Agroforestry Survey:

A Summary of Responses

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Sophie Lewis
Agroecology Intern

Organic Research Centre,
Elm Farm, Hamstead Marshall,
Newbury, Berkshire,
RG20 0HR

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1. Introduction

This paper discusses the results of a survey conducted by the Organic Research Centre's Agroecology Programme to gain an understanding of how landowners in the UK are currently using the woody components on their land, in order to assess whether there is potential from landowners to gain more both economically and ecologically from the woody components.

This survey was intended to reach a wide audience of landowners that practiced both organic and non-organic farming. Organisations that helped to distribute this survey are listed in Appendix 1. The survey was a voluntary online survey, therefore the assumption is that landowners that took part would have had an interest in this topic and therefore may not be representative of all UK landowners.

From March 2011 to May 2011 57 landowners participated in this survey, and results from these landowners are discussed below.

2. Results

2.1 Farm distribution and characteristics

Figure 1 illustrates the distribution of participating landowners throughout the UK at the county level.

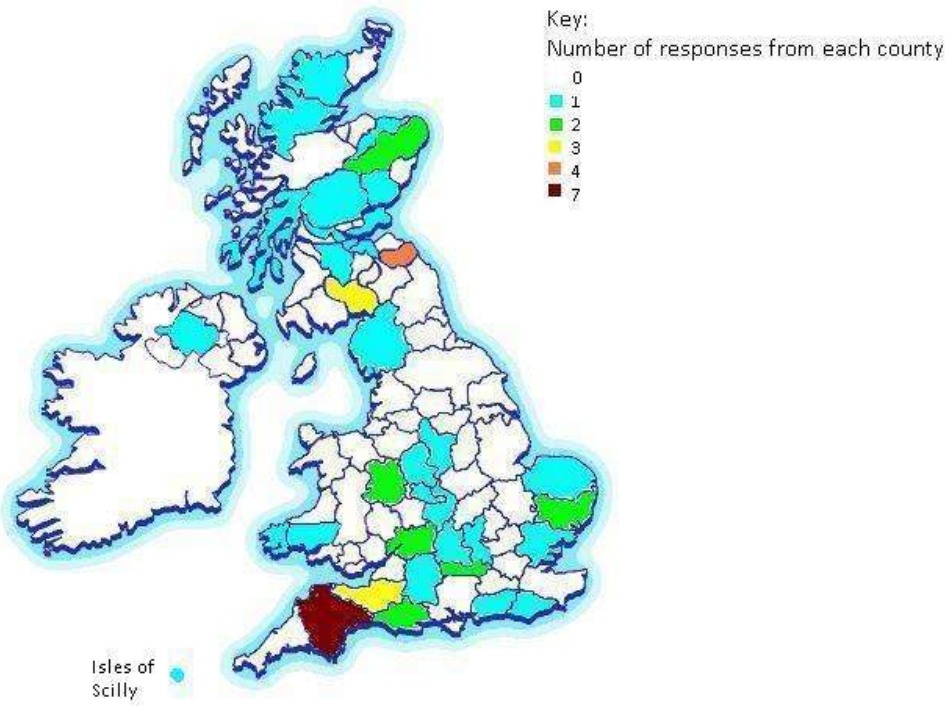

Figure 1. A map of the UK showing the distribution of the location of survey participants

The average farm size was 207 ha and farm sizes ranged from 1100 ha – 0.7 ha. 86% of participant's farms were organic. Figure 2 shows that the most common system components on participants farms were arable (crops, grassland, soft fruit, and vegetables) and trees (plantations, coppice, orchards, managed woodland for timber and firewood, trees in pasture), followed by beef and sheep, pigs and poultry, and finally dairy. The majority of the participants identified that their farm consisted of more than one component.

