

Forestry and Wood Update

December 2008 Volume 8 Number 12

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# COFORD Research Programme

# COFORD R&D programme project update

*Each issue of the newsletter carries a short article on new and ongoing COFORD-funded projects. Feedback on the articles is welcome and should be addressed to the project leaders (contact details at the end of the article).*

## ASHGEN - Investigating ‘brown bud’ ash

Some ash plantations which were established with imported plants from 1993 to 2000 have produced trees of poor form with crooked stems and poor growth. COFORD is supporting research into the genetic makeup of trees in these plantations to determine if they can interbreed with native ash trees. Preliminary studies suggest that imported trees may be hybrids of common ash (*Fraxinus excelsior*) with brown bud ash (*F. angustifolia*). The research - ASHGEN: Identifying the scale of suspected hybrid ash (*Fraxinus excelsior x F. angustifolia*) in Ireland and its potential for genetic pollution of indigenous ash germplasm - is aimed at finding distinctive morphological, physiological or molecular characters observed on individuals in Irish plantations with reference to European material. Suspected hybrid trees may have brown buds rather than typical black ones (common ash) and short shoots with buds in groups of threes rather than twos; however, individuals can exhibit different degrees of character combinations.

Successful interbreeding of trees in hybrid plantations would require an overlapping of the flowering periods between the imported ash and native ash. In Spring 2008 it was observed that the flowering period of imported ash overlapped with native ash in two plantations. Subsequently, the trees produced seeds. It is now being investigated whether the seeds were produced by pollen from within the plantations of imports or by pollen from surrounding native trees. Similarly, seeds of native trees are being examined to see if they were pollinated from the imported trees.

Research team: Dr Gerry C. Douglas ([Gerry.Douglas@Teagasc.ie](mailto:Gerry.Douglas@Teagasc.ie)); Dr Juan F. Fernández-M. ([Juan.Fernandez@u-psud.fr](mailto:Juan.Fernandez@u-psud.fr)); Dr Trevor R. Hodkinson ([hodkinst@tcd.ie](mailto:hodkinst@tcd.ie)); Prof. Nathalie.Frascaria-Lacoste ([nathalie.frascaria@u-psud.fr](mailto:nathalie.frascaria@u-psud.fr)); M. Muriel Thomasset ([muriel.thomasset@teagasc.ie](mailto:muriel.thomasset@teagasc.ie))

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# NATFOREX –

## Establishing a national resource of field trials and a database for forest research and demonstration

Over the last 90 years, forestry has expanded greatly in Ireland, increasing its land cover from 1% in the 1920s to over 10% today. This is a great success story, but it didn’t happen without a lot of experimentation and complimentary field trials. Because trees take a long time to grow to maturity, these experiments often need to be kept in place, maintained and measured over several decades or even longer. Trials that were laid down for short-term experiments are sometimes kept and used to produce useful information on other aspects of the stands development as the trees mature.

Initially, these trials were mostly established by the Forest Service, but since 1987 Coillte has been responsible for this extensive plot-network of over 1,400 forestry trials. Similar networks also exist in other forestry related organisations, such as Teagasc and the National Parks and Wildlife Service, but on a much smaller scale. These networks cover a wide range of research areas, including tree improvement, crop establishment, forest protection, stand management, wood quality and forestry related environmental issues. The results from these trials have contributed directly to operational practice on, for example, species and provenance selection, site improvement practices and forest management systems, in addition to providing data for the development of yield models for forecasting timber production. These results have also formed the basis for the successful introduction of sustainable forest management practices and development of standards for certification.

It is of critical importance that all the information and data associated with these research areas is brought together and made accessible to the forestry community, including practitioners and researchers. The trials are a unique national resource in that they contain a wide range of silvicultural and management treatments (Table 1). Their value is in the already assembled data as well as in any further observation and measurement, and also as practical demonstration areas. Of equal importance is the fact that the existing networks are maintained and managed where this is of benefit to future foresters.

