ABSTRACTS

MONDAY 18TH MAY: GENERAL AGROFORESTRY SESSION
CHAIR: JO SMITH (ORC)

AGROFORESTRY POLICIES IN THE EU

Gerry Lawson,
Vice President European Agroforestry Federation, Montpellier

Measure 222 of the last EU Rural Development Programme (2007-13) allowed Member States and regions to implement assistance for the establishment of new agroforestry systems on agricultural land. The measure was implemented in 5 Member States, and in 10 of the 88 EU regions, (including Northern Ireland) with a planned area of 14,742,871 hectares. However, by the end of the Programme, only 946,089 ha of agroforestry were established in 5 regions (6.4% of the planned area). The presentation looks at the reasons for this, but highlights that agroforestry was included (in a less measurable way) in a range of other EU Measures.

The new RDP (2013-2020) also provides an option for establishment of new agroforestry (Article 23, Measure 8b), but many lessons have not been learned from the previous RDP. The presentation considers: a) continuing disincentives to AF establishment (especially compared to afforestation), b) constraints on tree-densities and how these will be monitored in the Land Parcel Identification System, c) cross-compliance and the possible use of GAEC-7 for agroforestry, d) exemptions for 'grazable-trees' and 'permanent crop' trees.

The presentation also highlights recent statements on agroforestry in the EU Parliament's report on the EU Forest Strategy, and new opportunities for Member States to use agroforestry and LULUCF to meet their GHG emissions targets.

AGROFORESTRY IN SCOTLAND AND THE NEW FORESTRY GRANT SCHEME

Mike Strachan,
Policy and Development Officer, Forestry Commission Scotland

The Scottish Government has allocated an initial £250million for forestry expansion and management for the period of the new Common Agricultural Policy. This represents about 19% of the total allocated funds (circa £1.3billion) for Scotland.

Scotland has a planting target of 10,000ha/annum (England by contrast has a 2000ha target) and as a result the majority of available funds will be directed towards new planting. Agroforestry establishment will focus on 2 of the 9 woodland establishment options, providing support for wide spaced trees on permanent grassland (land class 3 to 4.2) and for small woodlands (up to 5ha in size). In addition support will be provided for woodland grazing in targeted woodland types and with support from the Agriculture sector, replacement trees in an Ancient Woodland pasture and small scale tree planting (up to 0.25ha) will be funded.

Grant support for woodland establishment is split to provide

1. Capital grants for fencing of sites etc. (but not for the establishment of wide spaced trees, protection costs are included in the grant offer)
2. Establishment grants to support the planting and initial maintenance of a site
3. Annual maintenance grant to support costs following establishment (payable for 5 years)

In Scotland we operate a rolling programme of grant application and approval, therefore no deadlines for submission of applications and we also have the authority to offer up to £750,000 of a grant without Ministerial endorsement. Not all of the grants are currently available and the pure Agroforestry wide spaced tree option will be open for applications in 2016. Further information on all the Agriculture and Forestry grants can be found at:- www.ruralpayments.org/overviewofschemes

AGROFORESTRY AND THE AFFORESTATION PROGRAMME IN THE REPUBLIC OF IRELAND

Eugene Curran,
Forest Service, Department of Agriculture, Food and the Marine, Republic of Ireland.

By the turn of the twentieth century, the forest cover in Ireland had fallen to 1% of the land mass. Most of it was broadleaf high forest dominated by oak and ash with some Scots pine on the higher and peaty ground. Currently the Irish forest cover is approximately 11%, while the EU average is around 34%. Since the late 1980s, afforestation in the Republic of Ireland has almost completely changed from public planting to private planting. Farmers are now the main contributors of land for afforestation. However, planting levels have fallen from a high of 20,000 hectares to 7,000 hectares per annum, mainly due to environmental constraints, silvicultural suitability, competing agricultural systems and land availability. Planting is now confined to better quality land, which farmers can be reluctant to plant. Agroforestry could be a way to help encourage farmers to put more trees into this high quality land.

In 2011, the Department of Agriculture started to investigate the potential of agroforestry. A suitable farm in West Cork was sourced and a demonstration plot of 1.89 hectares was planted. This involved ash (*Fraxinus excelsior*) planted at 5 x 5 metre spacing and using tree shelters. The farmer grazed sheep in the early and late spring, then cut silage hay over the summer. The system will suit young active farmers that want to retain agricultural production on the land; while producing agricultural produce in the short term and timber in the medium to long term.

