Ash dieback – silvicultural options?

Ian Short - Teagasc

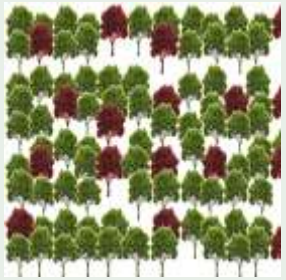
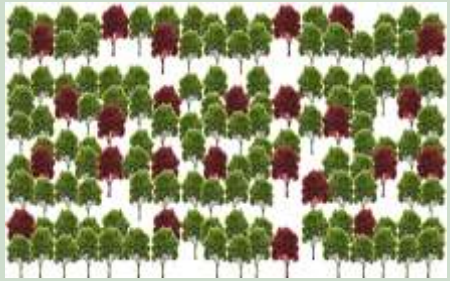
Teagasc
Agriculture and Food Development Authority

Grant options

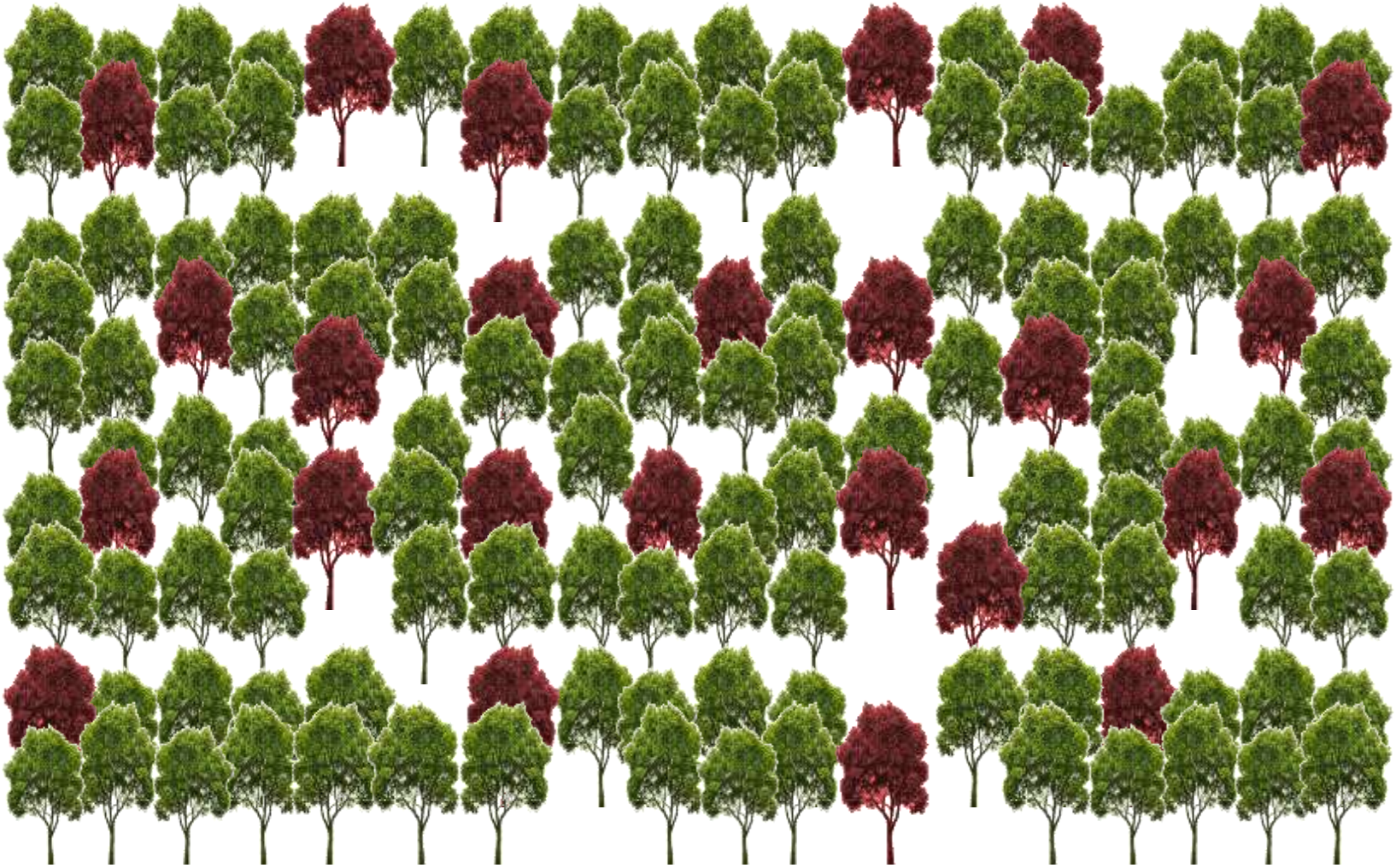
Criteria	Scheme	
<7m	Reconstitution	
≥7m AND: <15m OR <18cm OR <25 y.o.	Woodland Improvement AND/OR Reconstitution	
≥15m OR ≥ 18cm OR ≥ 25 y.o.	Woodland Improvement	

