



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

DAFM response to the Report of the Joint Oireachtas Committee on Agriculture and the Marine, on 'Issues Impacting the Forestry Sector in Ireland' (2021)

Origins of Ash Dieback Disease in Ireland, Lessons Learned and Research Update



November 2022



Overview

Ash dieback disease caused by the organism *Hymenoscyphus fraxineus* was first found in Ireland in 2012 and is now widespread throughout the country and the rest of Europe. The spread and impact of the disease on ash, one of our most important native broadleaves has increased year on year. Over the coming years and decades the continued rapid decline of ash trees in the countryside will lead to very significant cultural, ecological and economic impacts.

This report has been compiled in response to the Recommendations of the Joint Oireachtas Committee on Agriculture, Food and the Marine, report on '*Issues Impacting the Forestry Sector in Ireland*' one of which was that the Department of Agriculture, Food and Marine compile a detailed report on the origins of Ash Dieback disease in Ireland.

Specifically the Department notes Recommendation 7 of the Committee's Report *that the Department **compile a detailed report on the origins of Ash Dieback in Ireland** and whether there are lessons to be learned that would assist with preventing future disease importation.*

This report finds that ash dieback disease was likely to have been introduced into Ireland from another EU Member State, on infected ash plants for use in either forest, farm or roadside planting. It is not known when the disease first arrived in Ireland.

The Department of Agriculture Food and the Marine has taken a number of significant steps in response to this experience, including the provision of significant financial support to growers impacted to allow them to remove infected ash and replace with other suitable species; the publication of its Plant Health and Biosecurity Strategy, and the establishment of a new area of expertise in the Department in Pest Risk Analysis. The Department has and continues to support a number of research initiatives in order to identify tolerant genotypes for use in ash breeding programmes for the future.

The experience of ash dieback disease provides clear evidence of the increasing threat to our plant health status through a combination of climate change and trade from within the single market and from third countries. The lessons learned range from the



need for preparedness for outbreaks, collaboration with other jurisdictions, key scientific expertise through the plant health sector to supporting a greater level of awareness all stakeholders for awareness, vigilance and responsibility.

While the Department notes that the Committee heard (from a witness) that “ultimate responsibility with regard to the import of Ash Dieback to Ireland lay with the DAFM”, the Department outlines that this is not a correct assessment and sets out in detail in this report as requested by the Committee the account of the origin of ash dieback disease.



Executive Summary

The Origin of Ash Dieback in Ireland -

- This report finds that the most likely pathway for the introduction of ash dieback disease into Ireland was through the movement of infected ash plants into Ireland from another EU Member State.
- It is not known when the disease first arrived on the island of Ireland. The first detections of the disease were made in 2012 in both Ireland and Northern Ireland. In the same year it was also first detected in Great Britain.
- The disease was not fully scientifically understood as it spread across Europe and the causal organism was not fully described as *Hymenoscyphus fraxineus* until 2014.
- Ash dieback disease is a wind-borne disease and airborne transmission from continental Europe has been attributed to its introduction into the southeast of Great Britain and to rapid spread throughout the natural range of ash in Europe. Airborne transmission has similarly resulted in its rapid spread throughout the island of Ireland, where the disease is now widespread.
- The impact of ash dieback disease has increased in Ireland, and it is expected that in the coming years it will have a significant impact on ash wherever it occurs in the Irish landscape, including in hedgerows and in the wider natural environment.

Actions taken by DAFM

- Early actions by the Department involved the rapid mobilisation of the sector and investment of funds in attempting to eradicate the disease in the area where it was first detected, and subsequent measures to remove host material to slow the spread of the disease.
- Legislation was introduced to prohibit movement of ash plants into Ireland.
- To date DAFM has provided more than €7.5 million to ash plantation owners and anticipates continuation of the support for affected owners for the foreseeable future.
- Support for research is vital and, in this regard, DAFM has provided funding for ongoing research into the spread of ash dieback disease and the possible identification of resistant or tolerant genotypes for future planting.
- In November 2019, DAFM launched a major plant health initiative in its 'Plant Health and Biosecurity Strategy 2020-2025'



<https://www.gov.ie/en/publication/a8885-forest-health/#plant-health-and-biosecurity-strategy>) which outlines the importance of plant health

biosecurity for Ireland and helps ensure that all stakeholders are aware of the risks to plant health in Ireland, and their role and responsibilities to reduce those risks.

- There has been a very substantial investment in EU ‘Border Control Posts’ facilities since 2018 to allow import control inspections of plants and plant products from non-EU countries.
- Additional import notification requirements for a range of plants for planting (and other plant products) were introduced through S.I. 310 of 2021 which require importers to notify the Minister of these imports in order that plant health controls can be carried out.
- DAFM has substantially increased staff resources in plant health and has established a dedicated Pest Risk Analysis Unit.
- There are health and safety aspects associated with diseased trees which are particularly acute when roadside trees are diseased. In response to this developing issue the Department has published “A Guide for Landowners to Managing Roadside Trees” [gov.ie - A Guide for Landowners to Managing Roadside Trees \(www.gov.ie\)](https://www.gov.ie/en/publication/a8885-forest-health/#plant-health-and-biosecurity-strategy) in order to provide guidance to landowners with roadside trees.

