

# SEED ORCHARD

## DOUGLAS FIR FRANCE 2



### SPECIES

*Pseudotsuga menziesii*  
(Mirb.) Franco

### ORCHARD CODE AND NAME

PME-VG-007 FRANCE 2-VG

### CATEGORY

Qualified

### BREEDER

INRA (Institut National de la  
Recherche Agronomique -  
Orléans - France)

## CHARACTERISTICS OF THE ORCHARD

- Orchard of clones (cuttings)
- Year of planting : 1989/90
- Place of planting : Lavercaillère (Lot - France)
- Altitude of planting : 300 meters
- Surface area : 5 hectares
- Number of clones : 138 (in 2007)
- Origin of clones : French plantations in the eastern Massif Central
- Number of effective clones \* : 53
- Number of trees : 578
- Start of production : 2007
- Method of pollination : Free

\*This indicator of genetic diversity takes cognizance of the number of representatives of different clones and, where appropriate, between genetically related clones

## CRITERIA AND SELECTION PROCESS

The base material consisted of a representative sample from selected French plantations. These mature plantations have already been subjected to the pressure of natural selection and so represent a guarantee of good adaptation to French climatic conditions. The 23 sampled plantations are located on the eastern edge of the Massif Central, at an altitude ranging from between 350 and 750 metres (detailed list at end of sheet).

## SUMMARY

It is one of the three seed orchards from French plantations in the eastern Massif Central. The selection was made in Ariège, at an altitude of 900 metres, based on the criteria of growth, bud burst and shape, in particular the angle of insertion of the branches. Initial results show a vigorous tree with a slightly earlier bud burst than that of the Darrington orchard.



SEED GENERATION

For cultivation in France, France 2 is recommended for all areas that are appropriate for Douglas fir (mid-mountain, good water supply). It's also recommended for Belgium (Walloon region).

## CRITERIA AND SELECTION PROCESS

Seeds were collected from approximately 150 trees from these 23 plantations. They facilitated the setting up of four progeny tests. One of these tests, involving 126 progeny was planted at an altitude of 900 metres, at Argein near St Girons (Ariege, foothills of the Pyrenees). After ten years, INRA selected the 52 best examples from amongst the 126 progenies, as well as the 151 best individual examples from within these 52 progenies. The selection criteria included vigour (total height), lateness of bud burst and shape (straightness of trunk, open angle of insertion of the branches, no forking, no growth in August). Cuttings were taken from the 151 selected trees to establish the France 2 seed orchard at Lavercantière in the Lot region.

## EVALUATION

Compared to the population at the beginning of the test at Saint Girons (progeny from French plantations), the expected genetic gain was estimated at +15% for the total height, that is, an expected gain of approximately 30% on volume. The first experimental harvest of seeds from the France 2 orchard facilitated the setting up of 3 progeny tests in 2000. One hundred of the progenies were planted in the Nièvre, Tarn and Haute-Vienne regions. The first assessments at 4 and 5 years gave the following results: sturdy, young vigour on the 3 sites, superior to that of La Luzette and Darrington control seed orchards, bud burst (measured only on one site), slightly earlier than the two controls. Further measures will help to complete this data. The first significant harvest of seeds took place in 2007. It facilitated the setting up of a number of evaluation tests in 2009 and 2010, at different altitudes and under various climatic conditions, in particular in marginal conditions for Douglas fir (Haute-Vienne, Creuse, Loiret, Puy de Dome, Aude Lot, Cantal ...). The first results (spring 2010) demonstrate that bud burst in France 2 is slightly earlier than Darrington.

## DETAILS OF THE 23 SELECTED FRENCH PLANTATIONS

PLANTATION	DEPARTMENT	LOCAL AUTHORITY	ALTITUDE (M)	LAT. NORTH	LONG. EAST
En Argaud	Saône et Loire	Matour	550	46° 18'	4° 30'
Bois Chicard	Saône et Loire	Ozolles	440	46° 20'	4° 22'
Bois des Cusses	Saône et Loire	Ozolles	445	46° 21'	4° 21'
Bois du Moulin	Saône et Loire	Verosvres	400	46° 20'	4° 24'
Bois Rond	Saône et Loire	Chatenay	525	46° 17'	4° 22'
Bruyère de Pommey	Saône et Loire	Ozolles	410	46° 21'	4° 23'
Au Charnay	Saône et Loire	Matour	560	46° 18'	4° 25'
Chassagne	Rhône	St Igny de Vers	550	46° 15'	4° 24'
Chevenatte	Rhône	St Bonnet des B.	580	46° 14'	4° 28'
Les Communes	Saône et Loire	Chatenay	470	46° 17'	4° 21'
Etang Bonnin	Saône et Loire	Ozolles	363	46° 21'	4° 21'
La Garenne	Saône et Loire	Gibles	430	46° 20'	4° 22'
Les Genévriers	Saône et Loire	Trambly			
La Gravière	Saône et Loire	St Racho	500	46° 15'	4° 22'
Marcon	Saône et Loire	Dompierre	400	46° 21'	4° 29'
Moussan	Herault	Verreries de Moussan	750	46° 26'	4° 42'
La Neiray	Rhône	Claveisolles	580	46° 17'	4° 28'
Le Perron Nord	Loire	Belleroche	720	46° 09'	4° 25'
La Perrière	Rhône	Aigueperse	490	46° 16'	4° 26'
Aux Pralles	Saône et Loire	Matour	530	46° 18'	4° 30'
En Seignerion	Saône et Loire	Trivy	350	46° 22'	4° 29'
Les Serrets	Rhône	Aigueperse	520	46° 16'	4° 24'
Villars	Saône et Loire	Montmelard	450	46° 21'	4° 24'



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