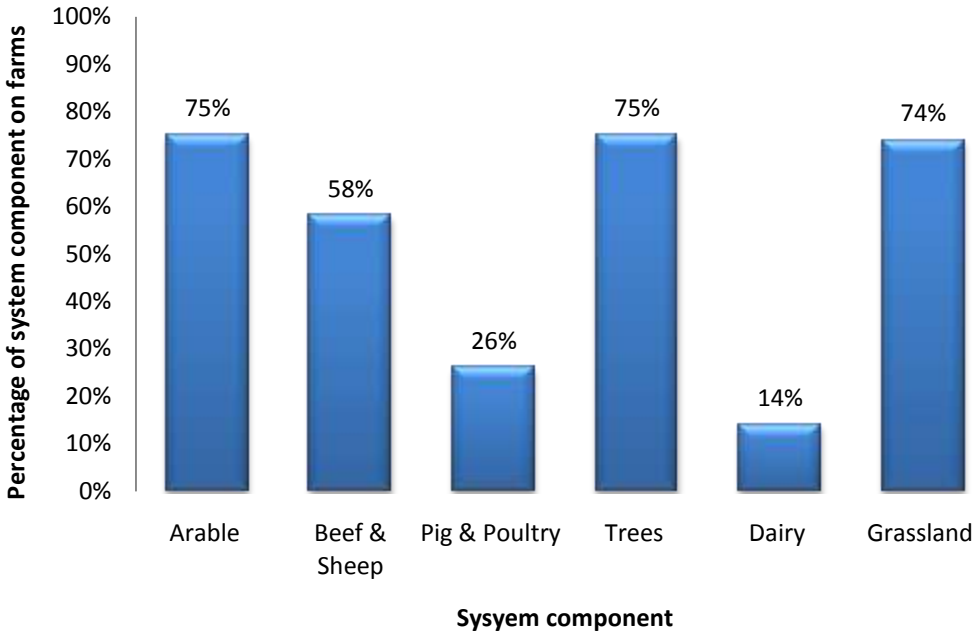

Figure 2. Percentage of participants with each system component on their farm (57 farms in total)

2.2 Woody Elements on Farms

Figure 3 shows a summary of the main woody elements of participant's farms. All participants stated that they have woody elements on their farm. The most common woody element on participant's farms are hedgerows with 89% of participants stating that they have hedgerows on their farms. Participants stated that these hedgerows are either single species hedgerows (willow, elm, blackthorn, yew, beech) or mixed species hedgerows (species mentioned included; Blackthorn, hawthorn, slowberry, elderberry, beech, rose, hazel, holly, field maple, willow, maple, spindle) and mixed species hedgerows with standards (standards mentioned were; hazel, ash, wild cherry).

The second most common woody element of farms is woodland. The majority of these woodlands are mixed deciduous, but mixed deciduous/conifer woodlands, and single species plantations (Sitka spruce, larch, and birch) were also mentioned.

Very few of the farms (18%) are employing a method of ally cropping where woody elements (e.g. coppice plots) are grown in rows in-between an ally of crops or pasture i.e. agroforestry. When participants provided more details when they stated "other", two participants had forest garden Permaculture plots, and one participant had left an area for natural regeneration.

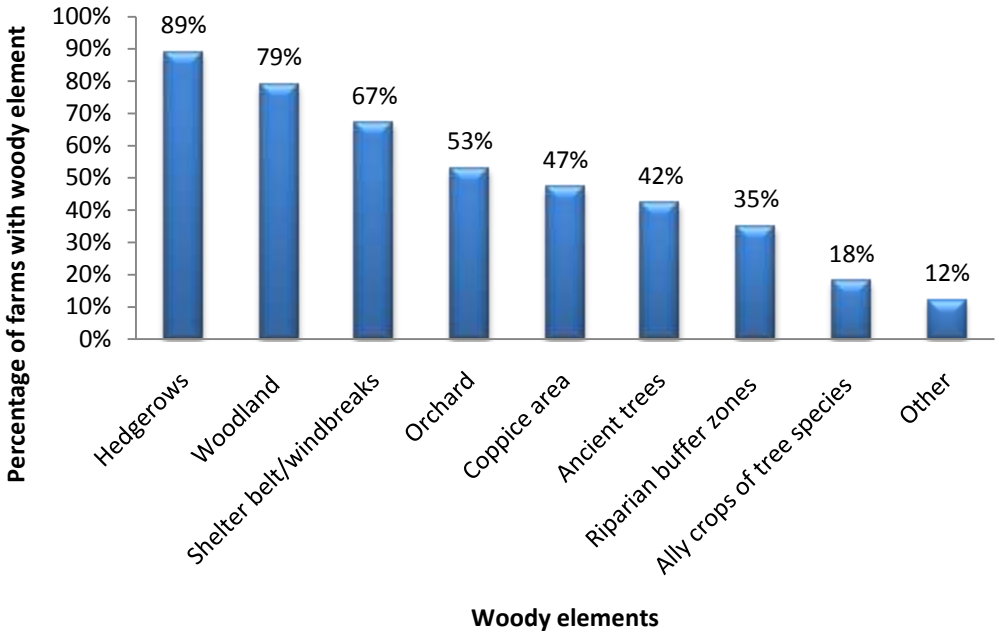

Figure 3. Percentage of farms with each woody element (57 farms in total)

2.3 Management of the woody elements

As shown in figure 4, 91% of participants personally manage the woody elements on their farms, and 19% outsource management. Out of those that outsource the management only 5% state that this is their sole means of managing their woody elements.