Lessons learned from the impact of Ash Dieback Disease

- Ireland and the rest of the EU is under ever increasing threat from invasive pests and disease. The threat of introduction of harmful organisms is significantly increased due to a combination of intensive globalisation of trade in plants and the increasing impact of climate change.
- Once a harmful plant pest or diseases is introduced and becomes established in the ‘wild’ it may become impossible eradicate.
- Having a plant health contingency plan was key to managing the outbreaks. The critical importance of preparedness, capacity and awareness to address the threat of harmful organisms as now set out in The Department’s ‘Plant Health and Biosecurity Strategy 2020-2025’.
- DAFMs regular engagement and collaboration with counterparts in Northern Ireland was important in managing this and future outbreaks. DAFM must continue to work with its Northern Ireland counterpart DAERD on an all-island basis in order to protect the plant health status of the island of Ireland as a single epidemiological unit.



- Good communications engagement with all stakeholders is key. A number of actions proved very successful and should be repeated in any future outbreak. Good quality information on the DAFM website laying out clearly the most up to date position is important when dealing with queries from a variety of sources. and in particular landowners are key. In addition, ‘town hall’ meetings convened by Teagasc and DAFM and attended by landowners and foresters also proved successful.
- All forest sector stakeholders have a responsibility for forest health and should ensure they engage in best practice to help prevent the introduction of pests and diseases on plants and plant products



Introduction.

Common ash (*Fraxinus excelsior*) is one of our most important native tree species and is of unique value in economic, ecological, landscape and culture terms. However, ash is now under significant threat due to ash dieback disease, caused by the harmful organism *Hymenoscyphus fraxineus* which was first detected in Ireland in 2012.

Ash Dieback Disease has spread rapidly throughout Europe from east to west over the last 30 years with devastating consequences on ash tree populations. The effects of the disease in Ireland are evident and increasing year on year on ash found in forests, roadsides, hedgerows and with associated environmental, social and economic impacts.

The Department of Agriculture, Food and the Marine has been extensively involved in combating this ash dieback. These efforts have included disease control, financial support for owners of ash plantations impacted by the disease and support for research into tolerance to ash dieback disease.

Among the Recommendations of the Joint Oireachtas Committee on Agriculture Food and the Marine, report on '*Issues Impacting the Forestry Sector in Ireland*' was that the Department of Agriculture, Food and Marine compile a detailed report on the origins of Ash Dieback disease in Ireland.

This report is the Department's response to this Recommendation. It addresses the question of the origin of ash dieback disease in Ireland, actions taken, and lessons learned, following its first finding of the disease. The report provides the background concerning the science and understanding of the disease, its arrival in and spread across Europe, as well as an account of the European Union's legislative and market context. A Summary of the key points are provided in each section. The report is presented in three sections these are

Part 1. The origins of ash dieback disease in Ireland

Part 2. The actions taken by the Department in response to the impact of the disease.

Part 3. The lessons learned from the impact of ash dieback disease and



Part 1. The Origin of the Ash Dieback Disease in Ireland

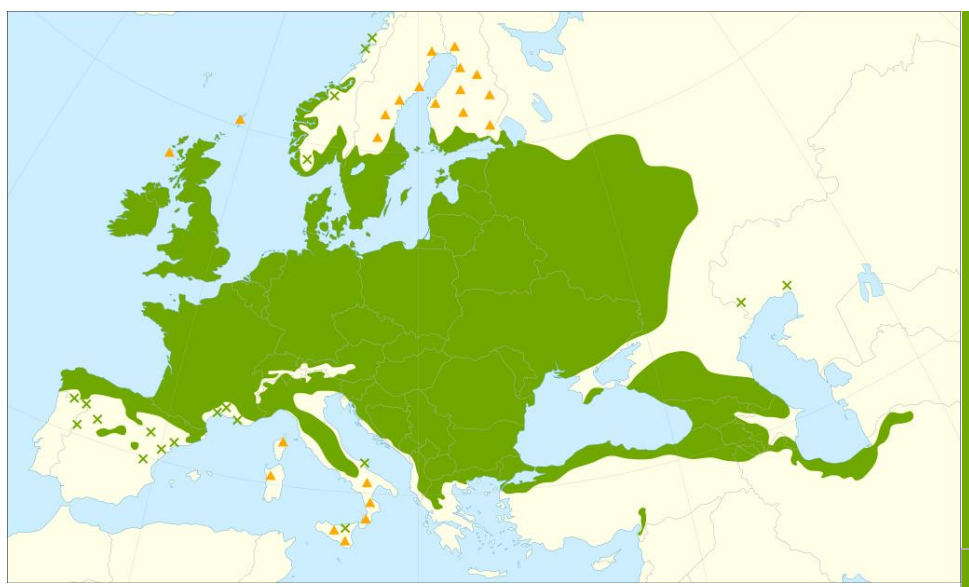
1.1. Background - The European context

In reporting on the origins of ash dieback disease in Ireland it is important to recognise in the first instance that this disease has swept across the continent caused by an organism which was previously unknown to science.

The origin in Europe of ash dieback disease is not certain but scientists in recent years have suggested that it may have inadvertently been introduced into Europe on plant material imported from Asia. Post its discovery in Europe, it was subsequently found for the first time to be present in China, Japan and Korea where it does not cause damage to their native ash species (*Fraxinus mandschurica* and *Fraxinus chinensis subsp. rhynchophylla*). It was most likely introduced to Europe at an unknown time, possibly in the early 1990s into Poland prior to its membership of the EU.

Figure 1 below illustrates the distribution of common ash in Europe. Figure 2 illustrates the distribution of ash dieback disease in Europe. Both figures illustrate that the occurrence of ash dieback disease very largely matches the natural occurrence of ash in Europe. It is notable that no other countries in the EU apart from Ireland and the UK attempted to prevent its further introduction and spread.

