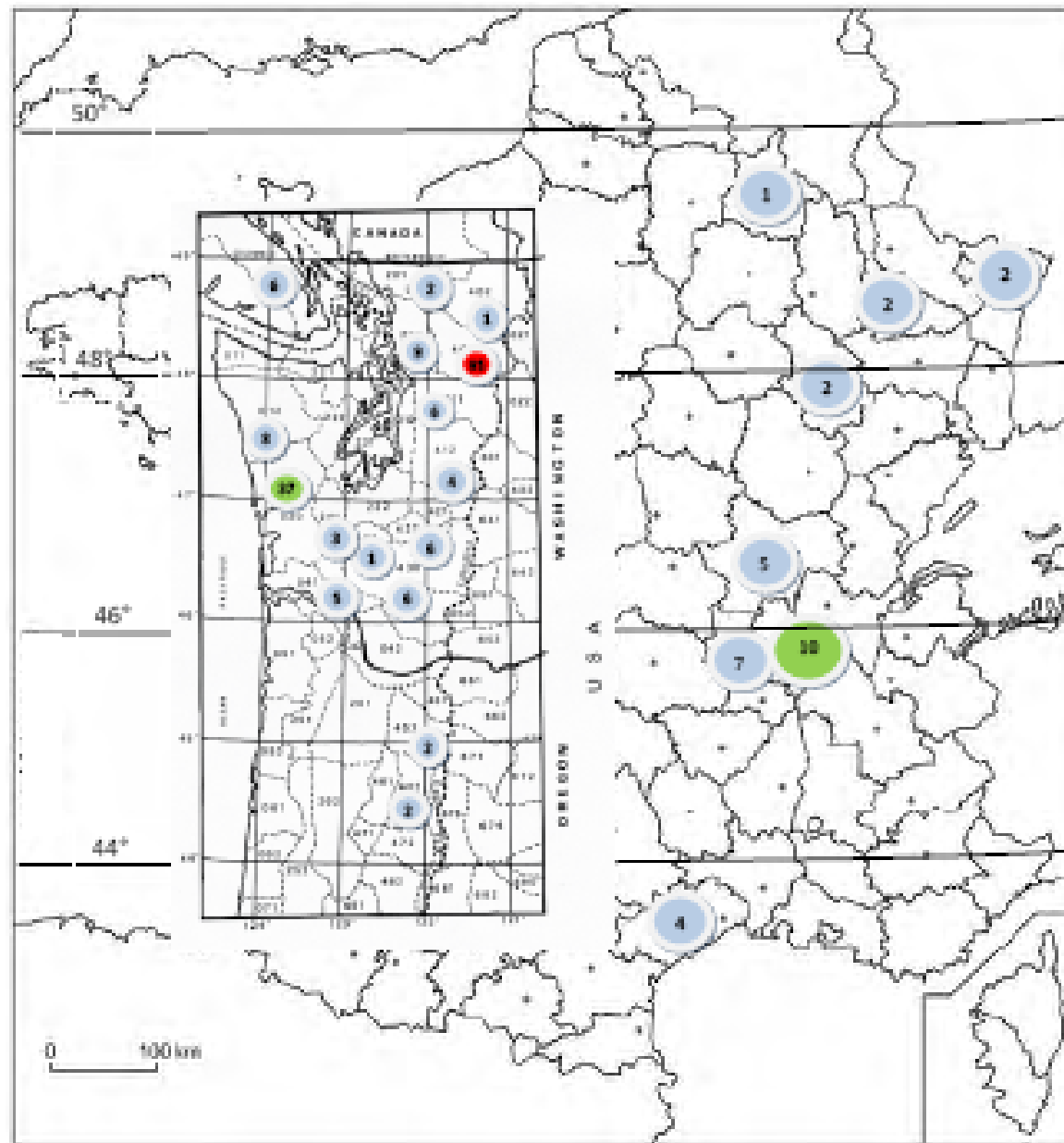


Map indicating the source of the clones in the La Luzette seed orchard



NB: The two maps are shown on the same scale



A wide selection of other factsheets are available. Visit our website or call us for more information.



'Growing for the future'

References:

WILSON S.McG (2011) *Using alternative conifer species for productive forestry in Scotland* (21-28).
VILMORIN A.A (2011) *Seed Orchard Douglas Fir 'La Luzette'*.

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FACTSHEET 01 Seed Orchard of Douglas Fir 'La Luzette'



KEY FACTS:

- **Species:** *Pseudotsuga menziesii* (Mirb.) Franco (Douglas Fir)
- **Orchard Code and Name:** PME-VG_002 La Luzette-VG
- **Category:** Tested
- **Altitude of Planting:** 700 metres.
- **Origin of Clones:** Mainly USA (Washington) and East France.
- **Site suitability:** A range of soil types are suitable for growing Douglas Fir. Soil moisture regimes should ideally be fresh to moist but drier soils can also be used. It will not grow well on waterlogged or calcareous soils. It is inadvisable to plant Douglas fir on exposed sites.
- **Establishment:** Douglas Fir can be established as a pure even aged crop or planted as a mixture with spruce/larch/red cedar and hemlock. It is important to ensure that weed control and vermin protection measures are put in place until the crop has established. Suggested planting density of 2,000-2,500 stems/ha.
- **Timber Use:** Produces a durable and very strong timber

SUMMARY:

With foresters recognising the importance of species diversification, Douglas Fir is considered to be an excellent option for a wide variety of situations. Cheviot Trees offer stock from the widely acclaimed 'La Luzette' seed orchard.

