Ash dieback – silvicultural options?
Ian Short - Teagasc
## Grant options

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7m</td>
<td>Reconstitution</td>
</tr>
<tr>
<td>≥7m AND: &lt;15m OR &lt;18cm OR &lt;25 y.o.</td>
<td>Woodland Improvement AND/OR Reconstitution</td>
</tr>
<tr>
<td>≥15m OR ≥18cm OR ≥ 25 y.o.</td>
<td>Woodland Improvement</td>
</tr>
</tbody>
</table>
Eradication
# Grant options

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Scheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7m</td>
<td>Reconstitution</td>
</tr>
<tr>
<td>≥7m AND: &lt;15m OR &lt;18cm OR &lt;25 y.o.</td>
<td>Woodland Improvement AND/OR Reconstitution</td>
</tr>
<tr>
<td>≥15m OR ≥ 18cm OR ≥ 25 y.o.</td>
<td>Woodland Improvement</td>
</tr>
</tbody>
</table>
Rack and selection thinning
Switzerland

- Yes: Safety risk?
  - Yes: Tree-biotope? (niche habitat for other spp)
    - Yes: Risk of devaluation of marketable and profitable wood assortments?
      - Yes: Pure ashwood? 
        - Yes: Intervention not necessary. Promotion without cost of other species with the disappearance of ash trees.
        - No: No intervention. Natural selection of resistant individuals.
      - No: No intervention. Natural selection of resistant individuals.
    - No: No intervention. Natural selection of resistant individuals.
  - No: No intervention. Leave alone!

- No: Felling of infected ash trees (optional transportation outside forest). Monitoring of remaining trees: examine the usefulness of species promotion measures.
Germany

- Preferentially remove affected ash
- Healthy/weakly diseased vigorous ash in mixed stands are encouraged. Stand development to favour mixed spp.
- Severely damaged (70-80% crown death) harvested and marketed
- Selection during growing season (by mid-August) and permanently marked

Kirisits and Freinschlag (2014)
**UK – Woodland SSSIs**

<table>
<thead>
<tr>
<th>Ash Percentage</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30% ash</td>
<td>Leave the ash: survival important. Promote regen. Thin if needed to promote crown development and space for regen.</td>
</tr>
<tr>
<td>30-70% ash</td>
<td>Diversify age structure. Open up stands: 1) around minor species to promote their regeneration; 2) to promote regeneration of ‘prime’ and tolerant ash.</td>
</tr>
<tr>
<td>70-90% ash</td>
<td>Avoid drastic changes in forest conditions. Diversify age structure. Promote minor component tree spp. Encourage natural regen / underplanting of appropriate alternative spp.</td>
</tr>
<tr>
<td>&gt;90% ash</td>
<td>Avoid drastic changes in forest conditions. Promote crown development of ‘prime’ ash. Encourage space for regeneration. Underplant with appropriate spp. as ash canopy thins.</td>
</tr>
</tbody>
</table>

Reid *et al.* 2015
UK – Ecological mitigation

- Mixtures support greater no. & variety of ash-associated species than single species alternative
  - 74% with oak and beech mixture
  - 84% with 11 tree spp.
- Oak supported all ash-associated birds
- Field maple and hazel mixture support 98% bryophytes
- Birch, beech and oak mix support 54% invertebrates

Mitchell et al. 2014
UK – Infected stands

- Avoid heavy thinning or clear-felling
- Where tolerant trees revealed, ensure free from additional stress (thin)
- Ensure adequate no. seed-bearing females retained for nat regen potential
- Where tolerant seed trees present, manipulate stand for optimal seed germination, survival and establishment
- Promote tolerant individuals of ash regen

Alsop 2014
FRAXBACK

- Tending – Thinning period probably most critical stage when considering silviculture prescriptions of ADB stands
- Conserve resistant / tolerant trees
- Crown dieback and collar rot correlate with soil moisture
- In pure ash stands, admix alternative spp
  - Healthy remaining trees can maintain overhead shelter
- In young stands, restock in clumps or clusters
- Crop tree management e.g. free-growth

Skovsgaard et al. 2017
- Ideally inspect at least once per year (Skovsgaard 2009; Thomsen and Skovsgaard 2012)

- “Adapting woodlands to become more resilient will require anticipatory action – changes need to be made before the impact of biotic and abiotic threats is observable.” (Bladon et al. 2016)
References


Alternative options?

- Systematic thin and underplant
- Free-growth / Halo
- Small coupe
- Agroforestry

- Research & Demos required
Systematic thin and underplant
2:2 systematic thin with alder underplanting
May 2011
2:2 systematic thin with alder underplanting
Feb 2016 – Underplanting approx. 6m tall.
Light (sycamore overstory; 17yo; after 3 growing seasons)
**Light** (sycamore overstory; 17yo; after 3 growing seasons)
Free-growth / Halo
Underplant?
Small coupes – underplant / nat.regen
Teagasc / Woodland Trust project
Drumnaph Woods, Co. Derry.

Oak, birch, hazel. Coupes 0.025 – 0.045 ha
Agroforestry
Agroforestry
Ash dieback positives??!

• Improved silviculture?
  • Amelioration of poor-performing stands
    • Better soils for tree establishment
    • Shelter present?
  • Greater emphasis on thinning
  • Greater owner (and public) interest
  • Less prescriptive silviculture, more site specific silviculture
  • Greater emphasis on establishing mixtures?
    » Increased resilience
• Improved planting stock made available?
Thank you

Dr Ian Short
Broadleaf Silviculture Research Officer
Teagasc
Forestry Development Dept.