Table 1: Research areas covered by forest field trials and logged in the NATFOREX database.

|  |  |
| --- | --- |
| **Subject Area** | **Specific Topic** |
| Genetics | Species trials, Provenance trials, Interprovenance lodgepole pine hybrids, Progeny tests, Clonal trials, Genetic gain trials |
| Establishment | Cultivation methods, Planting method, Planting stock, Planting season, Direct seeding, Leguminous plants, Vegetation management, Weevil control |
| Silviculture | Farmland trials, Mixtures: Nutrient nursing, Shelter, Self-thinning, Frost protection, Timber production, Continuous cover forestry (CCF) trials |
| Nutrition | Fertilisation: Afforestation, Checked crops, Pole staged crops, Organics, Restock, Monitoring |
| Crop Structure | Spacing, Re-spacing, Pruning, Thinning, Dynamic growth models |
| Forest Protection | Forest health plots (levels I &II), *Fomes annosus* trials |

The objectives of the NATFOREX project are to:

* maintain and manage a national network of field trials for the scientific study and demonstration of silvicultural and forest management treatments;
* evaluate the relevance of existing trials in the Coillte experimental plot network and in the research sections of other organisations;
* decide on the feasibility of the analysis of the existing data, and on the benefits of further data collection and on the need to establish new trials based on identified information gaps;
* carry out maintenance work on key field trials to improve access, signage and labelling, and also to update the thinning and management status of the trials and to implement and continue the experimental treatments where appropriate;
* collect new data in trials where the development of the stand and the research objectives of the specific trial require this;
* integrate the findings and data from the trials into a publicly accessible data base, in which the information from the relevant (active and closed) field trials, consisting of all details of the experimental site, the experimental design and the treatments and all available collected data and any analysis results that have been produced, is pooled with findings from a wide range of forestry related disciplines.

The programme will also contain new trials currently being established as well as any future new trials.

Information on the full range of experiments, trials and demonstration sites will be publicly accessible. This information will include details of the research or demonstration objectives, the experimental design and layout, and an overview of the data that have been collected in each experiment. Database users will have access to the extensive body of silvicultural metadata that has been accumulated over many years.

In July 2007, Ireland was formally accepted as a member of NOLTFOX (Northern European Database of Long-Term Forest Experiments). Other members are Norway, Sweden, Finland, Denmark, Iceland, the UK, Latvia, Estonia, and Lithuania. The trials identified for retention as part of the COFORD-funded NATFOREX project will also be submitted to NOLTFOX, where a summary of each experiment will be made available on the NOLTFOX website.

The project is managed by UCD in co-operation with Coillte. The project co-ordinator is Prof. Maarten Nieuwenhuis ([maarten.nieuwenhuis@ucd.ie](mailto:maarten.nieuwenhuis@ucd.ie)); the project manager is Ted Lynch, field manager Donal O’Hare, and data manager Clare Cullinan.

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# CRISIS – next steps

The CRISIS (*Combined research and investigation of squirrels in Irish silviculture*) project funded by the Forest Service between 2005 and 2008 and concluded in June 2008. Key recommendations in the final report include:

* Ongoing promotion of public awareness on the threats posed by the grey squirrel to the broadleaved estate and the related issue of the conservation of the native red squirrel population.
* Introduction of a pilot trap loan scheme in a number of areas across the country in order to contain the spread of grey squirrels.

In response the Forest Service has agreed to provide financial support for this scheme in 2008-2009. The main proposals are as follows:

* The circulation of an educational pack on squirrels to all secondary and primary schools in early 2009. This initiative is also supported by the National Parks and Wildlife Service.
* The establishment of a trap loan scheme in selected parts of Tipperary, Louth, Wicklow, Wexford and possibly parts of Kildare. The scheme will centre on adjoining woodland in areas considered most vulnerable to grey squirrels. Owners will be given traps and the necessary support training to ensure success in addressing this problem.

For further information, contact Dr Michael Carey (email: careyml@eircom.net).

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# EUFORGEN Forest Management Network Meets in Belgium

The Forest Management Network convened for the fourth time in Leuven, Belgium on 4-6 November 2008. The meeting was hosted by the Research Institute for Nature and Forest (INBO) and representatives from 22 countries including Ireland participated. The purpose of the meeting was to report on progress made by the Network since its formation in early 2005 and included a review of its earlier efforts to increase awareness on genetic aspects of forest management practices and to promote appropriate use of forest reproductive material, i.e. material that is of high quality and well adapted to given climatic and site conditions. The meeting stressed the crucial role of forest genetic resources in ensuring that forests and forest management can adapt to climate change. Some countries have already analysed various options for future use of forest reproductive material and have identified key issues for further considerations in the face of climate change.