La Luzette is the most widely used seed orchard in France. It combines the best Darrington and Humtulips plantations, with some exceptional French plantations. It produces a tree with **good young vigour together** with a **late bud burst**, which protects it from spring frosts. Recent thinning out has contributed to the improvement of the shape of the trees.



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CRITERIA & SELECTION PROCESS

The clones were selected after approximately 10 years, from 10 comparative provenance plantations located in France (Vosges, Haute-Vienne, Meurthe-et-Moselle, Dordogne). The criteria for selection were vigour (height growth after 11 years), lateness of bud burst (to avoid Spring frosts) and quality of branching (slim branches, few in number). The 42 best U.S. provenances and the 20 best French provenances were selected. Cuttings of 343 clones were taken and planted in 1981.

This orchard therefore, had at the outset a very broad genetic base which enabled genetic thinning, allowing for further improvement of certain criteria. This was carried out in 2006, based upon an analysis of 20 progeny tests. These tests were planted in France between 1992 and 2002 at altitudes ranging from 420 and 1050 metres. The quality of each clone was judged by the success of its progeny. 45% of the trees and 33% of the clones were thinned out. Improvement has focused in particular on forking and the number of branches, enabling monocyclic growth in individual trees.

After the thinning-out process, the orchard has 83% of U.S. clones, with some plantations such as Darrington (26% orchard trees) or Humtulips (13%) being particularly well represented, the latter being noted for the lateness of its bud burst.



- **La Luzette has good vigour together with a late bud burst, which protects it from Spring frosts.**
- **La Luzette showed a 12% gain in height and dbh when compared to the Washington control.**
- **La Luzette has a high quality of branching (slim branches, few in number).**

EVALUATION

The first significant harvest of seed took place in 1996. Three tests for the tested category were carried out. They were planted in 1998 in the main Douglas fir plantation areas in France: Montsauche-les-Settons (Morvan), St Sylvester and Peyrat-le-Château (Limousin). Initial results after 6 years showed a gain of 12% in height compared to the Washington control seed area 403, as well as having good shape and later bud burst.

More recent results confirm that La Luzette is one of the latest French seed orchards, producing a bud burst four days later than the Washington 403 control seed (3 tests in Haute-Vienne, Lot and Loiret). Based on these results, la Luzette has been placed definitively in the tested category for vigour (growth in height and circumference) and the lateness of bud burst.

Similarly, within the framework of a European project, 9 additional tests will facilitate the evaluation of La Luzette orchard for wider use. These tests were planted between 1998 and 2000 in Spain (Galicia and the Basque Country), Germany (Lower Saxony), Belgium (Wallonia), the United Kingdom (South Wales and West Central England) and France (Morvan and Limousin). They compare German, Belgian, French and Dutch seed orchards with plantations from Europe or from the natural growing area.

Finally, taking into consideration the prospect of climate change, La Luzette is in the process of being evaluated in numerous parts of France, in different climaticconditions and at altitudes ranging from between 100 to 1300 metres.

PROVENANCE OF LA LUZETTE ORCHARD CLONES

(after genetic thinning-out in 2006)

Country/State	Seed zone or Department	Plantation	Number of clones	Number of trees	% in number of trees
USA - Washington	012 WACO	Forks, Hoh-River, Lake-Crescent	8	189	78%
USA - Washington	030 WACO	Humptulips, Matlock	37	488	
USA - Washington	041 WACO	Naselle, Skamokava	5	94	
USA - Washington	202 NWCA	Arlington, Granite-Falls, Camano	9	106	
USA - Washington	241	Shelton	3	54	
USA - Washington	242	Tenino	1	1	
USA - Washington	401 NWCA	Glacier	2	9	
USA - Washington	402 NWCA	Bacon-Point	1	17	
USA - Washington	403 NWCA	Darrington, Perry-Creek, Tenas-Creek	95	847	
USA - Washington	411 SWCA	Gold-bar, Skykomish	6	113	
USA - Washington	412 SWCA	Enumclaw, Chester-Morse-Lake	4	48	
USA - Washington	422 SWCA	Ashford	6	125	
USA - Washington	430 SWCA	Sequest, Silver-Lake	6	119	
USA - Oregon	452	Molalla	2	30	2%
USA - Oregon	462	Detroit	2	34	
Canada British Columbia	1020	Courtenay, Gold.River, Sooke, Cameron-lake	6	71	3%
France	08 Ardennes	Vendresse	1	11	17%
France	34 Hérault	Moussans	4	115	
France	42 Loire	Arcon, Bois-Pagnon, Renaison	7	57	
France	52 Haute-Marne	Chaumont	2	4	
France	54 Meurthe et Moselle	La Sivrite	2	37	
France	67 Bas-Rhin	Hohwald	2	32	
France	69 Rhône	Chevenatte, Claveisolles, Grandris, Matour-Giraud, Ronno, Saint-Just-d'Avray	10	161	
France	71 Saône et Loire	Croux, Saint-Bonnet-de-Joux, Souvigne	5	75	
TOTAL			226	2837	100%

