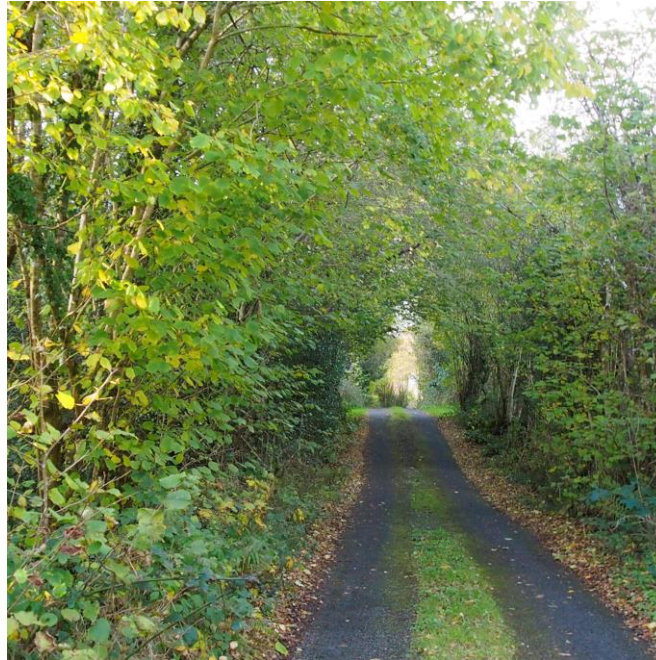


The Value of Native Provenance Trees & Hedging Stock & How to Reduce Health Risks to Them

Joe Gowran, CEO, Woodlands of Ireland

Maria Cullen, Chairperson, Society of Irish Plant Pathologists



Native Trees and Hedging Stock

Not just 9 species indicated in policy:

Blackthorn, *Prunus spinosa*

Whitethorn, Hawthorn *Crataegus monogyna*

Crab Apple, *Malus sylvestris*

Bird Cherry, *Prunus padus*

Holly, *Ilex aquifolium*

Wild Rose, *Rosa canina*

Guelder Rose, *Viburnum opulus* (Poisonous berries)

Spindle, *Euonymus europaeus*

Rowan, *Sorbus aucuparia*



Provenance

Irish Tree seeds from Irish material as far as can be possible to ascertain

Irish grown, in Irish medium, not peat

Kept far away from exotic and imported material at all times

A question of “Origin”

Irish tree seed is in some instances sent abroad and the seedlings are re-imported.

Later called “Irish Origin” but do not buy these plants.

They may be carrying pests and diseases that can damage or kill your own trees and plants.

How to tell the difference? If in doubt, leave it out.

Grow your own instead!



Johnny Appleseed – a simple story



Forest Genetic Resources

Definition: The **heritable** materials maintained within and among tree and other woody plant species that are of actual or potential economic, environmental, scientific or societal value...

many of the world's **60,000 tree species** are also an important component in other ecosystems...

Most tree species have high levels of genetic diversity, offering great potential for **increasing the production of both wood and non-wood forest products**, as well as for improving the provision of environmental services.

Food and Agriculture Organisation of the United Nations

Odd utilitarian emphasis?

FAO Goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.

Irish Forest Genetic Resources

- Genome Data for Irish Trees? No
- Do we understand Irish Tree species genomics? No
- Do we understand Irish Tree biomes? No

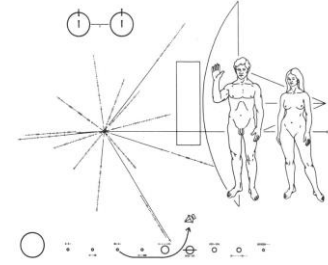
Phenotypic variation in trees and plants is just what we see – form, height, girth, robustness, general fitness

- Mendel the Monk and his peas

We are hardly beyond this level at Irish Tree Genetics



Comparisons for perspective



- Pedunculate Oak, *Quercus robur* has 12 chromosomes pairs, about 26,000 genes and 750 million base pairs
- Humans have 23 chromosome pairs, 20-22,000 genes and 3 Billion base pairs
- Loblolly Pine, *Pinus taeda* has 24 chromosome pairs, 50,172 genes and 23 billion base pairs