The network decided to summarise these analyses and develop an overview of these options and issue guidelines for the benefit of all member countries. Forest management decisions, such as the selection of regeneration method, have far reaching consequences and the genetic material used today must be able to cope with climatic changes for the next 50 or even 100 years. Therefore, forest managers need to pay more attention to genetic consequences of their decisions and practices applied at different phases of the silvicultural chain. The Network agreed to summarise key genetic issues in this regard for forest managers and policy-makers which will be issued as guidelines for all member countries in the future.

The meeting included a seminar on local forest management issues such as (1) delineation of provenance regions and (2) production of planting stock to enhance genetic diversity of autochthonous tree populations. During the seminar, the participants also discussed possible methods on how to inform forest managers and ways to disseminate research findings.

INBO organized a field trip at the end of the meeting in collaboration with the Agency for Nature and Forests (ANB). At the forest of Meerdaal, the participants discussed forest management problems with local managers and shared their experiences in addressing similar problems in their own countries. The participants also visited the Sonian Forest which is a large wooded complex covering over 5,000 hectares, south of Leuven. The management history of the Sonian Forest goes back for several centuries. In the 12th century, the forest was already managed by the Dukes of Brabant for hunting. Today, the Sonian Forest is famous for its beech forests which are registered as selected seed stands and provide a highly valued seed source in Belgium and many other countries such as Denmark and the UK and even Ireland where the material has shown excellent results. In 2006 approximately 4,000 kg of beech seed was harvested in the Sonian Forest. The area is managed for economic, ecological, social and recreational functions of the forests and is used extensively by the urban residents from the surrounding towns, including Brussels who appreciate the excellent facilities provided by this beautiful forest.

Forest Service and COFORD together service EUFORGEN at national level. A full report on the meeting is presently in preparation and will shortly be available on the EUFORGEN website. For further information visit the Bioversity website at [www.bioversityinternational.org](http://www.bioversityinternational.org)

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# Information and support services

# Carbon Corner

## Land use and climate change

In the lead up to Poznan in Poland, where the Conference of the Parties to the UN Framework Convention will meet over this week and next, the issue of land use and climate change is assuming ever increasing importance at national, EU and international levels.

At the national level the value of the forestry sector as an effective carbon sequestration tool has come into sharper focus, given the current financial situation. COFORD’s latest COFORD Connects Note – *Climate change and Irish forestry* - sets out the background to the issue of climate change and forestry, and illustrates the value to the climate and the economy of continued state and private investment in afforestation (report may be downloaded from the COFORD web site[[1]](#footnote-1)). The investment in afforestation since 1990 is set to save the Exchequer over €200 m in carbon purchases between now and 2012. Ireland’s ability to estimate and verify these levels of carbon sequestration is a direct consequence of state investment in the COFORD research and development programme. Research in the area began over ten years ago, when the first project in the area was funded by COFORD[[2]](#footnote-2). The project report makes interesting reading today in the light of more recent developments, as outlined in *Forests, Carbon and Climate Change* - *Local and International Perspectives*, which was launched at the COFORD council meeting in November[[3]](#footnote-3).

Developments at EU level are focussed on the European Commission’s proposed legislation[[4]](#footnote-4) - the climate and energy package - on greenhouse gas emission targets and how these can be met. Ireland’s target for 2020 is a proposed 20% reduction of emissions (on 2005 levels) by 2020. Meeting this target will be extremely challenging, and will require the development of new policies and approaches at national level. Central to the whole issue will be how agriculture can respond to reductions of the scale envisaged, in a way that will not damage the profitable parts of the sector, particularly dairying. Forestry has a major role to play here, and cost effective and market based approaches need to be considered to link forestry and agriculture in meeting policy objectives post 2012.

This brings us to the fact that forestry is, for the moment, excluded from the EC’s climate and energy package. The EC’s view is that forestry will be considered when there is a new international agreement on the post 2012 regime. Whether or not there will be an agreement depends on progress made at Poznan, and in the lead up to the final phase of negotiations, which will culminate at Copenhagen at the end of 2010. Forestry is important in the negotiations, with issues ranging from the rules governing the use of afforestation in developed countries such as Ireland, to reducing greenhouse gases emissions from deforestation in developing countries. Securing an international agreement will enable national policies and measures to be put in place which will better secure the future of agriculture and forestry as an economic uses of the land resource of the country.

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# Irish forests help reduce greenhouse gas concentrations

## and will save the taxpayer €220 m between now and 2012

COFORD has issued two new reports on forests and climate change. A new COFORD Connects paper outlines that Irish forests under the Kyoto regime are expected to remove 11 million tonnes of carbon dioxide from the atmosphere between now and 2012, thereby reducing the impact of climate change and saving the taxpayer over €220 in carbon purchases. The second report *Forests, Carbon and Climate Change* edited by COFORD Director, Dr Eugene Hendrick and the leader of the national research programme on forests and climate change – Dr Kevin Black – deals with national and international perspectives on the climate change issue.