In January 2015 The Republic of Ireland introduced an agroforestry measure under the new round of grant aided measures (2014 – 2020). Under Grant and Premium Category 11 (GPC 11) grant aid is now available to landowners who wish to practice agroforestry. As this measure is planted under the afforestation programme the land will come under our forestry act which will require the land to remain under trees indefinitely. This applies to all the other tree planting categories too.

An essential part of introducing agroforestry to the Republic of Ireland will be the need for research. Equally important is the need for training and promotion. Most stakeholders (farmers/foresters) will have very little knowledge of agroforestry so it will be important to familiarise them with the concept. The forestry companies will need training and will also play an important role in promoting agroforestry. Demonstration plots and pioneer plantations will provide invaluable sources for training.

QUANTIFYING AGROFORESTRY IN EUROPE WITH A FOCUS ON THE UK

Paul J. Burgess[1], Michael den Herder[2], and Matt Upson[1]
[1]*School of Energy, Environment and Agrifood, Cranfield University, Cranfield, MK43 0AL, UK*
[2]*European Forest Institute, 80100 Joensuu, Finland*

In the AGFORWARD project, agroforestry is defined as "the practice of deliberately integrating woody vegetation (trees or shrubs) with crops and/or livestock production to benefit from the resulting ecological and economic interactions". In early 2015, we completed a review of existing literature and datasets that describe agroforestry practices across Europe, and have structured the results in line with the focus of the four farmer networks in the project i.e. agroforestry of high nature and cultural value; agroforestry with high value trees such as fruit trees, olives, and chestnut; agroforestry for arable farms; and agroforestry for livestock farms (den Herder et al 2015). The objective of this paper is to present the key results at a European scale and to highlight the situation within the UK.

The report highlights significant areas of agroforestry of high nature and cultural value. This includes the dehesas of Spain, montados of Portugal, and oak-dominated agroforestry on farmland in Greece (accounting for 15-31% of the utilised agricultural area in these countries). The largest agroforestry system in Europe is considered to reindeer husbandry occupying about 35% of the area of Sweden, Norway, and Finland. It is argued that agroforestry occurs in these areas as it is too dry or too cold for intensive agriculture. Agroforestry practices in the UK that are of high nature and cultural value include wood pasture and parklands, which have been estimated to cover about 15,000 ha. If we use the definition cited at the beginning of the paper, then it is arguable that grazed heathlands are a form of agroforestry. As dwarf shrub heathland covers about 1.487 million hectares in the UK (6% of the land area), then the area of agroforestry in the UK may be higher than we think! In a similar way to the systems mentioned in the Mediterranean and Fenno-Scandanavia, it is either too cold or the soil is too acidic for more intensive agriculture.

Hedgerows and shelterbelts are also agroforestry practices that have high nature and cultural values. In 2001, the Forestry Commission derived the area of wide hedges (greater than 16 m width) in England, Scotland and Wales (20,395 ha), and the length of narrow hedges (less than 16 m). If we assume a mean width for narrow hedges of 8 m, then would suggest a "narrow hedge" area of 96,779 ha.

Agroforestry practices can also occur within orchards, vineyards, olive groves, and plantations of high value trees such as walnut. Again the principal location of such systems in Europe is in the Mediterranean, but we estimate that there is 25,350 ha of traditional orchard in the UK where grazing may be practised.

The overall analysis suggested that across those European countries for which we obtained data (and excluding reindeer husbandry) agroforestry practices occupied at least 6.5% of the utilised agricultural area. The equivalent value for the UK (if we included grazed heathlands) would be 1.644 million hectares, or about 9.6% of the utilised agricultural area of 17.172 million hectares.

References

den Herder, M., Burgess, P.J, Mosquera-Losada, M.R., Herzog, F., Hartel, T., Upson, M., Viholainen, I. and Rosati, A. (2015). Preliminary stratification and quantification of agroforestry in Europe. Milestone Report 1.1 for EU FP7 Research Project: AGFORWARD 613520. 53 pp

AGFORWARD (Grant Agreement N° 613520) is co-funded by the European Commission, Directorate General for Research & Innovation, within the 7th Framework Programme of RTD. The views and opinions expressed in this paper are purely those of the writers and may not in any circumstances be regarded as stating an official position of the European Commission.

