

FGRT oak seed orchards programme

Eugene Hendrick

FGRT

27 June 2022

Working with Gerry Douglas, Monica Murphy, Dermot O'Leary, Geraldine Conway, Mick Power, John McNamara, Brian Clifford, John Fennessy, Jo Clark, Joe Beesley, Richard vd Horst, Jason Cassidy

Oak - background

- Oak important species in native woodland ecosystems and plantations
- ca 18,000 ha (2.3% of forest estate)
- Important timber species for future
- Likely increased role in forest programmes

Oak seed supply and demand

- Annual acorn demand in Ireland is ca 10-12 tonnes (total for both species)
- Intermittent and uncertain seeding – for example 2022 small acorn crop – probably < 1 tonne
- Also 2022 crop low across all allowable collection regions
- Seed orchards part of solution – for oak production forests

Seed orchards definition and production

- Seed orchards – areas where selected or improved genotypes are managed to produce quality seed
- Well recognised way to bulk up and deploy selected and improved forest reproductive material
- Acorn yield in orchards (after say 8-10 years) is ca 500 kg per ha
- So $12 \text{ t} \times 0.6 \times 0.5 \text{ t/ha} \sim 14 \text{ ha}$ of seed orchards @ 1 ha per orchard $\sim 14\text{-}16$ orchards

FGRT oak seed orchard programme 2020 -2040

Element	Description	2020-2025	2026-2030	2031-2035	2036-2040	Total
Element O1	Number of orchards (assuming equal number in each of <i>Q petraea</i> and <i>robur</i> and 1 ha per orchard – assuming ca 50 genotypes per orchard, replicated 3-4 times)	4	4	4	4	16
Element O2	Number of progeny trials	0	1	2	2	5

Current work on oak seed orchard programme

Source of genotypes

- A selection from 102 Q robur and petraea plus trees selected 1980s and placed in clone banks at Kilmacurragh, Newtownmountkennedy, Kinsealy
- Q robur and petraea plus trees from GB
- French and Dutch material (1-2 per region)

Orchard layout and design

- 50 + genotypes as 3 clones of each species in 4 separate seed orchards (2 per species)
- Q robur and petraea plus trees from GB
- Individual orchard 8 x 8 m spacing x 3 reps x 50+ genotypes ~ 1 ha

Q robur orchards' layout

Gaps		Trees	I				II				III			
	1		QroIRE029	QroIRE015	QroIRE006	Qro406009	Qro403007	QroIRE018	Qro203006	Qro405005	QroIRE029	QroIRE015	Qro204004	QroIRE008
1	2		Qro p h 004	QroIRE024	QroIRE013	QroIRE011	QroIRE029	Qro404012	Qro203003	QroIRE027	Qro p h 004	QroIRE026	Qro305001	QroIRE020
2	3		Qro p h 001	QroIRE005	Qro404007	QroIRE031	Qro404004	QroIRE016	Qro404007	Qro406003	Qro p h 001	QroIRE014	Qro203006	QroIRE011
3	4		Qro404013	Qro203005	Qro109001	QroIRE027	Qro203004	QroIRE026	Qro405008	QroIRE031	Qro404013	QroIRE010	QroIRE006	Qro406003
4	5		Qro107001	Qro404003	Qro405007	QroNLD015	QroIRE032	Qro203005	Qro305001	QroIRE011	Qro107001	QroIRE024	QroIRE021	QroIRE031
5	6		Qro404001	QroIRE007	Qro203003	Qro405005	Qro203001	Qro404005	QroIRE013	QroIRE025	Qro404001	Qro404012	Qro203003	QroIRE027
6	7		QroIRE017	QroIRE018	Qro203006	Qro106001	Qro p h 003	QroIRE014	Qro109002	Qro106001	QroIRE017	QroIRE007	Qro405007	QroIRE001
7	8		QroIRE032	QroIRE014	Qro305001	QroIRE008	QroIRE028	QroIRE024	Qro405004	QroIRE009	QroIRE032	QroIRE018	Qro405008	Qro p h 002
8	9		Qro403007	Qro404005	QroIRE030	QroIRE001	Qro107001	Qro404003	QroIRE021	Qro p h 002	Qro403007	Qro203005	QroIRE022	QroIRE025
9	10		Qro404004	Qro109004	QroIRE022	Qro p h 002	Qro404013	QroIRE010	QroIRE006	QroIRE008	Qro404004	QroIRE005	Qro405004	Qro406009
10	11		QroIRE028	Qro403003	Qro204004	QroIRE009	Qro404001	Qro403003	Qro204004	QroNLD015	QroIRE028	Qro404005	QroIRE013	QroNLD015
11	12		Qro p h 003	QroIRE016	Qro405004	QroIRE025	Qro403002	Qro109004	QroIRE022	QroIRE020	Qro p h 003	QroIRE016	QroIRE030	QroIRE009
12	13		Qro203001	QroIRE010	QroIRE021	QroIRE020	QroIRE017	QroIRE005	QroIRE030	Qro202001	Qro203001	Qro109004	Qro109002	Qro405005
13	14		Qro203004	QroIRE026	Qro405008	Qro406003	Qro p h 004	QroIRE007	Qro109001	QroIRE001	Qro203004	Qro403003	Qro404007	Qro202001
14	15	Qro403002	Qro404012	Qro109002	Qro202001	Qro p h 001	QroIRE015	Qro405007	Qro406009	Qro403002	Qro404003	Qro109001	Qro106001	
														
			96 m											
Trees			1	2	3	4	5	6	7	8	9	10	11	12

Stages



Stages



Stages