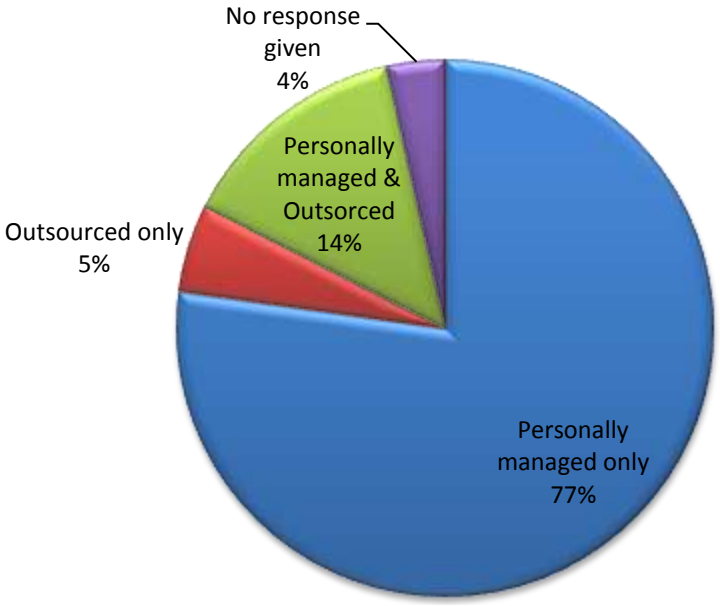

Figure 4. How management of the woody element on the farms was undertaken, shown in percentage of management type (personally managed, outsourced, personally managed and outsourced) (57 farms in total)

Those who outsourced management, outsourced to: forestry companies, tree surgeons, rented out equipment (hedge trimmers etc.), or the management was undertaken by larger organisations like, FWAG, Forestry commission, Wildlife Trust, the Woodland Trust and Scottish woodlands.

Management methods that participants applied towards the woody elements on their farms are shown in figure 5. Tree establishment was undertaken on the majority of participant's farms, with over half also coppicing and thinning the woody elements. As stated previously 86% of participants farms were organic therefore it is to be expected that very few used herbicides, and none used insecticides.

When participants stated that they applied "no management", half of these participants (4 of 8) stated that they applied "no management" along with other management types. Therefore these participants perceived "no management", i.e. leave an area untouched for conservation purposes, as a type of management.