AGROFE - DEVELOPING AGROFORESTRY TRAINING IN EUROPE

Stephen Briggs and Ian Knight,
Abacus Organic Associates Ltd

Agroforestry research and farmer adoption continues to gather pace throughout Europe. Estimates are that there could be 15 000 to 20 000 agroforestry farms created in Europe in the next 5 – 7 years. Despite increasing adoption there are few formal training programmes for agricultural professionals, students and adults. The EU funded AgroFE project is a 2 year pilot project between partners in France, Belgium, UK, Romania, Hungary, Czech Republic. In the UK, AbacusAgri is the lead partner working with Warwick University and Warwickshire College.

The AgroFE project builds on scientific research, agroforestry experiments and professional practice to develop innovative teaching methodologies and resources for a range of audiences including: farmers and future farmers; students and adults; advisors/technicians - all based on the European Qualification Framework – L4, L5, L6.

The overall objective of the project is to develop a teaching system for agroforestry formation and promotion in Europe. The project aims to build an innovative training system: training modules using ICT (Information and Communication Technologies – computers, tablets etc.) and with professional participative training. One of the innovations of the project is a strong participation of in-field professional training. Specific objectives are: To produce professional book of references as a support for transfers in training with a common framework and adaptation to local or national context; To create knowledge database which will be used for tools and training resources and which will also integrate existing resources; To implement experimentation in initial training in individual countries; To develop a certification system for all levels of education adapted to particular country education systems and needs.

AGROFORESTRY IN THE CITY

Benjamin Lawson,
MSc Biodiversity and Conservation student, University of Leeds

In the presentation I will focus on urban forest gardens and how they have become a novel and radical way of addressing social issues through teaching the public about forest gardening. They do this by being many things at once: an educational resource, a nutritional resource, an aesthetic resource and a community resource. Urban forest gardens combine this usually by being created in spaces that would otherwise be unused private land, council managed amenable grassland or marginal allotment space.

This “killing many birds with one stone” can be a very powerful combination that allows urban forest gardens to be easy candidates for funding and quickly become an important community asset. I present four different urban forest garden initiatives and their personal circumstances that highlight the above premise:

- Bedford Fields Community Forest Garden in Leeds,
- Birchfield Park Forest Garden in Manchester
- Moulsecoomb Forest Garden in Brighton and
- Metford Road Community Orchard

All four have in common their aim to educate the community on forest gardening in urban areas so that people can become empowered to start projects elsewhere – be it private gardens or on public land. They also rely on volunteer support to enhance and maintain their gardens. I will then talk about what things can be done to help support these initiatives according to what problems. For example, some projects have difficulty trying to ensure their land is protected from being sold off as forest gardens are not recognized legally as an important asset.

TUESDAY 19TH MAY: WOOD FUEL FROM AGROFORESTRY
CHAIR: MIKE STRACHAN, FC SCOTLAND

UNDERSTANDING AND MEASURING IMPACT IN INTERVENTIONS INVOLVING AGROFORESTRY AND BIOENERGY

Prof SM Newman
BioDiversity International Ltd Faversham Kent

Every agroforestry intervention is underpinned by a theory if change which can be implicit or explicit. The first major agroforestry bioenergy (agrenforestry) trials in the UK were carried out by the Open University and the Institute of Terrestrial Ecology in the late 1980s. The implicit theory of change for the work at the Open University was that poplar and wheat silvorable systems could produce low cost biomass in a manner that would be more attractive to farmers than the proposed monocultures and this would pave the way for farms to be exporters of renewable energy. Reflections on local and global impact will be given.

This paper outlines how a theory of change linking activities to outputs to outcomes leading to a research project purpose can be used to (a) measure local and global impact and (b) improve action learning by testing assumptions. OECD DAC terminology and linked methodology will be explained and developed.

DOMESTIC FIREWOOD IN WALES: WHERE DOES IT COME FROM AND HOW MUCH ENERGY DOES IT GENERATE?

James Walmsley[1], Jenny Wong[1,2], Simon Atherton[1]
[1] School of Environment, Natural Resources and Geography, Bangor University, Gwynedd LL57 2UW *j.walmsley@bangor.ac.uk*
[2] Wild Resources Limited, Ynys Uchaf, Mynydd Llandygai, Bangor, Gwynedd LL57 4BZ

The past decade has seen rapid growth in the demand for firewood for domestic heating. However, there are very few reliable statistics on domestic firewood production or consumption and without such information there is no evidence base to support the notion that current domestic firewood activity is sustainable. Low-intensity omnibus public opinion surveys of forestry (2011) suggest that 14% of the population burn some firewood, but there are no official data on the volumes of wood consumed or its source. To address this paucity of evidence, household surveys have been conducted across Wales in 2012 and 2014. Firewood is obtained from a number of sources: waste wood, arboricultural arisings, and sawmill offcuts. However, around half comes directly from householders' own land, neighbours' land, or family land. The importance of these sources provides evidence of the importance of trees outside forests in the supply of domestic firewood. The authors' results indicate that domestic firewood use represents a significant contribution to renewable heat generation that is not captured in national energy statistics. This paper will present the results of the survey for Wales and set them against the context of emerging statistics for domestic firewood consumption in Europe.