Eradication

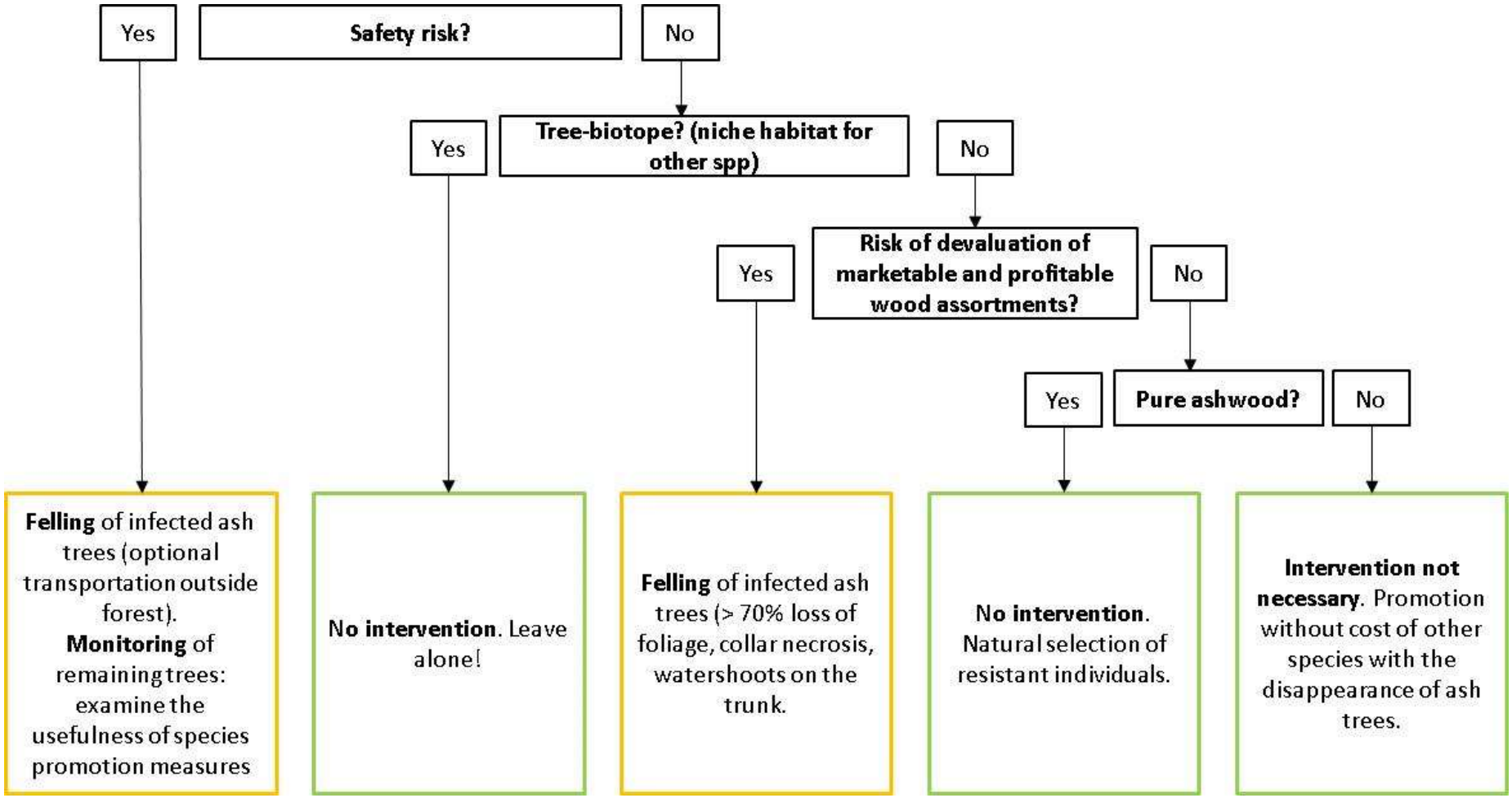
Grant options

Criteria	Scheme	
<7m	Reconstitution	
≥7m AND: <15m OR <18cm OR <25 y.o.	Woodland Improvement AND/OR Reconstitution	 
≥15m OR ≥ 18cm OR ≥ 25 y.o.	Woodland Improvement	

Rack and selection thinning



Switzerland



Rigling *et al.* 2016

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

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

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)

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- Bladon, F., Harmer, R. and Lang Brown, J. 2016. The silviculture of resilience. *Quarterly Journal of Forestry* **110**: 98-102.
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Alternative options?