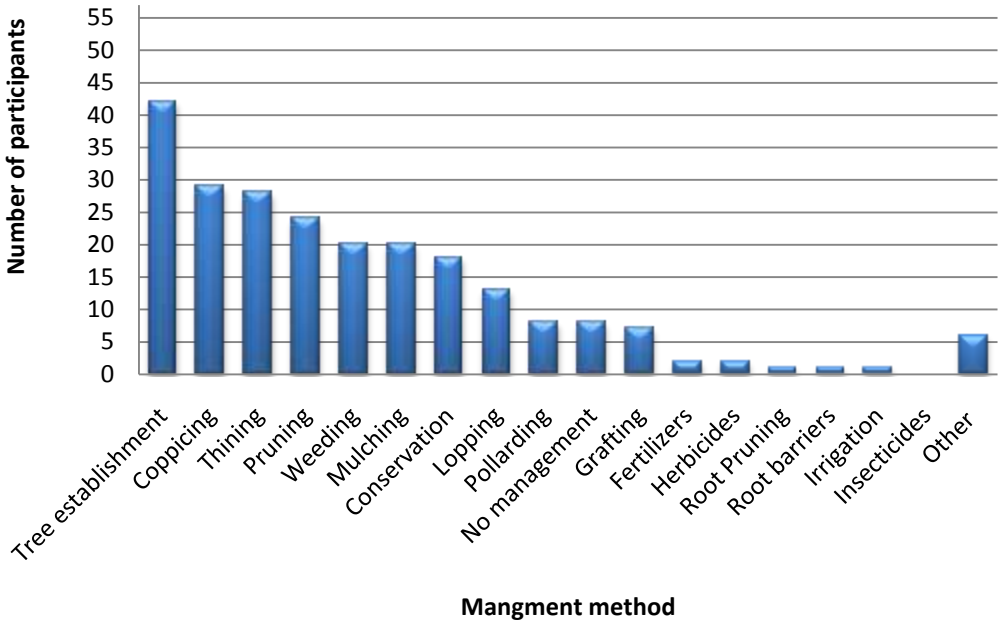

Figure 5. The number of participants that used each management type (57 farms in total)

Figure 6 shows that out of the participants that stated that they have livestock present on their farm (47 participants answered these questions), 70% said that they utilise the woody elements on their farms towards the management of their livestock.

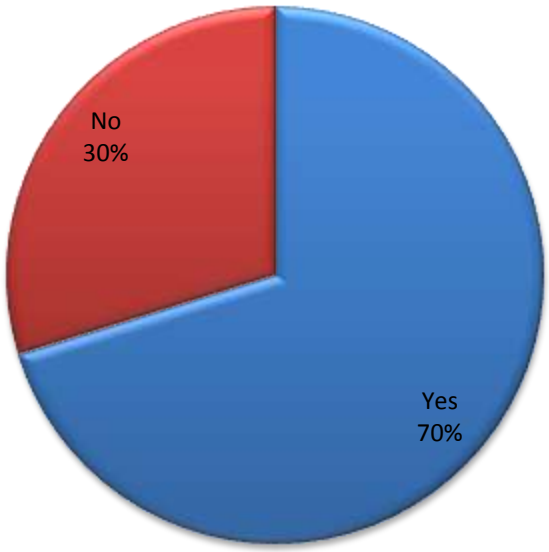

Figure 6. Of participants with livestock present of their farms (47 participants) the percentage that either do (yes n=33) or do not (no n=14) use the woody components towards the management of their livestock

When asked an open questions to provide details of how they used the woody elements towards their management 94% (n=33) of participants who answered yes provided additional information of how the woody elements are used. Figure 7 shows the how the woody elements on participants farms are used towards managing their livestock.

The most common use of the woody elements on participant's farms towards livestock management was for shelter. Other uses of the woody elements mentioned were use as part of livestock feed or their feeding environment, including; using pruning for additional fodder, woodland grazing, orchards grazing, and parkland grazing.

However it should be noted this was an open question. If participants were given as a closed question, with different options of how they use the woody elements on their farm towards livestock management, the results shown in figure 7 may well have been different.

