes of wood per kilometres through annual growth = 1,500 litres of fuel, about 2 kilometres of managed hedge is sufficient to feed a 50kwatt biomass boiler.
- Hedges should be cut every 10-15 years. For replanting choose varieties like hornbeam, alder, oak and chestnut.
- 176 kilometres of hedges managed sustainably for the production of wood chips.
- 17,600 tonnes of wood chipped.
- 7,700 tonnes of dried wood chip produced

The advantages

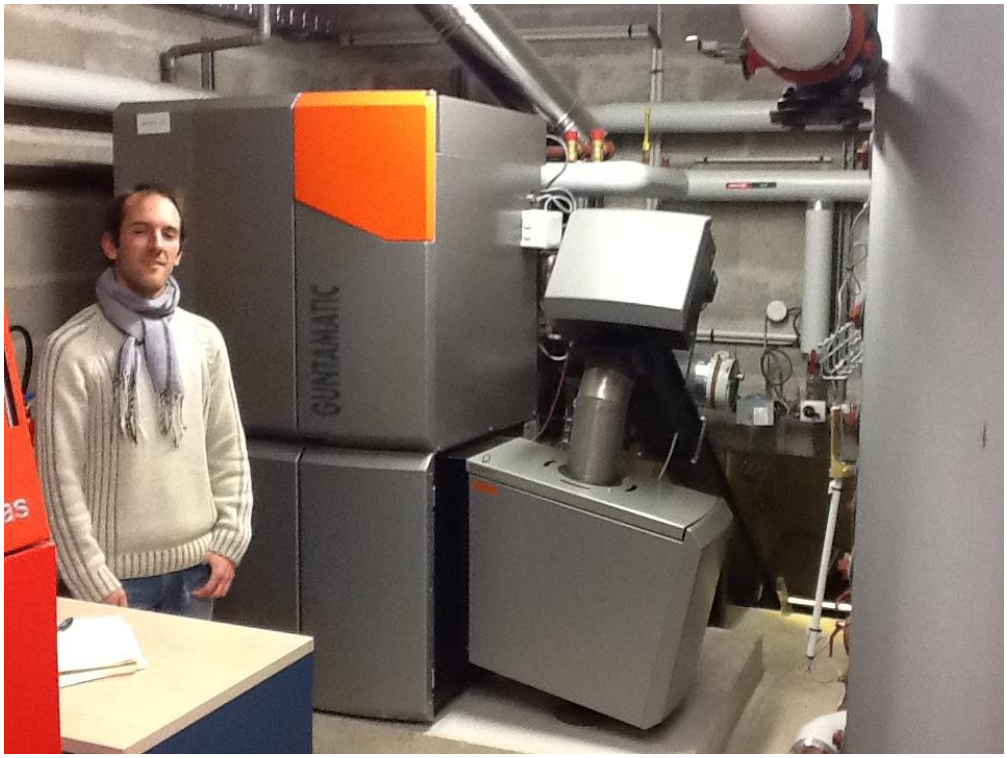
- local source of renewable energy
- Every size of branch is chipped including smaller branches which before were wasted or burnt in the field.
- Uses all types of wood including those with a lower calorific value like poplar and willow.
- Environmental - biodiversity, less run off, better water quality.