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Slow Hedgerow Movement – Don't Mow, Let it Grow Ballymoney Riverside Park





Edmond Locard, Forensic Scientist 1877 - 1966

Plant Health Risks to hedgerow trees and plants

- Insects – Aphids, Weevils, Beetles
- Other invertebrates – Slugs, Nematodes, Worms, Spiders
- Moths e.g. *Thaumetopoea processionea* (Oak Processionary Moth)
- Liane species – *Hedera helix* (Ivy)
- Fungi – e.g. *Hymenoscyphus fraxineus* (Ash Dieback), *Phytophthora ramorum* (Sudden Oak Death), *Cryphonectria parasitica* (Chestnut Blight), *Gibberella circinata* (Pine Needle Blight)
- Bacteria – e.g. *Erwinia amylovora* (Fireblight)
- Viruses and Viroids – e.g. Rose Rosette Virus, Mountain Ash Virus (EMARaV)



EU List of Priority Pests - COMMISSION DELEGATED REGULATION (EU) 2019/1702

Agrilus anxius Gory - Bronze Birch Borer Beetle

***Agrilus planipennis* Fairmaire - Emerald Ash Borer Beetle**

Anoplophora glabripennis (Motschulsky) – Asian Longhorn Beetle

Aromia bungii (Faldermann) – Red Necked Longhorn Beetle

Bursaphelenchus xylophilus (Steiner et Bühner) Nickle et al. – Pine Wilt Nematode

Conotrachelus nenuphar (Herbst) – Plum Curculio Weevil

Popillia japonica Newman – Japanese Scarab Beetle

Rhagoletis pomonella Walsh – Apple Maggot Fly

***Xylella fastidiosa* (Wells et al.) – Gram negative Bacterium, 5 or 6 subsp.**

Last March of the Ents?

We now know that 30% of tree species are threatened with extinction.

At least 142 tree species are recorded as extinct.

The main threats to tree species are forest clearance and other forms of habitat loss, direct exploitation for timber and other products and the spread of invasive pests and diseases.

<https://www.bgci.org/our-work/projects-and-case-studies/global-tree-assessment/>



If you suspect there is a novel disease or pest on your hedgerow trees or plants...

Contact:

Horticulture and Plant Health Division

Address: Department of Agriculture, Food and the Marine, 2nd Floor, Backweston Campus, Administration Building, Celbridge , Kildare , W23 X3PH

Email: plantandpests@agriculture.gov.ie

Phone number: [+353 \(0\) 1 505 8885](tel:+353(0)15058885)