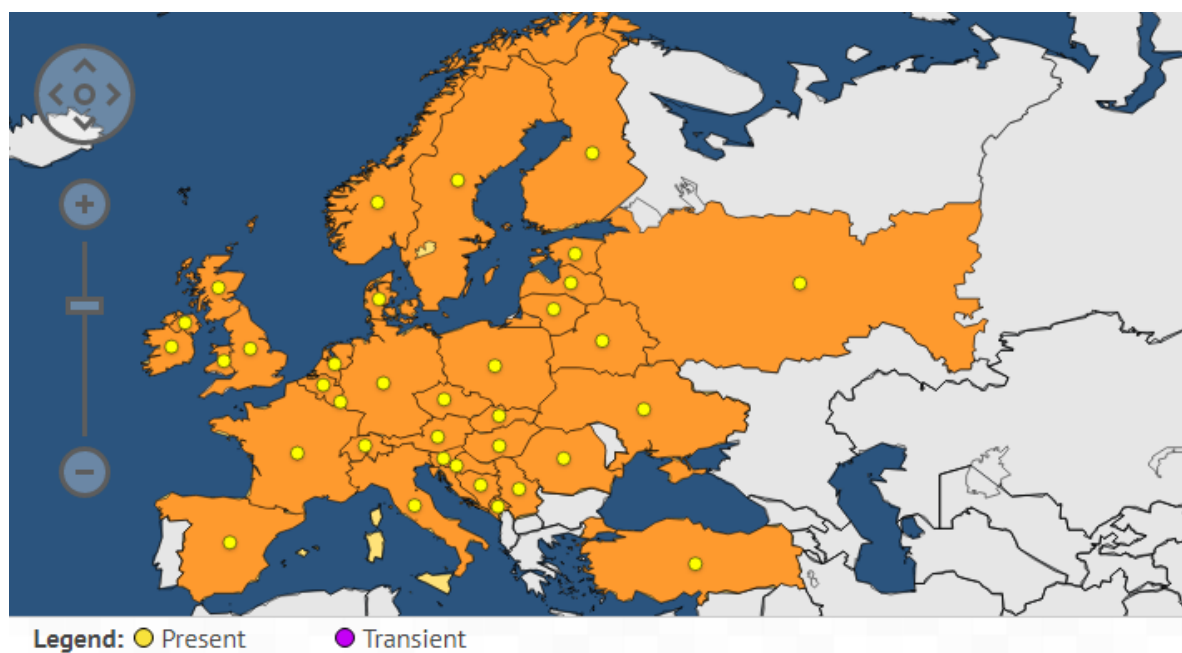
Figure 1: Distribution map of *Fraxinus excelsior* (common ash) in Europe



Native range X Isolated population ▲ Introduced and naturalized (synanthropic). Source: EUFORGEN
https://commons.wikimedia.org/wiki/File:Fraxinus_excelsior_range.svg



Figure 2: Distribution map of ash dieback disease in Europe



Source: European and Mediterranean Plant Protection Organisation (EPPO)

Current Reported Distribution of ash dieback disease: EU and European Countries (in alphabetical order): Austria , Belarus, Belgium, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, **Ireland**, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, Norway, Poland, Romania, Russia (European & Asian) , Serbia, Slovakia, Slovenia, Spain, Switzerland, Turkey, Ukraine, United Kingdom (**including Northern Ireland**).

Host species: Ash is the host genus for the disease, and it has been recorded on the following species of ash: *Fraxinus excelsior* (common ash and our only native ash), *Fraxinus americana*, *Fraxinus angustifolia*, *Fraxinus chinensis subsp rhynchophylla*, *Fraxinus mandshurica*, *Fraxinus nigra*, *Fraxinus ornus*, *Fraxinus pennsylvanica*.



1.2. Scientific understanding of Ash Dieback Disease

The expert scientific community in Europe in dealing with ash dieback disease in the early 2000's was dealing with a disease of ash with no known cause. Dieback symptoms in ash had first been noted in Poland in the early 1990's without any described cause. At this time, the level of understanding and awareness of the disease in Europe was very poor in comparison to today.

It is not widely understood that ash dieback disease was caused by a new species to science. The disease and its life cycle were not fully scientifically described until after 2009. There was also confusion around the correct name of the organism and separating it from that of a closely related benign native fungal species. It was scientifically misunderstood until the harmful pathogenic sexual reproductive stage of the disease was discovered and described as recently as 2010, which was subsequently named *Hymenoscyphus pseudoalbidus*. This followed the earlier discovery of the asexual stage of the fungus in 2006, which was also described as a new species to science and was named *Chalara fraxinea*. This vegetative state of the fungus is from whence the disease derived one of its common names – Chalara.

Both phases of the life cycle of these new species were then combined for nomenclature reasons in 2014 to the new official scientific name for ash dieback disease, *Hymenoscyphus fraxineus*.

This disease also should not be confused with a separately described and documented 'ash dieback' disorder, scientifically described and published in the early 1990's in GB (<https://www.forestresearch.gov.uk/research/archive-ash-dieback-a-survey-of-non-woodland-trees/>). Due to the widespread presence of similar symptoms this disorder is also considered to occur in Ireland where mature older ash trees in hedgerows can exhibit extensive crown dieback. As *Hymenoscyphus fraxineus* disease spreads to older trees there is very likely going to be an overlap in symptoms of ill health related to the old ash crown dieback and the recent Chalara ash dieback disease.

Laboratory diagnostic protocols for identifying the disease were also deficient at the time. Early non standardised diagnostic protocols relied on microbiological isolation of the slow growing fungal organism. These microbiological methods had a high risk of false negative results. Modern molecular diagnostic methods developed after 2009 provided high sensitivity and accuracy.