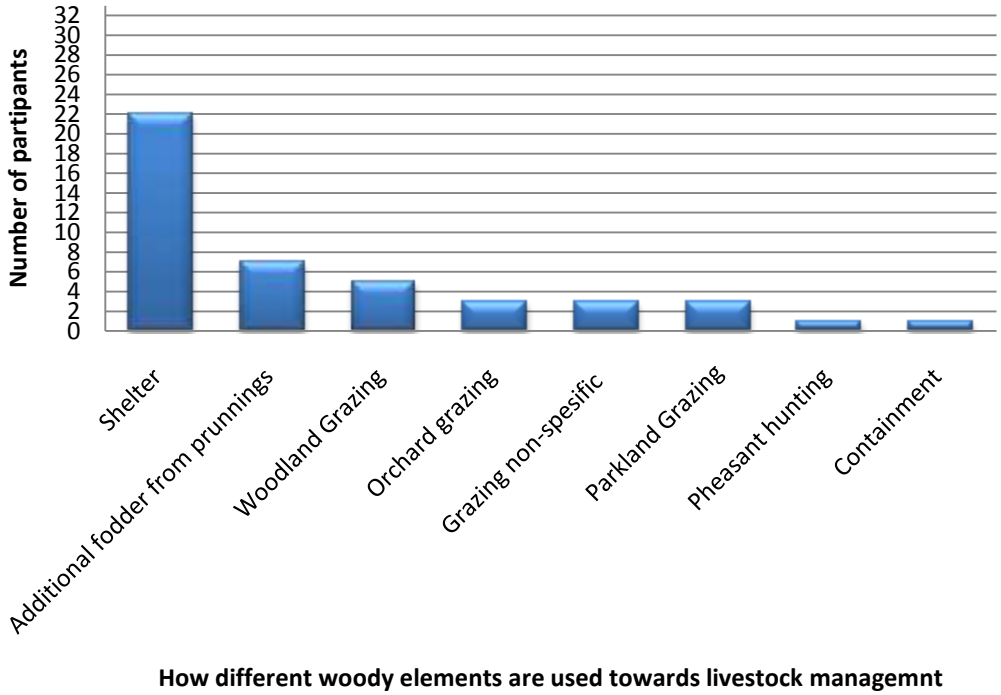

Figure 7. The number of participants using the woody element on participant land for different management purposes.

2.4 Products derived from the woody elements

This section illustrates the different products and services that are derived from the woody elements on participant's farms either to be used internally or sold externally, and whether there is a financial gain from the woody elements.

Figure 8 shows the products and services that participants derive from their woody elements for internal use. A high percentage of participants use the woody elements on their land, hedgerows, coppice areas, and woodland, for on-farm fuel. The second most stated use for the woody elements on the farm was as a conservation area, showing that over half of the participants saw conservation as an important service.

At the other end of the scale, only a small percentage of participants used their woody elements for livestock fodder or derived eggs as a secondary product from woodland eggs (this may also be due to the small amount of farms with a poultry component). Other uses included; thatching lathes, bark for mulch, poles for beans/peas, and hurdles for plant protection.

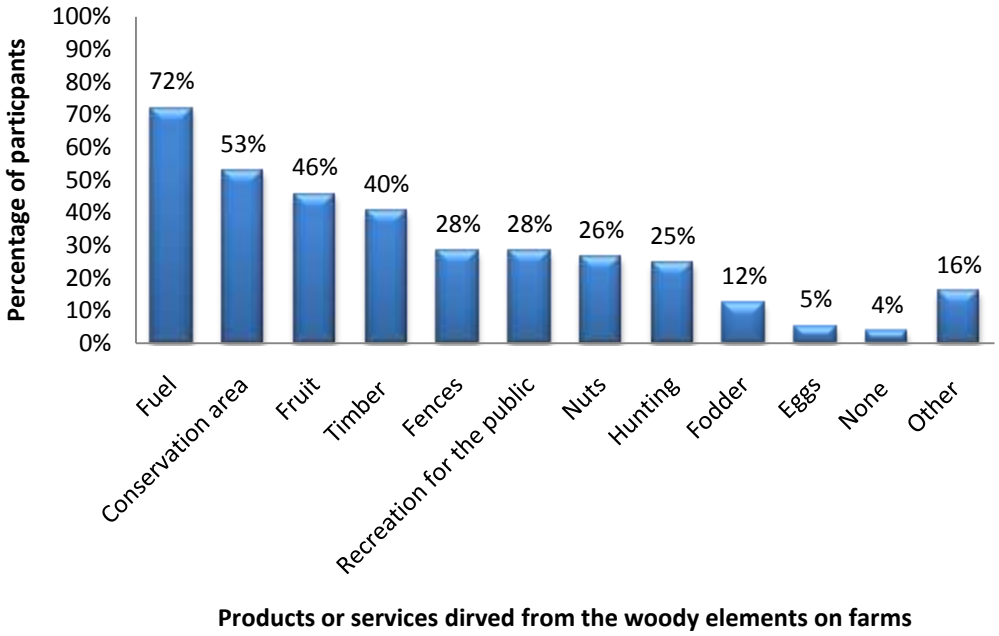

Figure 8. Percentage of participants that used the products or services derived from the woody elements on their farms for internal (on farm) usage (N=57)

When comparing figures 8 and 9 we can see that a much lower number of participants sold any products or services that could be derived from their woody elements externally (46% of participants stated that they sold their products or services, while 96% of participants had an internal use for the woody elements). The most widely sold product, although by a small percentage of participants, was timber followed by fruit. Only 9% of participants sold fuel compared to the 72% that use fuel for on-farm use. Other uses for the woody elements on participants farms either sold or provided for external use were, training and demonstration, selling essential oil and spruce by-products (tea, beer, soft drink presses), and selling materials for making yurts.