Commenting at the launch of the reports yesterday at the COFORD council meeting at Waterford Institute of Technology, Michael Lynn (Woodfab Timber Limited), COFORD Chairman stated – *The public at large is not aware of the* *very significant contribution that the planting of land with trees makes to alleviating the effects of climate change – not just in Ireland but at the global scale. Irish forests alone contain over one billion tonnes of carbon dioxide in soil and trees. Not only do the forests themselves remove carbon dioxide from the air but they are a source of renewable energy and sustainable wood products such as construction timber and fencing*. *We need to accelerate our rate of afforestation and continue to encourage the use of wood energy in heating and as renewable material in the built environment and in other applications such as fencing*.

Dr Eugene Hendrick, COFORD Director, added – *Afforestation is a major building block in positioning the land use sector in Ireland to tackle greenhouse gas emissions. State investment in afforestation over a long period of time is now paying dividends in reducing the impact of climate change. A sustained afforestation programme is essential for this contribution to be maintained into the future, allied to measures to phase out fossil fuel for heating buildings and replace it with the range of wood fuels now available on the market.*

In concluding remarks Dr Kevin Black stated – *Investment in science and research to analyse and quantify the climate change benefits of forests is an essential support to national and international policy processes. The projects that come under the umbrella of the COFORD-funded CLIMIT programme are geared to providing better quality data for national and international reporting and decision making, as well as deepening our understanding of how forests interact with the climate. We are also working on how future climate regimes will impact on forests and forestry practice in Ireland and in what ways future forests can be made more climate robust*.

The reports can be ordered or downloaded from www.coford.ie

* Forests, Carbon and Climate Change - Local and International Perspectives. Proceedings of the COFORD conference held at the Glenview Hotel, Co Wicklow on 19 September 2007. Editors: Eugene Hendrick and Kevin G. Black.
* COFORD Connects note: Environment 9. Climate change and Irish forestry. Eugene Hendrick and Kevin Black.

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# 7th Framework Programme update

The regular supplement supplied by InnovaWood ([click here to download](http://www.coford.ie/iopen24/pub/iws-December2008.pdf)) contains information about:

* EVENTS, CONFERENCES AND COURSES
  + Events in brief
  + Shape Your Sustainability Tools (Eforwood Conference)
* EUROPEAN RESEARCH OPPORTUNITIES
  + Calls for proposals
  + FP7 Research topics with relevance for the forestry–wood chain (FWC)
* INNOVAWOOD INFORMATION SERVICE
  + InnovaWood project
  + Forest-Based Sector Technology Platform: the first years
  + Management of recovered wood: proceedings of the 3rd European COST E31 conference

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# National & international news

# Local Development and the Wood Energy Sector

On 3 December 2008, the Western Development Commission (WDC) is hosting a workshop to discuss the enterprise opportunities presented by the wood energy sector. The workshop will take place at the Claregalway Hotel, and will examine how the development of the sector can be supported, particularly the potential role of Local Authorities. The workshop will present two projects delivered by the WDC in partnership with Údarás na Gaeltachta and Donegal County Council as well as launching two information guides *A Guide to Wood Energy* and *Wood Energy and Local Authorities.* The workshop will discuss the following topics:

• The role of local authorities in supporting the wood energy sector;

• the experience of Donegal County Development Board and Community and Enterprise Division of Donegal County Council in supporting the sector;

• the enterprise opportunities presented by the wood fuel supply chain with a focus on potential community-based enterprises;

• the main factors affecting the development of wood energy projects (from fuel producer to end users).

The workshop is of interest to those involved in local economic development including community co-operatives, local development groups, LEADER companies, members of County Development Boards and the staff of Local Authorities. The private sector will also find the workshop a practical information session on wood energy development issues and the role of public agencies. Attendance is free of charge. Places are limited. Register by email: marykeaveney@wdc.ie or call 094-9861441.

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# Greening of Irish agriculture

The Institute of International and European Affairs is organising a one day major conference: *The Greening of Irish Agriculture: Responding to the Challenge of Climate Change* in Dublin Castle on 9 January 2009. This conference will address one of the major strategic challenges facing the Irish economy - reducing emissions in line with the ambitious targets proposed by the EU for 2020.