1.3. The first detection of Ash Dieback Disease in Ireland

The first detection of ash dieback in Ireland was made from material sampled from a forest plantation in Co. Leitrim in 2012. While there has been some focus on the first detection it is important to highlight that it is unknown when the first introduction of ash dieback disease into the island of Ireland occurred, or the origin of the first introduction.

The Co. Leitrim site where the disease was detected was planted in 2009, before the disease was fully scientifically described. Using forest reproductive material traceability records the Department was able to identify the origin and the chain of import of these plants which involved an importing private nursery and a private forestry contractor. The plants were shipped from the Netherlands in accordance with EU regulations at the time and without any border controls under the rules of the Single Market (see Section 5 below). It subsequently transpired that the plants originated in Denmark and were moved to the Netherlands, again without any border controls under the rules of the single market.

As is normal forest practice plant failures were filled in in 2010. The origin of these replacements plants is unknown. It is not possible to be definitive on whether the trees first detected as infected with ash dieback disease at the Co. Leitrim site were already infected when imported or whether they were cross infected by other nearby infected plantings, considering the highly transmissible airborne transmission of the disease and several subsequent detections of ash dieback in the area.

The first detection of the disease in Northern Ireland was also made in 2012 but it is also unknown when the disease was first introduced or the specific origin of the disease.

Following the first detection in 2012, the disease was subsequently found through intensive surveys which followed, to be much more widespread throughout Ireland in various contexts including forests and hedgerows, agri-environment planting schemes, motorway and roadside plantings, landscape and amenity planting, nurseries and garden centres. It was also found to be more widespread than initially thought in Northern Ireland.

In the likelihood that the disease first arrived on infected plants it is not known whether these plants were used for forestry, agri-environment, motorway/roadside planting,



amenity plantings or in multiple scenarios. While it was first detected in 2012 the disease was almost certainly present on the island of Ireland for some years.

Certainly, the movement from other countries within the borderless EU Internal Market hastened the spread of the disease and the disease to this day remains unregulated under the governing EU Plant Health legislation.

For all Department forestry schemes home sourced ash was recommended in its Grant Schemes Manual as 'first choice' for its use in its grant schemes. However for supply and/or economic reasons millions of ash trees were imported by the forestry sector for use in the schemes.

The Department successfully sought a requirement that only native sourced ash and other native trees be certified and used for the National Roads Authority (NRA) motorway plantings and these measures were published by the then NRA in its 2006 'Guide to Landscape Treatments for National Road Schemes in Ireland' but DAFM understands that these recommendations were not implemented due to supply issues for the extensive motorway plantings.

While the Joint Oireachtas Committee has considered ash dieback disease specifically in the context of forests, it is important to emphasise that the disease has also been detected throughout the island of Ireland wherever ash is grown, planted, or is occurring naturally in the wider environment. Outside of forestry plantations, the disease has been detected for example in horticultural nurseries, garden centres, private gardens, farm/agri-environment plantings, motorways and roadsides and increasingly in hedgerows and the wider environment. The disease is also widespread where ash occurs in urban environments, including Dublin city centre.

1.4. Situation in Great Britain

Like Ireland and Northern Ireland, the disease was also first detected in Great Britain (GB) in 2012. Airborne spread of the disease from the continent was thought to be a source of the disease in the southeast of GB as well as the introduction on previously imported infected plants. Scientific research carried out in 2018 in England found evidence from mortality dating of ash indicating that ash dieback disease was present in England as early as 2004-2005. The research paper also concluded that the advanced disease levels at some sites, plus confirmation of the disease in old stem cankers, suggested that planting of infected tree stock in England could date back to



the early 1990s. It is very likely that ash dieback was introduced into Ireland for a considerable number of years prior to its first detection by DAFM in 2012.

1.5. EU Single Market/Internal Market Regime

There are no formal border controls or inspections on goods (including plants and plant products) moving within the EU under the rules and principles of the EU Single Market /Internal Market. Compliance with movement requirements to other Member States are essentially the responsibility of the EU country of origin.

Plant health rules that restrict the movement of plants and plant products into a Member State must be stringently scientifically substantiated so that they are not perceived to be barriers to trade (and globally also under WTO rules).

Central competency for EU plant health legislation as such resides with the European Commission rather than with the individual Member States. This is unlike human health where competency rests with the Member State and the current example of the Covid-19 pandemic.

Under the then governing EU Plant Health Directive (Council Directive 2000/29/EC) (replaced by the new EU Plant Regulation in December 2019), only certain plants and plant products were regulated. Under the old EU Directive, ash plants, ash trees or ash wood moving within the EU Internal Market were not regulated in any Member State and could freely move throughout the then 28 Member States.

Ash dieback disease remains unregulated throughout the EU under the new EU Plant Regulation. While many tree species (e.g., ash, birch, beech) were not regulated under the outgoing Council Directive, it is a positive development that all plants under the new enhanced EU Plant Health Regulation (2016/2031), require a Plant Passport when moved within the EU between 'Professional Operators'.



Action taken by Ireland at EU level and legal opinion from the Commission

The competent European Commission forum for the then EU Plant Health Directive (Council Directive 2000/29/EC) was previously named the 'Standing Committee on Plant Health'.

Ireland represented by the Department was the first Member State to raise concerns about ash dieback disease at the 'Standing Committee on Plant Health' and repeatedly raised it in this forum. The UK also raised its concerns about the disease and indicated that they were working on a scientific 'Pest Risk Analysis'. No further action was taken at the Standing Committee by the European Commission or by the other Member States to address the disease threat as it spread across Europe..