THE EVOLUTION OF FOREST OWNER GROUPS IN IRELAND

John Casey
Forestry development officer, Teagasc, the Irish Agriculture and Food Development Authority, Sandfield, Mallow, County Cork

This presentation will provide background to and examine some of the challenging issues surrounding forestry expansion in the Republic of Ireland. The increased use of both biomass-based energy and raw materials needs to be achieved in a way that is economically efficient and is compatible with food security and environmental objectives. The presentation will particularly focus on the role of Teagasc's forestry extension service in providing advisory and technical support to Forest Owner Groups in order to mobilise the current and future private timber resource and to optimise farm forestry's potential.

ALLEY COPPICE: AN ALTERNATIVE LAND USE SYSTEM

Rory Lunny [1, 2&3], Jim McAdam, [1&2], Douglas G.C. [3]
[1] School of Biological Sciences, Queens University Belfast, Belfast, Co. Antrim, N. Ireland, BT9 7BL. [2] Agri-Food Bioscience Institute (AFBI), Newforge Lane, Belfast, County Antrim BT9 5PX
[3] Teagasc, Kinsealy Research Centre, Malahide Road, Dublin 17.
Contact: rlunny01@qub.ac.uk

The necessity in Europe today for more diverse climate smart land management systems has never been more prevalent. The need for renewable, short rotation carbon- neutral energy sources have also become important due to major concerns regarding the security of future energy supplies and climate change mitigation measures.

'Alley Coppice' (**AC**), a combination of agroforestry (**AF**) and short rotation coppice (**SRC**), could play a significant role in helping to achieve these environmental objectives. AC, not previously investigated in Ireland, is being assessed within an EU research project –AGROCOP-involving: France, Germany, Ireland, Italy & United Kingdom.

In May 2013 an **AC** experimental field site was established near the AFBI research station in Loughgall, Co. Armagh, N. The site consisted of an existing stand of semi-mature poplar (*Populus* L.) trees planted in 1999. Tree rows were orientated in an East-West direction. Poplar cultivars Gibecq, Beaupre, Hoogvorst and Trichobel were planted at a tree to tree (intra-row) spacing of 5m and at a between tree row (inter-row) spacing of 14m. 20cm long unrooted willow cuttings were planted as the biomass intercrop in 5 double rows across the alley, 0.75m apart with spacing between double rows of 1.5m within main plots. A randomised split-split plot design was used for this experiment. It contained 4 replicates with 16 main plots and 7 sub-plots. Each main plot included 1 variety of Poplar in combination with one of 7 willow treatments (7 treatments i.e. 6 monoculture willow varieties Tora, Olaf, Terra Nova, Endeavour, Beagle and Resolution - & 1 mixed willow treatment simulating a commercial planting). Two way interaction between willow and plant position was highly significant ($P<0.01$). Interaction was linear between willow and plant position. Two way interaction was very highly significant ($P<0.001$) between poplar and plant position. An overview of the AGROCOP project and detail of the experimental work carried out on the Island of Ireland will be presented.

PREDICTING ASH GROWTH IN FARM WOODLANDS

Matt Upson[1], Paul J Burgess[1], James I. Morison[2]
[1]School of Energy, Environment and Agrifood, Cranfield University, Cranfield, MK43 0AL, UK
[2]Forest Research, Alice Holt Lodge, Farnham. Surrey GU10 4LH

One of the ways in which farms in the UK diversified in the latter part of the 20th century was by planting farm woodlands. This was encouraged by the introduction of the Farm Woodland Scheme by the Forestry Commission in 1988 in anticipation of changes to the Common Agricultural Policy. These grant schemes favoured native broadleaf planting on arable or improved grassland, leaving a legacy of broadleaf woodlands planted at a relatively low density (2-3 metre spacing). Planted closer to the final harvesting density, such systems do not require the same level of management as more dense forestry systems, and hence have been considered more appropriate for farms.