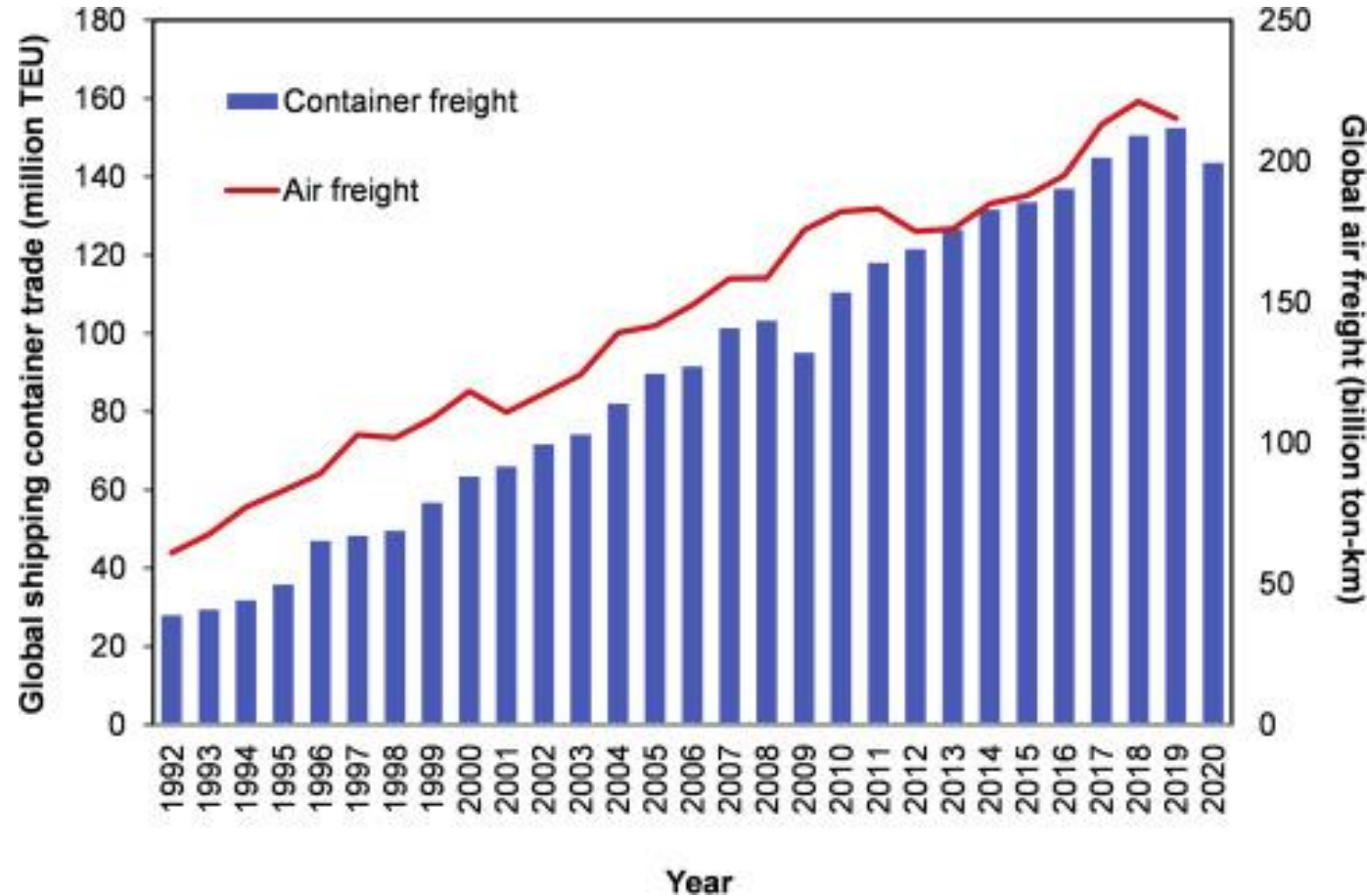
Department of Agriculture, Food and the Marine, Forestry Division

Address: Department of Agriculture, Food and the Marine, Johnstown Castle Estate, Co. Wexford,

Phone number: [+353 \(0\) 53 916 3400](tel:+353(0)539163400)



World Trade 1992-2020



Unwelcome exchange: International trade as a direct and indirect driver of biological invasions worldwide. P.E. Hulme, 2021. <https://doi.org/10.1016/j.oneear.2021.04.015>

Value of hedgerows and hedgerow native trees and plants

Trade – Agriculture, Horticulture, Forestry, Tourism

Inherent value for hedgerow's sake – a living habitat



What have hedgerows, their trees and plants ever done for us?

Boundaries, Shelter, Shade in warm weather, Food for birds, animals, insects including pollinators, Fuel, Oxygen generation, Reduction in air pollution, Soil security, Flood mitigation, Carbon sequestration

Heritage/Archaeological/Architectural features of note

Hedgerow species themselves – priceless



Cost of Not Protecting our Trees and Plants

We have approximately 689,000 km of Hedgerows in Ireland



Ash is the most common tree in our hedgerows

The estimated cost to Ireland for the loss of *Fraxinus excelsior* due to a single introduced fungal species - from Denmark and the Netherlands - *Hymenoscyphus fraxineus* is **€14 Billion**

Add to that all the suffering, death and potential extinction for so many dependent species – birds, mammals, fungi, algae, liverworts and mosses

Add to that the cost of losses and mitigation required for all other diseases and pests currently killing Irish trees and plants

New Zealand flatworm, *Arthurdendyus triangulatus*

The New Zealand flatworm, *Arthurdendyus triangulatus*, is native to New Zealand and has been introduced to Europe, being invasive in the UK, Ireland and Faroe Islands. Introduction is thought to be associated to the trade of consignments of potted plants.