Given its concerns, the Department in 2009, also applied to the European Commission for a 'Pest Risk Analysis' for ash dieback disease to be carried out at EU level. Pest Risk Analysis is a prerequisite and required to justify the introduction of new legislation proposed for new harmful organisms of concern. Unfortunately, this submission was unsuccessful. The Department was also unsuccessful in 2009 in its submission to the Commission for ash dieback disease to be added to the EU regulations as a harmful organism.

Ireland also raised the seriousness of the disease through the forum of the international OECD 'Forest Seed and Plant Scheme' concerning the movement of forest reproductive material in international trade.

At no stage did any other EU Member State bring forward any proposals to have ash dieback regulated within the EU legislation. This is difficult to understand but may be attributed to the lack of science to legislate for an unknown disease, the lack of laboratory diagnostic protocols and the rapid airborne spread of the misunderstood disease.

Uniquely in the EU, Ireland and the UK cooperated to simultaneously introduced its emergency national legislative measures in 2012 (also having to take into account our all-island shared plant health status with Northern Ireland and North South Ministerial Council co-operation). No other Member States brought in national legislation. The European Commission, having undertaken internal legal advice formally wrote to DAFM informing that the measures taken by Ireland were as such in breach of the EU Plant Health Directive (Council Directive 2000/29/EC) and should as such be revoked. In the letter to Ireland's Chief Plant Health Officer in DAFM, the Commission wrote *"In case of establishment of that harmful organism in the entire territory of Ireland, and in view of the fact that it is substantially spread in the rest of the Union territory, any national measures, such as the requirement for plant passport on particular plants or plant products, may not be maintained on the basis of Article 16(2) of the Directive."* The UK authorities received a similar legal opinion – covering the legislative measures in Northern Ireland and GB.



1.6. EU Forest Reproductive Material Marketing Regulation

Until the implementation in 2003 of Council Directive 1999/105/EC on the marketing of forest reproductive material (seeds, and plants for forestry purposes), ash was not a regulated tree species throughout the EU. There was therefore no legally based requirement for the certification of provenance/origin for the marketing of any species of ash plants for forestry purposes within the EU.

Summary. The Origin of Ash Dieback in Ireland -

- This report finds that the most likely pathway for the introduction of ash dieback disease into Ireland was through the movement of infected ash plants into Ireland from another EU Member State.
- It is not known when the disease first arrived on the island of Ireland. The first detections of the disease were made in 2012 in both Ireland and Northern Ireland. In the same year it was also first detected in Great Britain.
- The disease was not fully scientifically understood as it spread across Europe and the causal organism was not fully described as *Hymenoscyphus fraxineus* until 2014.
- Ash dieback disease is a wind-borne disease and airborne transmission from continental Europe has been attributed to its introduction into the southeast of Great Britain and to rapid spread throughout the natural range of ash in Europe. Airborne transmission has similarly resulted in its rapid spread throughout the island of Ireland, where the disease is now widespread.
- The impact of ash dieback disease has increased in Ireland, and it is expected that in the coming years it will have a catastrophic impact on ash wherever it occurs in the Irish landscape, including in hedgerows and in the wider natural environment.



Part 2. DAFM Actions Taken

2.1. Support for ash plantation owners

Following the first finding of ash dieback disease in Ireland in 2012, the Department initially invested large resources in trying to eradicate the disease in the area where it was first detected. A major reconstitution scheme was immediately introduced to provide financial support to ash plantation owners to remove and replace diseased ash plantations. By the end of 2019, under the ash reconstitution scheme well over 1,000 hectares of infected and associated ash plantations had been cleared and replanted with alternative species at a cost of over €7 million.

The disease spread rapidly on the island and established in the wild and wherever ash was planted. Regarding the forestry sector DAFM's revised policy and support approach scheme to ash dieback disease focused on ash plantation management 'living with the disease' rather than any further attempts to eradicate the disease.

In June 2020 a revised scheme the RUS scheme was introduced DAFM has received 833 applications for support from affected landowners covering some 3,161 hectares, with decisions made on 327 of those, accounting for 1,083 hectares (January 2022).

It is intended to continue to offer a Reconstitution Scheme through the next Forestry Programme which will cover the period from 2023-2027. The Programme is currently undergoing public consultation as part of the SEA/AA process.

2.2. Support for Research

This section details Department support for and involvement in research efforts on ash dieback disease.

2.2.1. Breeding for tolerance to ash dieback disease

The COFORD Council Forest Genetic Resources Working Group published in 2020 (a COFORD Connects information note "*Breeding for tolerance to Ash Dieback disease*" Reproductive Materials No. 22).

This document sets out a national approach which aims to

- Establish a population of tolerant material, suitably adapted to Irish growing conditions; and,



- Ensure that tolerant planting material is available in sufficient quantities in the medium and long term.

Teagasc is leading the research in Ireland on improving the genetic tolerance of ash to the ash dieback disease, which is carried out with research funding support from the Department and in collaboration with Coillte, Forest Genetic Resources Trust, Irish universities and Research Performing Organisations, European partners (including in the UK).

Production of disease tolerant ash plants is in a research and development stage in Ireland. It will be some years before ash plants tolerant to ash dieback will be available for planting. Tree breeding is a long-term process, and material considered for potential use in long-term programmes must be validated using laboratory methods along with multi-site field testing. A small proportion of ash trees show natural tolerance to the disease and this tolerance is heritable.