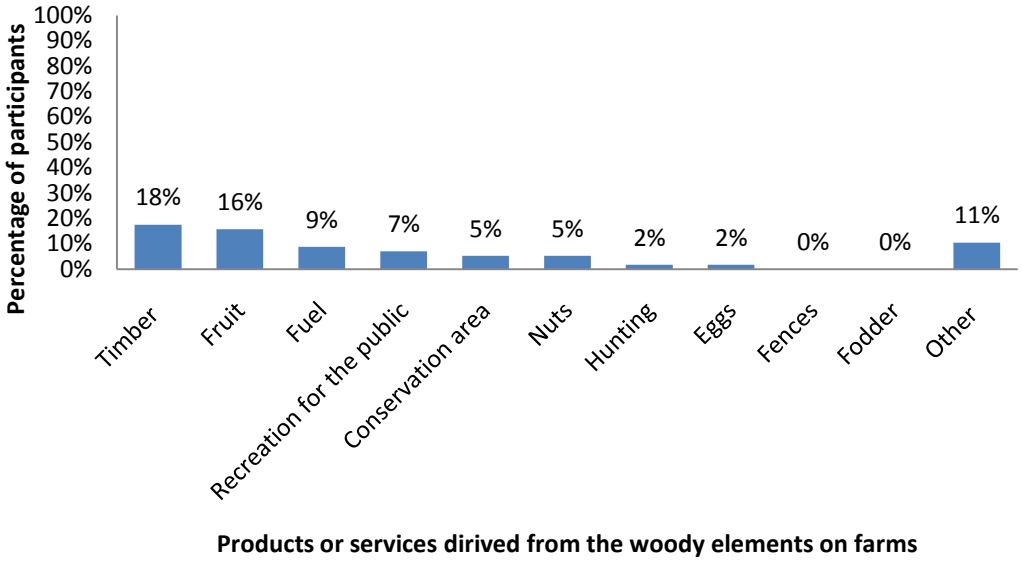

Figure 9. Percentage of participants that used the products or services derived from the woody elements on their farms sold or provided for external use (N=57)

Only 35% of the participants stated that the woody elements on their farm bring them in extra income, compared to 63% that says that they derive no extra income from their farm woody elements (Figure 10).

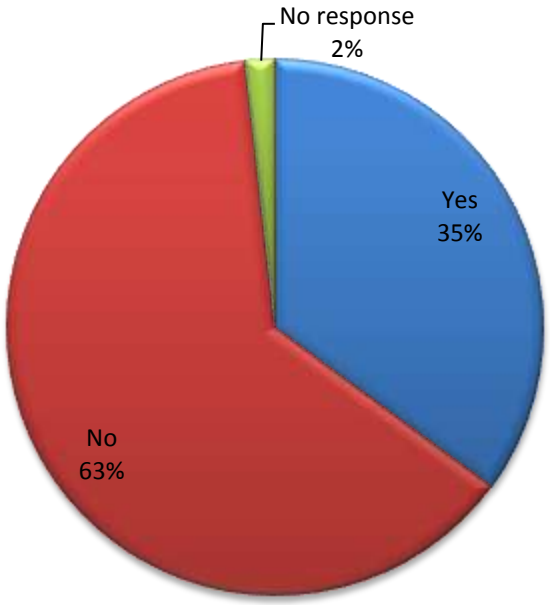

Figure 10. The percentage of participants that answered Yes or No when asked whether having woody elements on your farm bring you in any extra income (N=57)

Of those participants that stated that they did derive extra income from the woody elements on their land, the most common source of extra income was through the selling of fruit, followed by fuel and timber (Figure 11).