The Irish economy faces up to a 30% emissions reduction by 2020 on its “domestic” sector, largely made up of emissions from agriculture and transport. Agricultural emissions account for 40% of “domestic” sector emissions, four times the EU average. Among developed countries, only New Zealand compares internationally. Failure to introduce cuts in the agriculture sector will mean an increase in the burden on other sectors. Eventually a point will be reached where Ireland’s “distance to target” begins to appear unmanageable.

A key objective of this conference is therefore to explore possible market opportunities arising from mitigation and offsetting strategies for farmers, the forestry sector and the agri-food industry. It is clear that forestry, for example, provides significant offsetting potential in the period to 2020. One panel will therefore be devoted to exploring how forestry can be promoted through incentives and how the environmental benefits can be made more financially attractive and of greater benefit for the tree-planter.

For further information or a full conference brochure, please contact lynn.fitzgerald@iiea.com or call (01) 8746756.

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# COST conference: End user’s needs for wood material and products

COST action E53 recently held a conference in Delft in the Netherlands, on the topic of *End user's needs for wood material and products*. In the papers presented at the conference topics included moisture content and drying; machine and visual grading; and strength properties. The full proceedings are available online at www.coste53.net.

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# IUFRO Small-scale forestry conference

The 2009 IUFRO 3.08 Small-scale forestry group is seeking abstracts for the conference *Seeing the Forest Beyond the Trees: New possibilities and expectations for products and services from small-scale forestry* to be held in Morgantown, West Virginia from 7 to 11 June 2009. This conference will bring together scientists and practitioners to share their experiences in management, policy development and economics of contemporary small-scale forest products and services. Papers are sought in the areas of new and emerging opportunities for small-scale forests, sustainable agroforestry, policy formulation, amenity values of small scale forestry, economic valuation. Further details on the topics of interest can be found on the conference website: [http://ssf09.com/.](http://ssf09.com/)) For more information about the conference contact Dave McGill ([dmcgill@wvu.edu](mailto:dmcgill@wvu.edu)), chair of the conference organising committee.

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# Chemical released by trees can help cool planet

Trees could be more important to the Earth's climate than previously thought, according to a new study reported in the British press that reveals forests help to block out the sun.

Scientists in the UK and Germany have discovered that trees release a chemical that thickens clouds above them, which reflects more sunlight and so cools the Earth. The research suggests that chopping down forests could accelerate global warming more than was thought, and that protecting existing trees could be one of the best ways to tackle the problem. Dominick Spracklen, of the Institute for Climate and Atmospheric Science at Leeds University, said: "We think this could have quite a significant effect. You can think of forests as climate air conditioners."

The scientists looked at chemicals called terpenes that are released from boreal forests across northern regions such as Canada, Scandinavia and Russia. The chemicals give pine forests their distinctive smell, but their function has puzzled experts for years. Some believe the trees release them to communicate, while others say they could offer protection from air pollution. The team found the terpenes react in the air to form tiny particles called aerosols. The particles help turn water vapour in the atmosphere into clouds. Spracklen said the team's computer models showed that the pine particles doubled the thickness of clouds some 1,000 m above the forests, and would reflect an extra 5% sunlight back into space. He said: "It might not sound a lot, but that is quite a strong cooling effect. The climate is such a finely balanced system that we think this effect is large enough to reduce temperatures over quite large areas. It gives us another reason to preserve forests."

The research, which will be published in a special edition of the Royal Society journal *Philosophical Transactions A*, is the first to quantify the cooling effect of the released chemicals. The scientists say the findings "must be included in climate models in order to make realistic predictions".

Because trees release more terpenes in warmer weather, the discovery suggests that forests could act as a negative feedback on climate, to dampen future temperature rise. The team looked at forests of mainly pine and spruce trees, but Spracklen said other trees also produce terpenes so the cooling effect should be found in other regions, including tropical rainforests.

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1. <http://www.coford.ie/iopen24/pub/pub/CCN-ENV09-ClimateChange.pdf> [↑](#footnote-ref-1)
2. http://www.coford.ie/iopen24/pub/pub/Reports/carbonseq-Irishforests.pdf [↑](#footnote-ref-2)
3. http://www.coford.ie/iopen24/pub/pub/CarbonConferenceProceedings2007.pdf [↑](#footnote-ref-3)
4. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0017:FIN:EN:PDF [↑](#footnote-ref-4)