Both eggs and adults of *A. triangulatus* can spread through commercial and non-commercial movement of plant and soil material (Cannon et al. 1999). The species predaes on earthworms, causing declines in earthworm diversity, which can reduce soil fertility and have impacts on earthworm-feeding wildlife (CABI 2019).

Trajectories of introduced plant health threats

- Ports
- Airports
- Botanic Gardens
- Nurseries
- Major Infrastructure Plantings
- Private Gardens
- The wider countryside



Tina (Mad Max III) or Aretha (RESPECT)



What we can do for our Irish hedgerow trees and plant health – keep it clean!

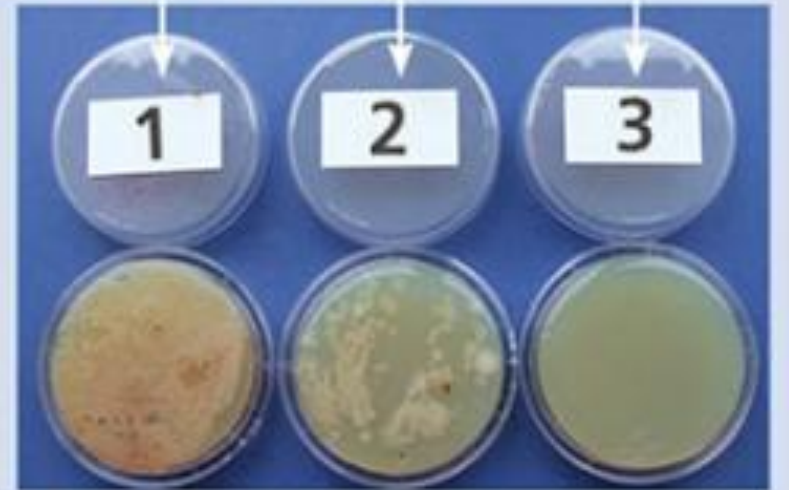
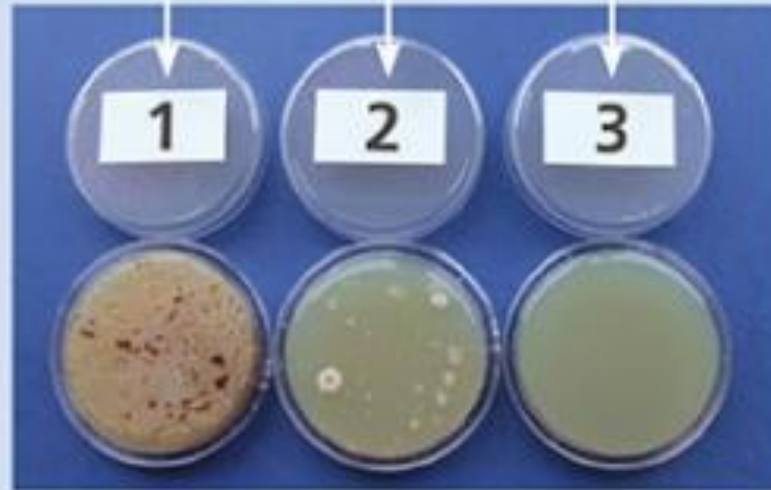
- Grow your own hedgerow trees and plants from your own healthy, robust material. Teach your children, friends about seeds and nature
- If you must buy in, purchase as local material as possible and only from extremely reputable sources with excellent phytosanitation
- Do not buy any plant that does not come from Irish seeds or cuttings that has been grown in Ireland
- Trim hedgerows lightly and only when and where necessary
- Manage Ivy, cut it where possible – there's plenty of it about
- Sterilise cutting equipment, vehicle wheels, footwear and wash work after each use when managing hedgerow trees and plants

1. *dirty boots*

2. *rinsed with water*

3. *disinfected*

Source: ILVO



Join the Society of Irish Plant Pathologists!



- Spring and Autumn Meetings Annually. Come along!
- Showcasing Irish research on Plant Health and Pathology
- Providing interface between research scientists, policy makers, land owners, practitioners, interested people
- Identification of plant pathogens – pests and diseases
- Highlighting employment, collaboration and funding opportunities
- Positive action and advice when dealing with plant pathogens
- Very, very inexpensive!

sippsecretary@gmail.com

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