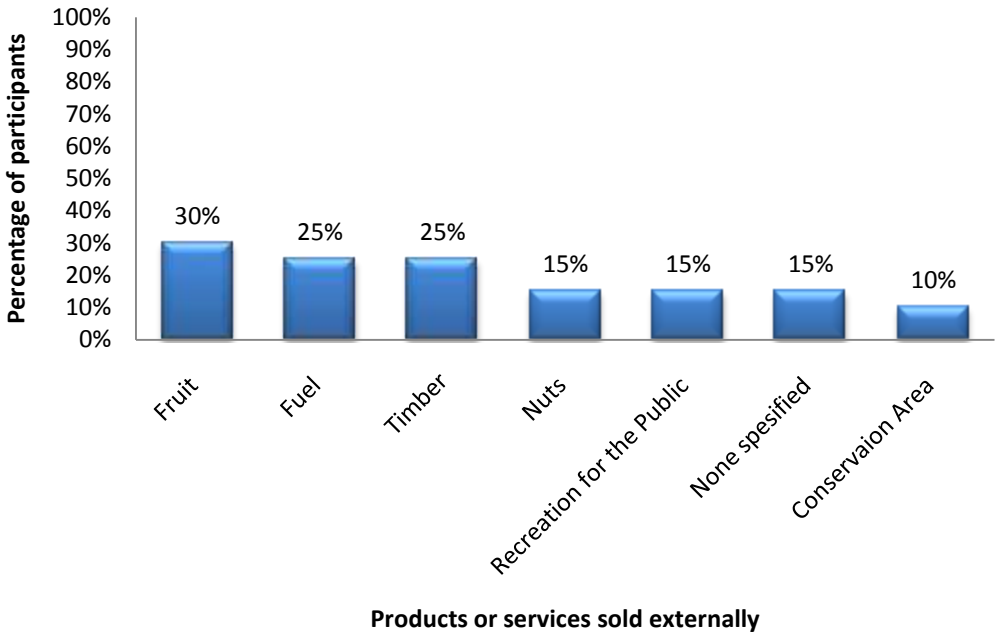

Figure 11. The percentage of participants that sold different products or services externally, from the sample of participants that answered Yes when asked whether having woody elements on your farm brings you in any extra income (N=20)

Almost conversely to figure 10, figure 12 shows that 65% of participants thought that having the woody elements on their land saved them money, with only 32% stated that this was not the case.

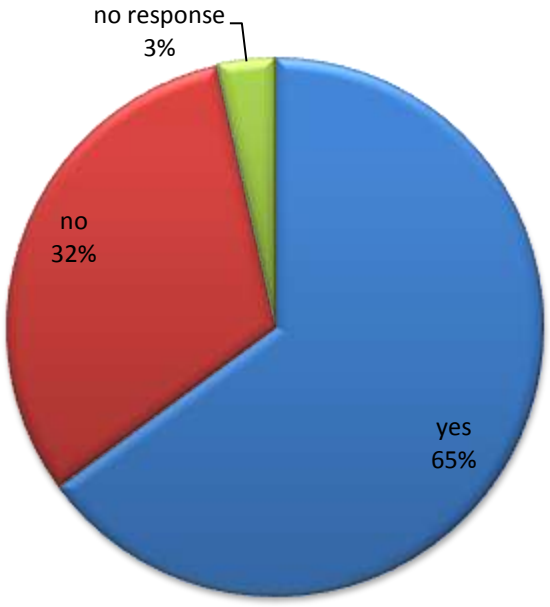

Figure 12. The percentage of participants that answered Yes or No when asked whether having woody elements on your farm saves you money (N=57)

2.5 Positives and negatives of woody elements

Participants were asked an optional open ended question about whether there are any additional positive benefits of having the woody element their farms, 82% of participants answered this question. Table 1 summarises the benefits stated by participates into general categories. The most frequently mentioned benefits were amenity/enjoyment and biodiversity. There was also a sense of enthusiasm from participants when talking about the positives, with comments such as; “trees are lovely”, “trees and hedges are beautiful”, “Bluebells!!!”. A couple of participants also stated that “shelter for poultry and for plants will be probably greatest benefit but hard to quantify in yields/costs” and “There is no measurable financial income but the shelter element must increase the size of our lamb crop”.

Table 1. A summary table to show the responses from participants when asked if there are any additional positive benefits that they derived from the woody elements of their farms, and the frequency these responses were mentioned.

Amenity / Enjoyment	23
Biodiversity / habitat resource	17
Shelter	7
Woodfuel	6
Nutrient recycling	5
Added current and potential economic value	4
Hunting resource	3
Carbon sequestration	3
Soil Erosion Mitigation / Landscape stability	2
Water management	2
Use of fruits	2
Conserve for future generations	2
Improved microclimate	2
Creates a more natural environment for farm animals	1
Privacy	1
Soil improvement	1
Noise barrier	1
No benefit	1

Participants were also asked an optional open ended question about whether there are aware of any negatives of having the woody element their farms, 67% of participants answered this question. The most frequently mentioned negative was additional management time. Additional cost of management and additional mammal/insect pests were also stated as a negative. A Couple of participants stated that any costs in management far outweigh any income derived from the woody components. There was also a participant that stated that they had problems claiming Single Payment, and another participant that stated that "non-availability of grants to 'harvest' willow & use to run a bio fuel boiler- cost is more than I could fund on my own."