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

- Research & Demos required

Systematic thin and underplant

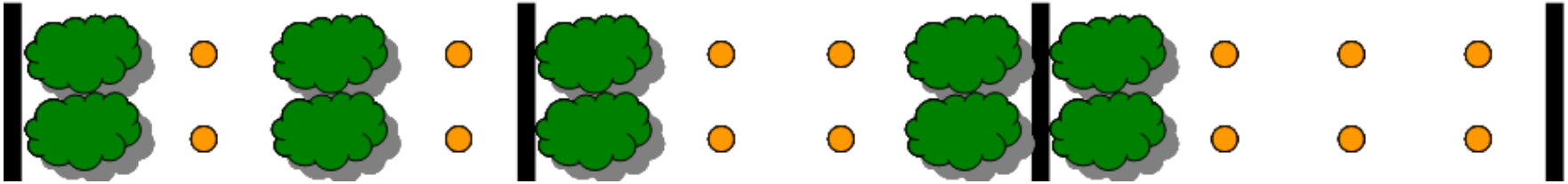
2:2 systematic thin with alder underplanting

May 2011

2:2 systematic thin with alder underplanting

Feb 2016 – Underplanting approx. 6m tall.

Light (sycamore overstory; 17yo; after 3 growing seasons)



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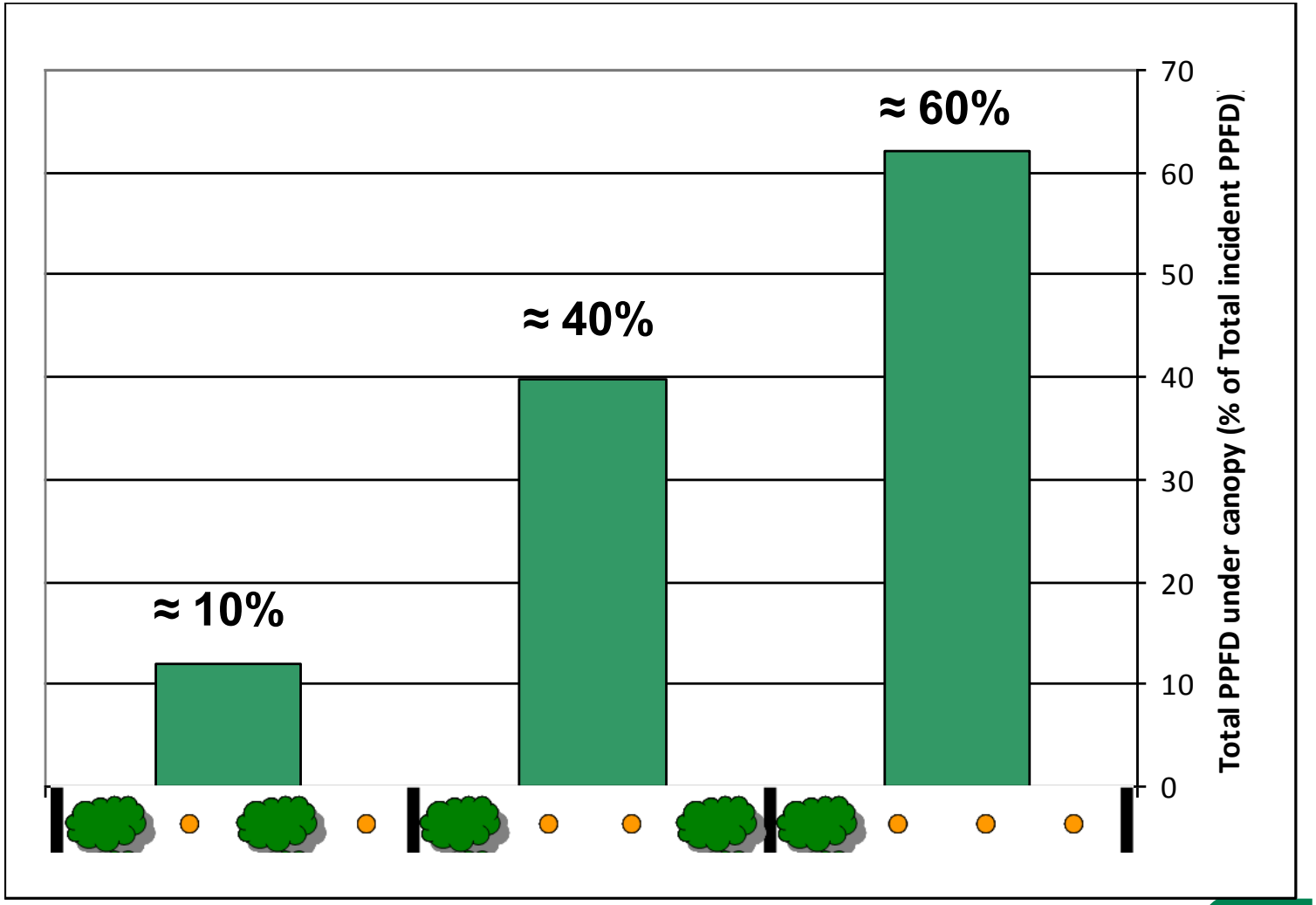


