

European Agroforestry Conference Report

In late May, 250 Delegates, from as far away as China and Brazil, with a large contingent from France and Europe gathered in Montpelier for the 2016 European Agroforestry Conference. Research, practices and experiences were shared from academics and managers alike were shared across 2 days of conference and 1 day of tours. The conference began with an inspiring opening talk by Mark Shepard from Wisconsin USA, only briefly overshadowed by the presence and address by the French agriculture minister (who is an advocate of agroforestry).

Without doubt the highlight of the event was the farm tours. On day 2, we visited innovative farms across the region, including: examples of silvopasture (wood pasture), silvoarable farming and an olive grove/market garden agroforestry system.

Perhaps the most innovative of all of these was a 250ha mountain farm, working to regenerate landscape and livelihood by controlling and utilising scrub growth on the farm. As well as sheep they keep 100 pigs on the farm, which historically were fed 80% from off-farm inputs (grain). 100 pigs require an area of 50ha of arable land in this area to keep them fed.

Historic over-grazing and mismanagement followed by years of neglect has meant that the upland landscape is dominated by box under-storey growth, that chokes canopy trees and shades out grasses and other valuable forages and wild flowers. Although it's a legal requirement in the area to control scrub, this farm (and a group of 4 others) has taken it to a new level by developing an ingenious multi-stage process to mechanically control (and harvest) the box growth, shred it, and up-cycle this material into bedding for horses/composting it (using it as a heat source for central heating in the house) and finally as a feed stock insect larvae that are high value pig/poultry fodder. The clearance work then opens up new "glades" within the existing wood pasture complex that provides diverse forage for sheep and also pigs. These opened pastures are rich in species.



This is an excellent contemporary example of the "Jean Pain" system in action (in fact, they have incorporated one of the patented chipper machines in their harvesting rig and count one of his family members amongst the design team).

The harvester unit is a beast of a machine, based around a giant pair of secateurs, modelled on the pincers of a beetle, (biomimicry in action). And the giant hydraulic arm it's mounted on is reminiscent of elephants trunk, and as Mark Shepard commented the machine is "doing what the mastodon used to do in the ecosystem", it's a shame these great beasts are no longer around to do this work (since they would do it with no need for fuel or repairs) all the while, making clearings for browsing and grazing animals to occupy.



The harvester yields around 1600m³ of biomass per year, with

a fairly small fuel budget, since most of the work is done with hydraulics. Surplus biomass is arranged into large piles/windrows, roughly 100m³ in volume. As composting takes place the pile heats up to between 50 and 80°C. Water-filled IBCs are inserted into the pile and water from the farm house's central heating system is circulated through the tanks, providing 50°C hot water for 6-12 months!





The icing on the cake for this system, even apart the nifty way that heat from large compost piles is harnessed, is the way that the cooled, composted wood chip is then used as a feed stock for insect culture. Driven by a desire to make best use of the woody biomass and derived from a simple question (what creature naturally eats wood chip?) and observation/knowledge of the indigenous fauna lead to a solution that makes this a truly sustainable (some would, rightly, call it *permaculture*) system. Instead of just being spread on beds as a soil conditioner/fertiliser, now, the partially composted wood chip is used to feed beetle larvae, that are fat and juicy, these are then fed to pigs

directly, replacing 60% of their grain ration. According to the farmer, 10 larvae are equivalent to 2kg of grain! And what's more, they are self-rationing when it comes to the larvae, rather than eating the grain without end. Now the pigs are 80% fed from on-farm resources. One day we might eat them directly - this would definitely reduce the need for "off-farm inputs". This work is saving 50ha of grain land from another location, just by some clever thinking.