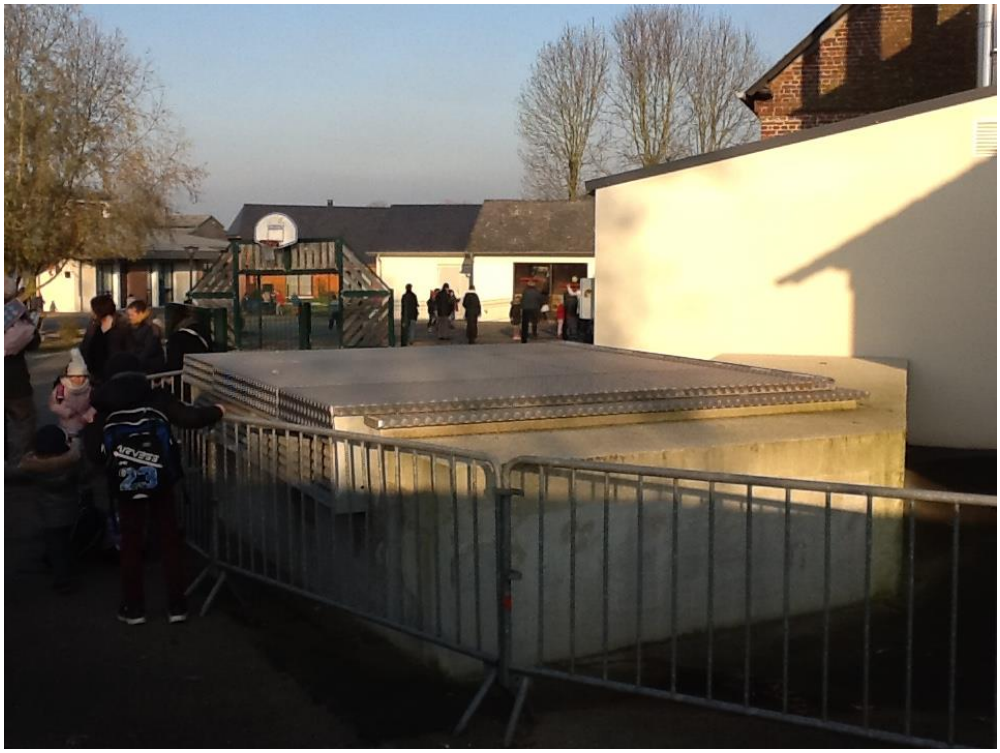
Price of chips

- Dry (less than 25% humidity) is €100/110 per tonne
- Green (45% humidity) is €60 per tonne

Marketing

- To enable individual farmers to become self-sufficient in energy by using the wood chips from their hedges to feed a biomass boiler (Pinguet).
- To feed the biomass boilers of local public buildings. For instance, in his own village of Allouville Mr Hernandez showed us the recently installed 125 Kwatt biomass boiler which was fed with wood chips from hedges and provided heating for a surface area of 2,200m2 for the school, the Mairie and the offices of Defis Ruraux.

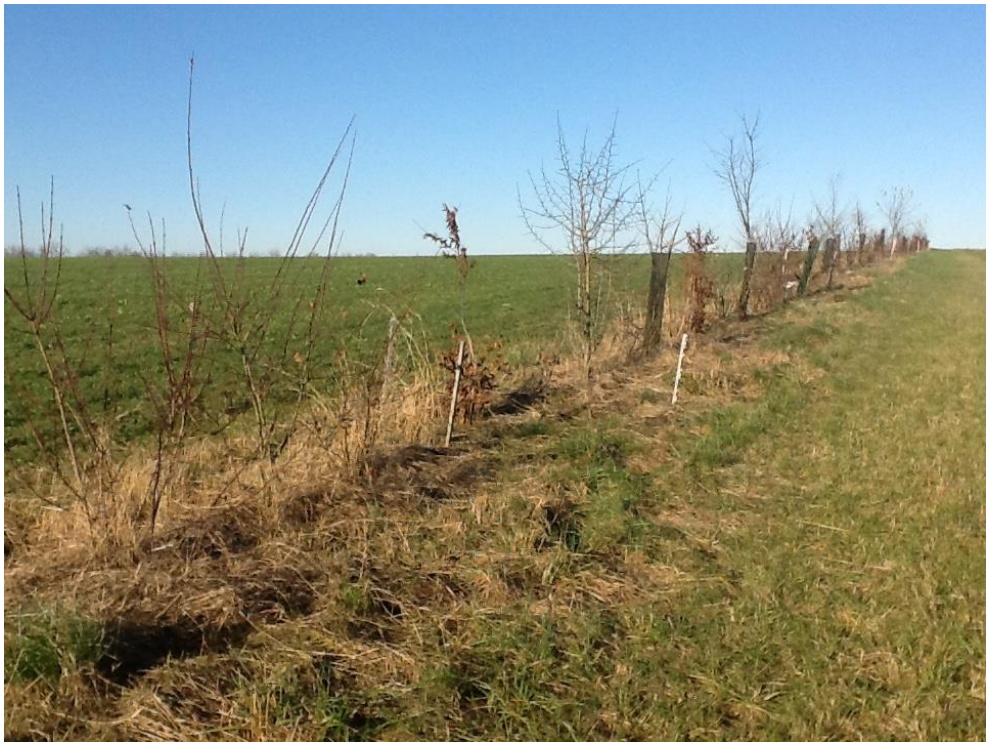




(Bio-mass boiler and wood chip storage hopper for the school, the Mairie and the offices of Defis Ruraux)