In 2011 the Woodland Carbon Code (WCC) was launched by the Forestry Commission to allow the validation of current and expected carbon (C) storage within woodlands. As of 2014, the WCC had registered 202 projects covering some 15,400 ha of woodland, with an expectation that these woodlands will sequester 1.6 million tonnes of C over the lifetime of these projects (Darot 2014). Most of the projects registered so far have been to create mixed native broadleaved species, planted at spacings of 2-3 m, with a mean area of 19 ha.

Predicting the yield and the carbon storage potential of these lower density broadleaf woodlands for practitioners is a challenge as the growth of these systems are not represented by yield tables which are traditionally used to estimate forest timber yield. Nor is it appropriate to use yield tables designed for more dense systems which may eventually be thinned to a similar density, as there is evidence that initial reductions in volume accretion due to wide spacing may not be recovered in later growth.

In order to improve the understanding of the dynamics of ash (Fraxinus excelsior L.) growth, we measured nearly a thousand trees in recently planted mixed-broadleaf woodlands at various planting densities prior to the onset of ash dieback. An additional 42 trees were destructively sampled, and the dry weight and carbon content of each of these determined. From each destructively sampled tree, samples were taken for tree ring analysis, and the growth curves for the preceding years were produced for diameter at breast height (Dbh). Biomass measurements were also combined with very comprehensive soil carbon measurements, allowing the relative merit of trees and soil to be compared in terms of carbon storage.

Variation in ash tree growth between sites was very great, complicating the modelling process, however tree ring measurements of Dbh appeared to be reasonably consistent at this early stage with values predicted by Sycamore-Ash-Birch (SAB) yield tables for much more densely planted stands (Edwards & Christie 1981). We modelled the relationship between diameter and biomass/carbon for different parts of the tree with a relatively high degree of accuracy in our observed data. These relationships were largely independent of tree spacing between 2 m and 3 m, and can be used to estimate the timber and total yield of young ash trees (c. < 20 years).

MANAGEMENT OF IRISH ASH IN THE LIGHT OF ASH DIEBACK

Ian Short and Jerry Campion,
Teagasc Forestry Development Department, Ashtown Food Research Centre, Ashtown, Dublin 15, Ireland

Ash dieback, caused by *Hymenoscyphus fraxineus* (previously known as *Chalara fraxinea*), was first discovered in Europe in the 1990s and has since spread across much of Europe resulting in the death of much ash. The first case in Britain was confirmed in February 2012 and in Ireland was first confirmed in October 2012. Unlike in Britain, ash dieback is not prevalent in the wider environment in Ireland. However, ash plantations in Ireland will likely be particularly susceptible to infection due to their age profile, structure, and other factors. In Ireland we have some time on our side to prepare ash plantations to mitigate the possible effects of *H. fraxineus* becoming prevalent in future. With that in mind, this presentation illustrates some potential silvicultural interventions that could be used for this purpose in farm-forests, all of which would produce a highly sought after product in Ireland: ash fuelwood.

HOW MUCH ADDITIONAL BIOMASS CARBON DOES IVY (*Hedera helix*) CONTRIBUTE TO WOODLANDS? A PRELIMINARY STUDY.

Ian Grange, Royal Agricultural University, Cirencester, Gl7 6JS email: ian.grange@rau.ac.uk
Andrew Wilson, Eden Tree Care & Fencing, Coleorton, Coalville, LE67 8JH

Ivy (*Hedera Helix*) is common and widespread throughout most of the British Isles (Preston et al. 2002). Whilst preferring more fertile, neutral, heavier clay-rich soils, it can tolerate a range of soil types and conditions (BRC & BSBI, 2015). It favours growing in secondary woodland, where competition for light is less intense (Metcalfe 2005) and can be a constant in Ash (*Fraxinus excelsior*) dominated woodlands (Rodwell 1991), which allows for more light penetration. Ivy is also frequently found in boundary features such as hedgerows or lines of trees, with Defra (2015) encouraging its conservation in the new Countryside Stewardship Grant Scheme (BE3).

The contribution that Ivy makes to the terrestrial biomass carbon pool of British woodlands and boundary feature is unknown. Ivy is considered to be a 'structural parasite' (Castagneri et al. 2013) relying on other plants and built structures for support. Whilst stem diameters of up to 25 cm have been reported (Metcalf 2005), smaller multiple stems from one or more plants are commonly found growing in a lattice type structure close to the support, with numerous lateral shoots in reproductive plants. Whilst discussion could be had about the limitations Ivy might have on tree growth and management, it can be seen as an additional carbon pool that has not been considered to date.