However participants also stated that they saw no negatives in having the woody elements on their farms. The summary of the responses with all negatives stated is shown in Table 2.

Table 2. A summary table to show the responses from participants when asked if they were aware of any negatives of having the woody elements on their farms, and the frequency these responses were mentioned.

Negatives the woody element on farms	Frequency negative stated
Additional management time	8
None	7
Additional cost of management	7
Attracts mammal/insect pests	7
Negative ecological crop-tree interactions	6
Loss of land	4
No Grants available / Grant issues	3
Constrains field operations	2
Limits crop rotation options	1
Trespassers	1
Soil damage from extraction	1
Spoils the landscape aesthetics	1
Environmental damage from establishment	1

3. Discussion and Conclusions

This survey illustrates that, in general, woody elements were integrated into participants farming system through; management, integration with livestock, and the use of the products and services derived from the woody elements. Furthermore participants also stated that the woody elements provided them with amenity and biodiversity benefits. Although not currently economically quantifiable, both these factors are important when considering agricultural land from the three sided perspective of society, ecology and economics. Additionally studies have shown that trees on farms have environmental benefits such as improved soil conditions and improved water storage potential. These environmental benefits may help to maintain a healthier more environmentally sustainable farming system thus creating greater long-term economic stability for the landowner (for more detail see "J. Smith, 2010, Agroforestry: Reconciling Productivity with Protection of the Environment, The Organic Research Centre" http://orgprints.org/18172/1/Agroforestry_synopsis.pdf).

On the basis of this survey it is difficult to indentify whether there is potential for participants to gain more financially out the woody elements on their farms (from a sustainable management perspective). Although the woody elements may not have been a direct source of extra income for most landowners, the majority stated that having the wood elements on their farms did save them money. A large percentage of participants used the woody elements as a source of fuel for their farm, but only a small amount sold fuel for extra income. Likewise only half the amount of participants sold timber compared to those that used the timber for on farm use. The reasons behind this at this point will only be speculative (i.e. farmers unable to access the market through small scale production, or they were utilising their woody elements to their maximum sustainable capacity) therefore further assessment would be needed. To assess this further a full survey of the farm and the woody elements on farms (e.g. area, type, etc…) along with detailed management plans of these woody elements, would have to be taken out on an individual farm basis. This could be used to assess whether more timber/woodfuel products and non-timber forest products could be produced on a farm. Finally a market assessment along with a review of the input costs should show whether there is any additional financial benefit to be gained from the woody components on farmers land (this level of detail was not possible in this survey).

Since most participants already utilise and personally mange the woody elements on their farms to some extent, this indicates that there is potential for trees to be further integrated into the farm systems to provide both an economical and ecological output. However management time and cost were seen as negatives to having the woody elements of the farms, therefore any suggestion of extra management of the woody elements will have to be calculated so the outputs (both directly financial, and indirectly through improved eco-system services) outweigh the inputs. Any future research should combined forestry and agricultural researches, to assess how best to manage an agroforestry system, and other woody components on farms, in order to gain a currently quantifiable financial return from managing the trees for productivity whilst maintaining the functional elements (i.e. soil stability, biodiversity, nutrient cycling, shelter etc…) of the trees on farms.

Furthermore one participant stated that “Putting half the usable land under trees was a philosophical not a business decision. We have suffered financially for it but it was still the right thing to do. Pity eco-services are not valued. If they are in the future pioneers will probably still go unrewarded.” Therefore any moves towards adding eco-system services into European policy or economic development will help ensure that trees remain a permanent part of our landscape.

Acknowledgements

I would like to thank all the landowners that took time out to participate in this survey. I would also like to thank all the people from the organisations in Appendix 1 that took time out to help me distribute this survey. Finally I would like to thank Jo Smith and all the staff at the Organic Research Centre that helped me put together and distribute this survey.

Appendices

Appendix 1

National Farmers Union (in their organic section)

Permaculture Association

Organic Centre Wales

BES Forest Ecology

The Organic Grower (journal of the Organic Growers Alliance)

Farm Woodland Forum

Institute of Organic Training and Advice

Scottish Auricular Collage

NIAB TAG

Farming and Wildlife Advisory Group

The Organic Research Centre's Producer Conference mailing list