Friday 2nd December

Looked at the host's farm hedges and continued helping with the planting of a new hedge.

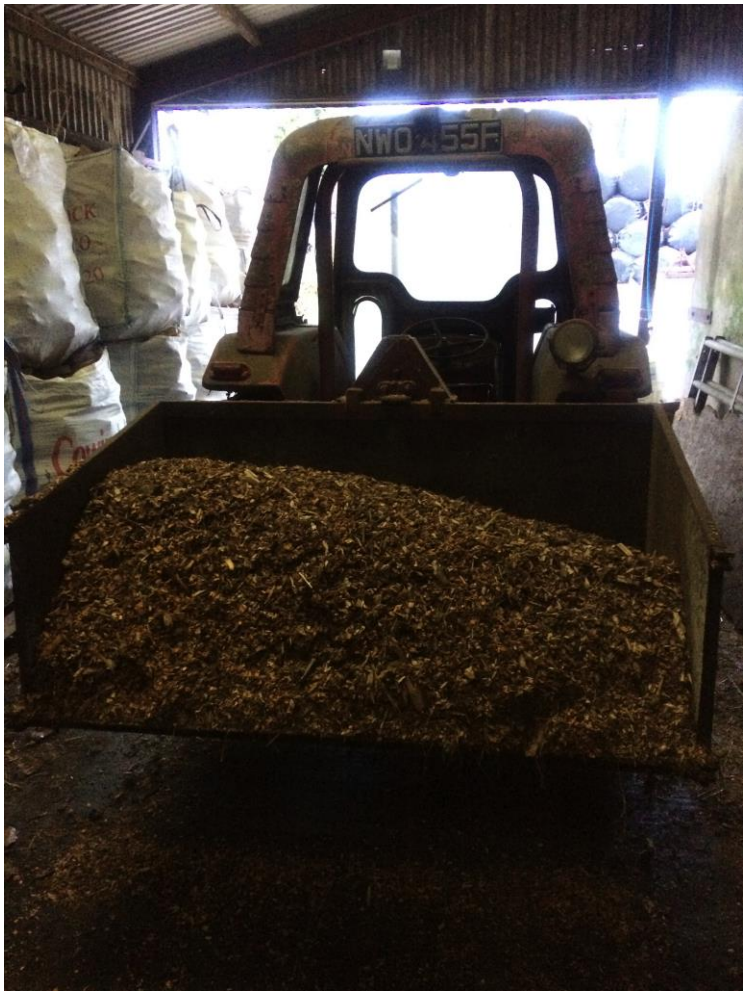


(New hedge established in 2013)

3 Next Steps

From the knowledge and experience gained from the Management Exchange I am now able with confidence to plan and implement a hedge rotation on the farm. My future aim is to install a wood chip fed biomass boiler to heat the farm house and be self-sufficient in fuel. I have been able to learn of the timings and techniques used to grow, harvest and manage the hedgerow. I now understand the equipment that is required in chipping and storing the wood chip. I have been able to see up to date bio mass boilers working and the technology that is available.

On the farm I have currently started chipping the hedge waste from hedge laying and using it as cow bedding. This was another use for hedge material that I learnt of on my visit. My interesting and informative visit to Normandy has enabled me to build a network of likeminded people who I am able to turn to for advice in the future.



(Home produced wood chip for livestock bedding)

Next, I would like to explore the possibility of starting a co-operative group of hedge chip producers that can supply wood chip to public buildings.

In summary, the key message I would like to share with the industry is that hedges are already important for environmental & ecological reasons in creating biodiversity. They are also renewable and sustainable sources of fuel for the future.