This preliminary study quantified the amount of biomass Ivy growing within a NVC W8 woodland, dominated by Ash (93% with 1120 total trees/ha), with a mean tree DBH of 13.3 ± 1.9 cm 95% CI, with a DBH range of 1.0 to 29.7 cm. Ivy was found growing on 93% of the trees. The woodland is near Kemble in Gloucestershire (ST 954 947). Five sample trees were felled and cut into 1 m sections before separating Ivy from the tree. Stem and branches were weighed for both trees and Ivy.

Whilst the study was limited to only a small sample number, good initial power relationships were derived. Tree mass versus Ivy mass ($y = 0.4956 x^{1.1346}$, where $R^2 = 0.9377$), suggested that biomass Ivy nearly equalled the tree biomass on which it was growing. The relationship between Ivy height and Ivy mass ($y = 2.2925 x^{0.4251}$, where $R^2 = 0.9559$) allowed for future, non-destructive, estimates to be made of biomass Ivy growing in similar conditions to this experiment. Further work, with increased numbers of samples and from different woodland/ boundary settings, is needed to better characterise and model the contribution that Ivy makes to carbon accounting schemes.

References

Biological Records Centre (BRC) and Botanical Society of the British Isles (BSBI) (2015). Online Atlas of the British and Irish Flora. *Hedera helix* (Ivy). Website: https://www.brc.ac.uk/plantatlas/index.php?q=plant/hedera-helix [accessed 0113 April 2015].

Castagneri, D., Garbarino, M. and Nola, P. (2013) Host preference and growth patterns of ivy (*Hedera helix* L.) in a temperate alluvial forest. Plant Ecology, Vol 214, issue 1 pp. 1-9

POSTER PRESENTATIONS

EARLY THINNING OF ASH (*FRAXINUS EXCELSIOR* L.) IN IRELAND – THINNING INTENSITY AND CROP TREE GROWTH RESPONSES

Hawe, J., Short, I. and Campion, J.
Teagasc Forestry Development Department, Ashtown Food Research Centre, Ashtown, Dublin 15, Ireland

This study analyses the response of ash (Fraxinus excelsior L.) potential crop trees (PCTs) in two first-thinning treatments. Two-tree and three-tree selection treatment plots were installed in a 15-year old stand. Racks were removed at approximately 1 line in 7. Initial data on the two treatment plots were collected in September 2009 directly before and after the first thinning operation. Data to monitor tree growth responses was collected two growing seasons after thinning and three growing seasons after thinning. To provide further information on individual PCT growth responses in relation to their growing space the number of neighbours remaining from the eight trees directly adjacent to each PCT was also recorded, as was the PCTs situation in relation to a rack. The main responses for analysis were increments of DBH and basal area (BA) over the three observation times. PCTs in both treatments showed significant DBH and BA increment gains over the remaining stand matrix at each measurement period. The number of neighbours remaining was negatively correlated with PCT diameter increment. The thinning had the desired effect of concentrating volume on the selected crop trees and it would appear that ash PCT volume increment may be accelerated via heavier early thinning.

THE EFFECT OF STUMPING POLE-STAGE SYCAMORE IN IRELAND ON PAR AVAILABLE TO, AND GROWTH OF, THE RESULTANT COPPICE

Short, I., Campion, J., Hawe, J. and Byrne, R.
Teagasc Forestry Development Department, Ashtown Food Research Centre, Ashtown, Dublin 15, Ireland

The site of this trial was planted in 1996 with sycamore (Acer pseudoplatanus) at 2 m × 2 m spacing (2,500 stems ha-1). A consultancy report in 2009 described the crop as ‘extremely poor’ with relatively extensive areas not having closed canopy and possibly requiring reconstitution via underplanting. Top height was 6 m – Yield Class 4. Three line thinning treatments were carried out in February 2011 to: remove 50 % canopy cover by removing alternate lines; remove 50 % canopy cover by removing 2:2 lines; and remove 75 % canopy cover by removing 3:1 lines. Three growing seasons since felling, all the coppice stools were assessed for shoot growth and stool survival. Hemispherical photography was used to investigate light availability to the coppice. The felling treatment significantly impacted on mean number of shoots per stool, mean height of the tallest two shoots per stool and mean stem diameter of the tallest two shoots per stool. It also significantly impacted on the photosynthetic photon flux density available to the coppice.