The focus of the research to date has been on the identification and establishment of a population of putatively tolerant ash plants, and to test the durability of these trees to the disease. In addition, putatively tolerant trees identified by European partners require testing under Irish growing conditions to assess their adaptability. It has been the case, as part of this research effort, that material initially considered to be tolerant to ash dieback disease has subsequently succumbed to the disease during field testing.

The primary output of this work to date has been the establishment of three gene banks of putatively tolerant ash material and an indoor seed-orchard of tolerant trees. Over time, and as the level of disease durability is established, these plantings will be used to generate reproductive material to generate tolerant ash trees for planting. In parallel, work continues on the selection of new genotypes that show tolerance to the disease and in developing new genetic and genomic tools to speed up selection efforts.

The COFORD Connects information note *“Breeding for tolerance to Ash Dieback disease”* outlines a timescale of at least 6 and up to 20 years for mass production of tolerant trees.



2.2.2. Department directly funded research.

The following ash dieback research projects have also been funded by the Department

Year	Project Name	Project Outline	DAFM Support (€)
2019	NEXCELSIOR	“Next steps in managing the impact of ash dieback”. The overall aim of NEXCELSIOR is to develop evidence-based guidance for foresters to minimise the impact of ash dieback and to maximise the recovery of timber or other products/services and preserve ash as a component in Irish forests and hedgerows. Research will also involve a focus on assessing wood degradation in infected ash.	132,600 (a similar level of funding has been made available by DAERD).
2017	FORM	The project aims to build a gene bank of ash composed by individual genotypes of ash with tolerance to ash dieback. These genotypes will be used to bulk up stocks of tolerant trees, as well as for establishing seed-producing orchards.	350,000
		As part of a DAFM-funded research project, in 2018, the first PRA scheme for Ireland has been developed. The scheme covers both pest-focused and pathway-focused PRAs and aligns with international guidelines. A PRA for Sitka spruce was developed as part of this work.	



2014	MASAD	Assessing Ireland's risk to airborne spread of ash dieback disease	67,000
------	-------	--	--------

2.2.3 DAFM supported Field Trials

The Department has supported a number of other research projects into the control and management of the disease, in particular projects with a key long-term focus of developing an ash tree breeding programme to identify trees that show strong tolerance and or resistance to the disease and the genetic basis for tolerance.

In this regard, a five-year project was begun in 2013, the aim of which has been to identify individual trees of ash which show resistance or tolerance to Ash Dieback and to use them for possible future breeding work and DNA screening by other institutes. The project, which is part funded by the Department, is being carried out by Forest Research, an agency of the Forestry Commission in the UK. The project involves 48 hectares of trial plantings over fourteen sites in the east of England and the mass screening of some 155,000 ash trees with fifteen different provenances from continental Europe, the UK and Ireland. Over 14,000 Irish ash plants from two distinct seed lots have been included in these trials. These trials continue to be monitored by Forest Research UK, while scion material showing early signs of tolerance has been repatriated back to Ireland and incorporated into the Teagasc research effort.

In 2014 Teagasc started a four-year project, working with researchers in Lithuania and France, with the aim of procuring individual trees of ash which show resistance/tolerance to the disease. If successful these trees will then be used to bulk up stocks of resistant trees, as well as for establishing seed producing orchards with resistant parent trees.

In 2020 a collaboration between Teagasc and Coillte, with support from DAFM, resulted in the first conservation collection being established on a Coillte property in Co. Kilkenny. The site constituted the first planting of potentially tolerant ash genotypes, and includes a range of Irish and European genotypes. A second genebank was established in 2021 in the Phoenix Park Co. Dublin, in a collaborative effort between Teagasc and the Office of Public Works. Both these sites will be monitored over the coming years in order to assess how tolerance of each genotype holds up.



The Department is also monitoring efforts by researchers in other European countries who are actively seeking to identify trees exhibiting a similar tolerance and develop a deeper understanding of the interactions between the pathogen and host. For instance, work in countries such as Denmark are far advanced, and active selection programmes are also underway in Austria, France, Poland, Sweden, Switzerland as well as the UK. Department officials and their colleagues in Teagasc have progressed opportunities for collaboration with these programmes, and material from across Europe has been included in the Teagasc genebanks for further study under Irish growing conditions.

Furthermore, Belgian researchers recently informed the Department that some of the Irish ash planted there as part of earlier forestry research trials has so far shown signs of tolerance to the disease and this may present another potential avenue to try and develop resistant Irish ash trees.

2.2.4. FRAXBACK COST Action

In relation to involvement in and support for research and research projects the Department was a participant in the European Cooperation in Science and Technology (COST) funded action into Ash Dieback disease during the period 2012 - 2016. COST was an intergovernmental framework for European Cooperation in Science and Technology, allowing the coordination of nationally funded research on a European level. Deliverables from the FRAXBACK COST Action are to be a dedicated special issue of Baltic Forestry Journal and a book featuring reports from participating countries. Emerging science and relevant results arising from the FRAXBACK Action were used as part of the Departments 2018 review of its policy on the disease.

2.2.5. EUPHRESKO workshop

In February 2018 the Department hosted a EUPHRESKO workshop **entitled Chalara lessons learned**. The main output and findings were as follows;

- The main focus of the report is research, future research and research co-ordination.
- Strong emphasis was placed on the need for research into tolerance to ADB.
- The time required for such research to produce any for significant outputs was noted. A more long-term research focus is needed.



- No immediate solution to the long-term issue of large scale loss of ash in the landscape was identified.
- No significant insight into silvicultural options were presented. It was noted in plant health, most interested parties agree that it is better to attempt to prevent issues rather than react to them through eradication and control responses. (At the meeting it was made clear from European participants that eradication is not possible).