Next we visited a silvoarable system, at a chateau where we had lunch. The farm contains a large block of 10-year-old hybrid walnut and arable alley cropping planting. Trees are planted in narrow strips of grass with arable rotations carry-out in the alleys. Here we saw an interesting selection of hybrid cultivars with very different leafing times, some having not even broken bud! These late leafing varieties will allow more light into the arable intercrops for longer in the year. These black walnut hybrids have been bread for timber, and as such provide little in the way of a nut crop. In this case the nuts are not harvested. What was starkly clear was how poor the state of the trees was, badly formed and harshly pruned. This illustrates clearly the importance of focus and attention from the farmer on the health and most importantly the form of the trees in an agroforestry system. Since these trees are mostly destined for veneers then the lack of straight trunks will likely be less of a concern, when compared to timber (saw log) applications, for which they would be largely unsuitable, or at least low value.



Some discussion on the causes of the poor shape of the trees. With local agroforestry extension advisor pointing to the issue of strong and variable winds in their region, incidentally both known as the Cevennes. With this in mind ideas were offered from the group about the efficacy of planted shelterbelts around the site. There was some concerns from locals about the unpredictability of wind direction, and they are not widely utilised in this region, unlike the neighbouring region of the Loire valley. That said, there was much agreement in the group that shelterbelts would be an avenue worth investigating. Especially as it is an established agroforestry system, widely practice in other wind-prone regions, like the US Mid-West.

There were other tree issues noted, to do with the southerly and continental climate. In this case issues with bark damage due to sun- and wind-burn. Currently, the main remedy sought is to apply white washes to the bark, to reflect light and shield the bark. Some delegates put forward the idea of planting shrubs close to the tree row. Thus shielding the tree bark from wind and sun. There's good experience of this in areas with long snow periods. One commentator proposed the idea of a row of currants on the sunny side of the tree row and a row of raspberries on the other. With sufficient clearance between the tree and shrub rows, this set-up will facilitate easy mechanical harvesting.

It was also pointed out that, as well as only making limited use of the tree strip itself the planting lacks diversity, another key intent of agroforestry. It was suggested that one way to add diversity, would be to plant wine grape vines on trellises attached to trees (perhaps above raspberry supports). This would tie-in with the vineyard wine-making activities currently taking place on the farm. This idea combined with the shrub plantings would make fuller use of the vertical space and the ground below the tree (the tree strips).



The final stop was a refreshing (and welcome shaded) end to the day. A market garden alley cropping system in an existing olive grove. The market garden was conceived- and is run by Odile and is a great example of how creative thinking can be brought to the subject of land access, utilising otherwise unused land, that otherwise would be a cost to manage, between long-term cash crop species. Odile has created a lovely synthesis of two distinct cropping systems - organic (biodynamic) market gardening and commercial olive production. The system is an example of some of the complimentary aspects that

agroforestry can bring, in the semi-arid Mediterranean climate of southern France, her lettuces and tender crops have protection from the sun and the air in the alleys is cooled from the dappled shade of the olive branches, and the ground below the competition for the olives from weeds and grasses is minimised. She is demonstrating what can be done with initiative and innovation, she is utilising cover crops and worm composts, as well as a reduced weeding regime that minimises the amount of soil disturbance and bare soil, whilst saving work, she says it works for her. And hers is not the only market garden alley cropping system currently working in France the idea seems to be getting some traction, we heard of another few examples from different parts of the country.



It's always a pleasure to go on farm visits, and "have a nose". Seeing what people are doing on the ground is always the best way to learn. There's always more to ask and about and enquire of but never enough time. My thanks to the organisers of the event and the farmers for sharing their work and their time and commend them for their commitment and passion in what they do. They are showing what can be achieved with trees and agroecology in practice.

What you can do

If you have a farm or smallholding with secure tenure then trees can form a part of a diversification programme. Offering protection for: cash crops, pasture and livestock. Provide additional income. Provide habitat for beneficial wildlife, and form part of an integrated pest management (IPM) strategy. Supply fertility for soil and crop. Produce biomass for: compost, heating/hot water.

The Woodland Trust is currently offering full grants for agroforestry plantings on-farm.

Links/Further Reading to French Agroforestry

SAS Buxor (Insect Culture Farm) www.buxor.fr

Market Garden agroforestry research project www.arbratatouille.projet-agroforesterie.net

Agroforestry training and research www.agroof.net

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