FGRT Breeding Ash – outlook / strategy

We follow the science:

Breeding a whole new Ash population

- **Genetic diversity (current losses ?)**
- **Healthy Ash deployments**

----Forests for high value timber

---- Hedgerow trees

--- Woodlands

---- Hurley ash

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FGRT Breeding Ash – outlook / strategy

We follow the science:

We can breed trees for resistance <u>because</u>

- **Resistance it determined genetically**

- **Resistance is stable** in trees propagated vegetatively

- **<u>Phenotypic selection is relatively easy</u>**

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May 27 2021


June 1 2022

Where can healthy trees be found ?

Heavily diseased forest plantations

19,000ha X 1000 = **19 million ash trees**

Hedgerows

- 350-400,000 km long – ash trees a major component
- 400, 000 woodland patches and scrub

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Healthy **A**sh **R**estoration **T**emplate (**HART**)

Stage 1

Inform all forest stakeholders about breeding for resistance

Stage 2

Establish & use a database to record locations of 'healthy' trees.

Stage 3

Identify potentially healthy trees +/- seeds (100-150, initially),

Stage *4*

Monitor --the health status of identified trees (3 yrs)

Stage 5

Propagate all of the healthiest individuals (**grafting**)

Propagate by **seeds** from healthy mother trees (30-40)

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Healthy **A**sh **R**estoration **T**emplate (**HART**)

Stage 6

Conserve tolerant trees after monitoring. Establish 4 gene banks (one in each province).

Stage 7

Screen 'healthy' trees (3-5 yrs) & select for durable tolerance.

Stage 8

Pilot planting of limited quantities of seeds (home / abroad sources)

Stage 9

Bulking up *the production of disease tolerant seeds*.

Establish **seed producing orchards**.

Stage 10

Bulking up *plant production by vegetative propagation*

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Essential Requirements for breeding

1. Long term and sustained commitment to the objective of providing healthy ash seeds and plants **asap**

2. Dedicated scientific expertise, nursery facilities and adequate long term funding

3. Secure Land sites for Screening, Conservation and Seed production

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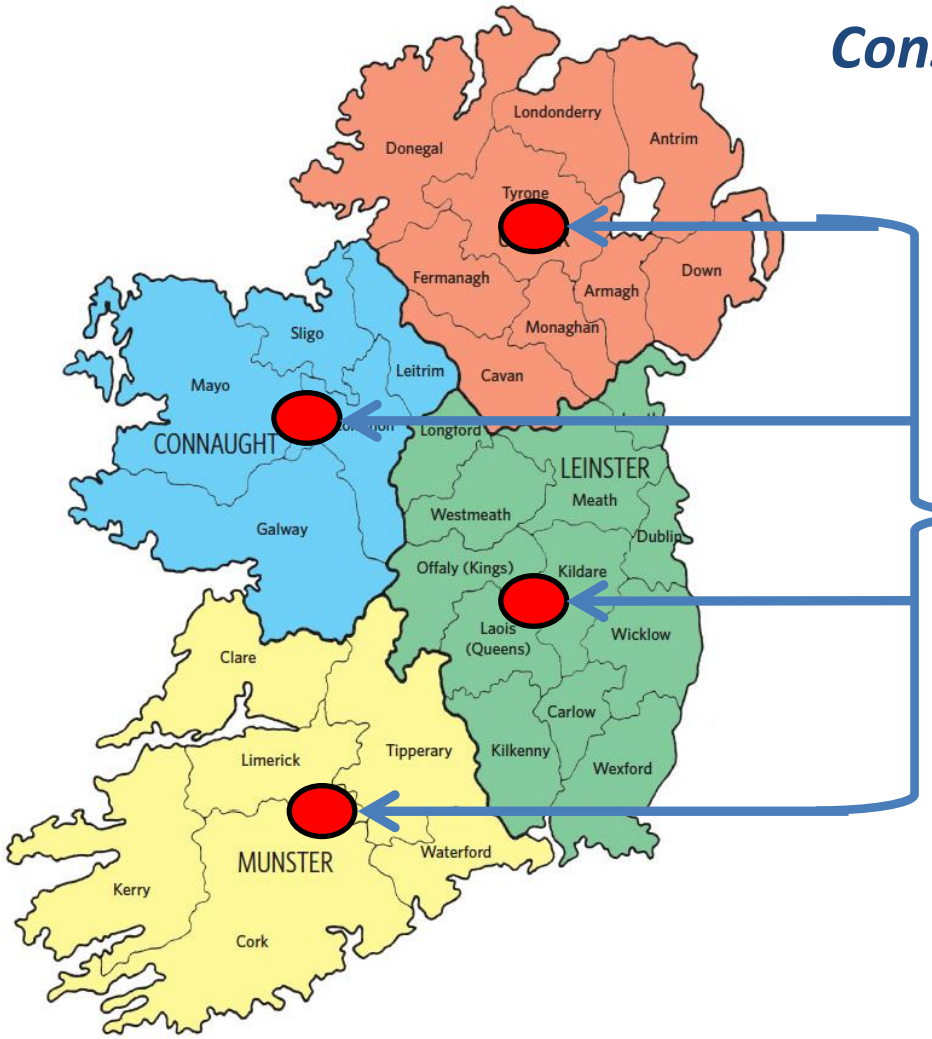
Site requirements



Durable Health Screening Conservation & Seed production Sites

- For **seed progenies** from 'healthy' mother trees
  (several thousand saplings)
- For grafted selected trees **(conservation gene banks)**
  (150-300) Selections,
  6-10 grafted copies of each
- **Screening** for Durable tolerance
  Monitoring , 3-5 yrs
- Rogueing diseased trees @4-8 yrs
  Seed orchards
- Seed production areas yr 15-25

Given resources outlined
<u>Healthy Ash can be restored in Ireland</u>

- **Forests**
- **Plantations**
- **Woodlands**
- **Hedgerows**

Thank you

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Dedicated seed orchards

-- consisting of durably healthy trees

-- not all trees are male / female

Not all trees have good stemform

Not all trees flush late

Hedgerow ash : tree on the left appears more tolerant to dieback than the one on the right