Free-growth / Halo


Underplant?

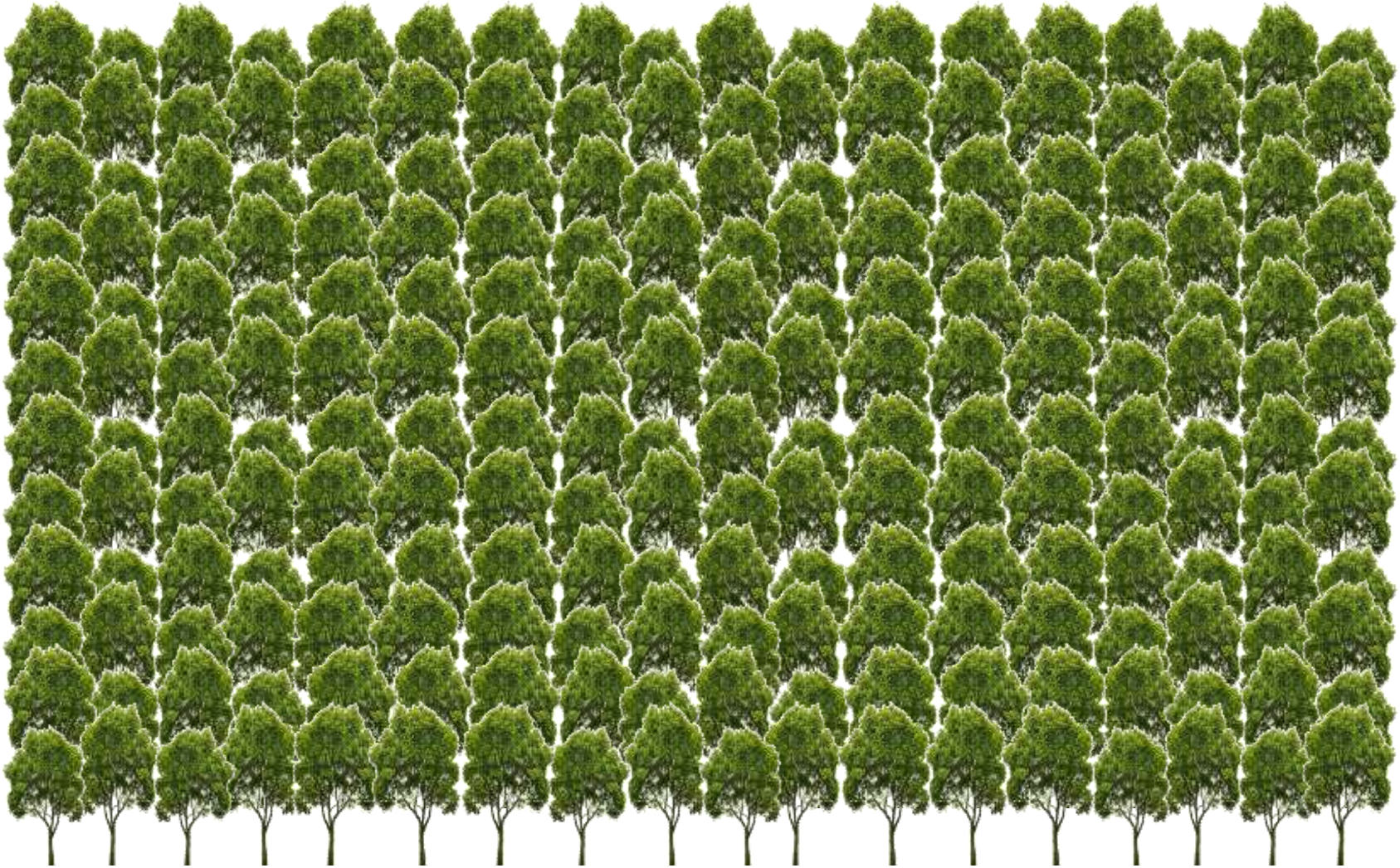
Small coupes – underplant / nat.regen

Teagasc / Woodland Trust project

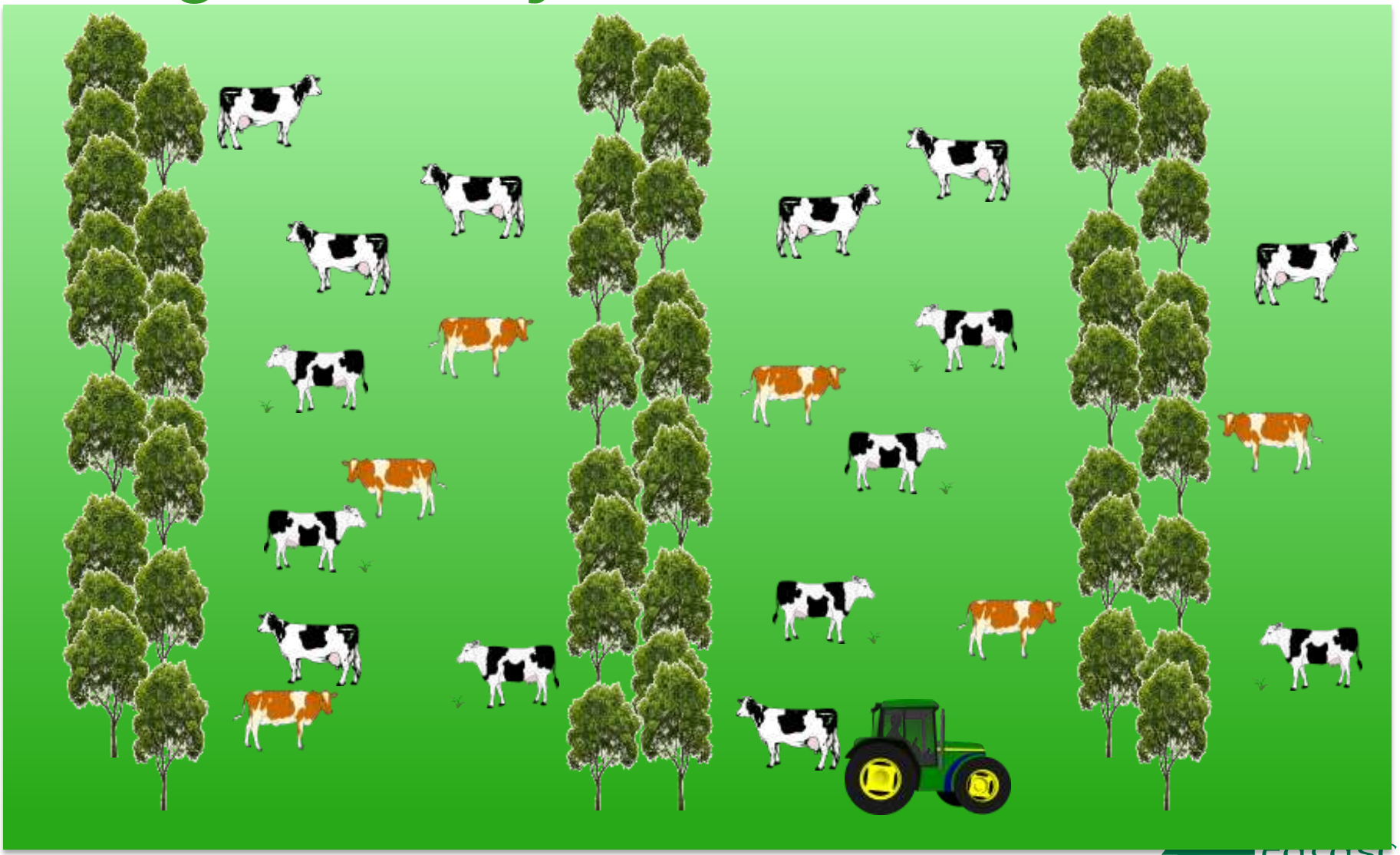
Drumnaph Woods, Co. Derry.

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 resilence
- Improved planting stock made available?

Thank you

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