3. DAFM Plant Health and Biosecurity Strategy:

In November 2019, DAFM launched a major plant health initiative in its 'Plant Health and Biosecurity Strategy 2020-2025' (<https://www.gov.ie/en/publication/a8885-forest-health/#plant-health-and-biosecurity-strategy>). The strategy outlines the importance of plant health biosecurity for Ireland and will help ensure that all stakeholders are aware of the risks to plant health in Ireland, and their role and responsibilities to reduce those risks. The Strategy is underpinned by key strategic principles around anticipating risk, implementing surveillance and management as well as building awareness and communication.

As a demonstration of the measures being taken in line with the Strategy, in July 2021 DAFM brought in a new Statutory Instrument that the Department should be notified of the arrival of specified plants and plant products from other Member States as soon as practicable and no later than 48 hours after arrival into the State. These arrangements are separate to the notification requirements for import of these plants from outside of the EU. The possibility to take such measures were not directly available under the outgoing EU Plant Health Directive and Internal Market rules but can now be undertaken under the 2017 EC Official Controls Regulation



4. Legislation.

In response to the number of introductions into the EU of pests and diseases and invasive species in general and the ever-increasing threats posed by globalisation, free trade and climate change, lessons have been learned by the EU, including Ireland. This has been primarily addressed in the EU by new EU plant health regulations, animal health regulations an overarching official controls regulation and an inaugural EU invasive alien species regulation.

Since December 2019 a new EU plant health regulation 2016/2031 of the European parliament and the council on protective measures against pests of plants came into force. This legislation is stronger and more effective from Ireland's perspective in comparison with the outgoing EU plant health directive which dates back to 2000. The legislation allows for more proactive and faster legislative responses to new and emerging plant pests and diseases. Under the new EU plant health regulation, all plants for planting should be accompanied by a plant passport which attests to the good health status of the plant(s) when moved between professional operators. There are also much enhanced controls on the importation of plants and plant products from non-EU countries.

5. DAFM resources and scope of activity in Plant Health

The profile of animal health and animal diseases such as foot and mouth disease have always received national prominence and public attention. Plant health and pests and diseases of plants have not previously received such national prominence. DAFM has raised the profile of plant health and the risks posed by introduced plant pests and diseases. DAFM has substantially increased staff resources in plant health in recent years including the addition of specialised staff.

This has also allowed the plant health teams in DAFM to increase the amounts of risk-based sampling and testing, to be proactively involved in international committees (e.g., European and Mediterranean Plant Protection Organisation (EPPO)), and to take part in applied EU scientific research projects (e.g., through EUPHRESKO).

Increased resources in plant health allow improved proactive engagement with EU legislative mechanisms. This includes surveillance, diagnostic and pest risk analysis capability.



Risk anticipation, horizon scanning, and PRA are essential components for maintaining Ireland's plant health and biosecurity and DAFM has invested significant resources since 2019 in establishing its own Pest Risk Analysis team whose function includes systematically analysing data relating to a particular organism of concern to establish its potential for entry, establishment and spread in Ireland. DAFM has also bolstered its scientific team in the plant health diagnostics area, recruiting a plant health bacteriologist, plant health nematologist, a plant pathologist as well as several plant health diagnosticians.

Summary. Actions taken by DAFM

- Early actions by the Department involved the rapid mobilisation of the sector and investment of funds in attempting to eradicate the disease in the area where it was first detected, and subsequent measures to remove host material to slow the spread of the disease.
- Legislation was introduced to prohibit movement of ash plants into Ireland.
- To date DAFM has provided in excess of €7.5 million to ash plantation owners and anticipates continuation of the support for affected owners for the foreseeable future.
- Support for research is vital and, in this regard, DAFM has provided funding for ongoing research into the spread of ash dieback disease and the possible identification of resistant or tolerant genotypes for future planting.
- In November 2019, DAFM launched a major plant health initiative in its 'Plant Health and Biosecurity Strategy 2020-2025'
<https://www.gov.ie/en/publication/a8885-forest-health/#plant-health-and-biosecurity-strategy>) which outlines the importance of plant health biosecurity for Ireland and helps ensure that all stakeholders are aware of the risks to plant health in Ireland, and their role and responsibilities to reduce those risks.
- There has been a very substantial investment in EU 'Border Control Posts' facilities since 2018 to allow import control inspections of plants and plant products from non-EU countries.
- Additional import notification requirements for a range of plants for planting (and other plant products) were introduced through S.I. 310 of 2021 which require importers to notify the Minister of these imports in order that plant health controls can be carried out.
- DAFM has substantially increased staff resources in plant health and has established a dedicated Pest Risk Analysis Unit.



- There are health and safety aspects associated with diseased trees which are particularly acute when roadside trees are diseased. In response to this developing issue the Department has published “A Guide for Landowners to Managing Roadside Trees” gov.ie - www.gov.ie - A Guide for Landowners to Managing Roadside Trees (www.gov.ie) in order to provide guidance to landowners with roadside trees.

Part 3. Lessons learned from the impact of Ash Dieback Disease

3.1. Introduction: - Threats from alien invasive pests and disease

Ireland and the rest of the EU is under ever increasing threat from invasive pests and disease and wider general alien invasive species of all kinds in terrestrial and aquatic and marine environments. This risk has been massively increased due to an intensive globalisation period with trade all around the world of plants and plant products including on infested wooden pallets and other wood packaging material associated with goods of all kinds. This is being and will continue to be exasperated by the increasing impact of climate change.

In recent years there have been numerous introductions of very damaging and previously unknown pests and diseases into the EU, such as the devastating effects of the introduction from China of the pine wood nematode into pine forests in Portugal and the recent massive damage to olive groves in Italy caused by the bacterial disease *Xylella fastidiosa*.

Outside of animal and plant pests and diseases there are numerous examples of introductions into Ireland of harmful invasive species such as zebra mussel, Chinese mitten crab, aquatic weeds in lakes, varroa mite in bees, very damaging deer species such as Sika deer and recently the introduction of muntjac deer, the massive impact of grey squirrel and invasive plants such as Japanese knotweed, giant hog weed and rhododendron. With globalisation, free trade agreements and the general increased movement all around the world it is a likely consequence that there will be further introductions of alien invasive species of all kinds.

It is also possible that there have been other introductions of plant pests and diseases which have not yet manifested themselves or which may not have been pests in their country of origin. Indeed, during the ash dieback outbreaks in 2012, DAFM was



already dealing with an unrelated national forest disease outbreaks of larch species caused by a blight like disease, *Phytophthora ramorum*. This disease is also a new species to science and was only first named in 2002 as the causal agent of ‘Sudden Oak Death’ in California. This newly described disease was first detected by DAFM in 2004 on rhododendron grown in the wild but it was likely to have been here in Ireland on rhododendron for a much longer period of time. Although *Phytophthora ramorum* has not caused damage to oak in Europe, uniquely on the globe the disease kills larch species in only Ireland and Great Britain. It was first discovered by DAFM on larch in Ireland in 2010 and subsequently in Northern Ireland, following its discovery in GB in 2009. Rather than ‘sudden oak death’, here it causes ‘sudden larch death’. Like with ash it has resulted in the removal of three very important forest tree species, Japanese, European and hybrid larch from DAFM’s planting schemes.

3.2. Improved scientific support horizon scanning and Pest Risk Analysis

In recognition of the ever-increasing risks of new and emerging plant pests and diseases the European Commission, in 2019, made a request to the European Food Safety Authority (EFSA) to provide a regular newsletter update summarising its plant health scientific literature monitoring. The aim is to identify relevant information on plant pests that might be of concern to the EU and therefore may require consideration by risk assessors and risk managers.

Pest Risk Analysis (PRA) carried out in accordance with international recognised criteria is a mandatory component for justifying any future legislative measures against a pest or disease. Up until 2017, Ireland previously did not have a full PRA capability in any of its national research institutes. In relation to ash dieback disease this was a significant shortcoming. Subsequently post the first detections of the disease and with the cooperation of the UK authorities, a joint PRA, led by the UK was carried out in 2013 for ash dieback disease covering the territory of GB, Northern Ireland and Ireland.

TreeCheck

DAFM and DAERA (Northern Ireland) developed the cross Departmental TreeCheck web-based application (www.treecheck.net) in 2014. TreeCheck is an App that enables members of the public throughout the island of Ireland to use their smart phones to report details and send photographs of evidence of suspect disease or evidence of insect damage on trees to DAFM or DAERA for investigation. The App is a citizen science tool to help in the early detection of new and existing harmful pests and diseases.



3.3. The role of all forest sector stakeholders

DAFM values its many stakeholders and is committed to keeping all interested individuals, groups and organizations informed and involved in plant health biosecurity. Simple actions such as sourcing plants from trusted producers and avoiding taking plants, flowers and fruit back to Ireland from holidays abroad contribute to maintaining plant health biosecurity. In this regard DAFM initiated a high profile 'Don't Risk it' campaign in 2018 aimed at the public.

All sector stakeholders have a responsibility and professional importers must ensure best practice in relation to preventing the introduction of pests and diseases on plants and plant products sourced within the EU Single Market or imported from Third Countries.

For those stakeholders working in the plant and plant products sectors the Department will continue to coordinate the provision of information and the establishment of training initiatives to ensure that stakeholders employed in the sector are equipped with the appropriate skills and knowledge to discharge their plant health responsibilities. In this regard under EU law all Professional operators are required since December 2020 to undergo competency assessments to be authorised by DAFM to issue Plant Passports. The training of professional operators by DAFM, under the new EU Plant Health Regulation is also a positive move, ensuring DAFM has many eyes on the ground allowing the early detection of pests and diseases.

Summary. Lessons learned from the impact of Ash Dieback Disease

- Ireland and the rest of the EU is under ever increasing threat from invasive pests and disease. The threat of introduction of harmful organisms is significantly increased due to a combination of intensive globalisation of trade in plants and the increasing impact of climate change.
- Once a harmful plant pest or diseases is introduced and becomes established in the 'wild' it may become impossible to eradicate.
- Having a plant health contingency plan was key to managing the outbreaks. The critical importance of preparedness, capacity and awareness to address the threat of harmful organisms as now set out in The Department's 'Plant Health and Biosecurity Strategy 2020-2025'.



- DAFMs regular engagement and collaboration with counterparts in Northern Ireland was important in managing this and future outbreaks. DAFM must continue to work with its Northern Ireland counterpart DAERD on an all-island basis in order to protect the plant health status of the island of Ireland as a single epidemiological unit.
- Good communications engagement with all stakeholders is key. A number of things proved very successful and should be repeated in any future outbreak. Good quality information on the DAFM website laying out clearly the most up to date position is important when dealing with queries from a variety of sources. and in particular landowners are key. In addition, ‘town hall’ meetings convened by Teagasc and attended by DAFM staff also proved successful.
- All forest sector stakeholders have a responsibility for forest health and should ensure they engage in best practice in order to help prevent the introduction of pests and diseases on plants and plant products