

Varieties, Planting, Care, Agronomics

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- Site Selection
- Orchard Layout
- Varieties
- Planting
- Orchard Management

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Site Selection

- -40°C less than once every 16 years
 - Homogenous freezing point of water
 - European vs American hazelnuts
- Well drained, moist loam to sandy loam soils
 - Avoid acid soils, pH<5.0
 - Avoid clay soils
 - Mechanical harvesters
 - Roots die in waterlogged soils

Site Selection

- Flat to gentle slopes
 - Mechanized harvesting
- Wind Breaks
- Adequate water supply
 - Need to be irrigated 3-4 years after planting
 - occasionally in dry summers

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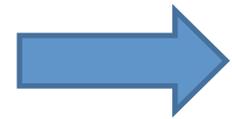
Orchard Layout

- Wind pollinated
 - Self incompatible
 - Varieties
 - catkins susceptible to winter /spring frost damage
 - Flower 2weeks, late March –Late April
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- Need pollinizer varieties

Wind



Catkin winter susceptibility



P	X	X		X	X	X	X	X	X	X	X	P
P		X			X		X		X		X	P
P	X		X			X				X		P
P	X		X		X		X		X		X	P
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Orchard Layout

- Row spacing
 - 6-7m (18-22ft) between rows
 - 4m (13-14ft) between plants
 - Double density (2m)
 - Remove every other plant when plants get too close c. 10yrs
 - Increases early yield

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Varieties

- Trees winter-hardy
- Resistant to Eastern Filbert Blight
- Catkins survive winter/spring
 - Pollinizers
- S-allele compatibility type
- Nut quality
 - Shape, size, blanching flavour
- Bud mite

Cultivar Trial – Simcoe 2008

Cultivar	Planting Size	Yield (kg/tree)				
		2010	2011	2012	2013	2014
Grimo 186M	4 ft	0.04	0.3	1.3	2.9	0.8
Butler	5 ft	.042	0.8	2.0	2.8	0.8
Geneva	4 ft	.024	1.3	2.2	2.7	0.5
Lewis	3ft	.018	0.2	0.1	2.6	0
Clark	3ft	.021	0.2	0.6	1.8	0
C-16	1 ft	.016	0.5	0.9	2.0	1.0
C-28	1ft	.016	0.2	0.7	2.0	0.4
C-409	1ft	0	0	0.4	1.8	0.2
Barcelona	5/6ft	.026	0.3	0.1	1.1	0.2
Jemstegaard	5 ft	.007	0.3	0.7	0.9	0.6

Catkin Survival (%) – Simcoe 2008

Cultivar	Catkin Survival (%)					
	2009 (%)	2010 (%)	2011 (%)	2012 (%)	2013	2014
Geneva	100	90	71	97	100	85
Butler	75	81	90	100	92	66
Grimo 186M	-	90	67	97	90	67
C-16	-	93	99	100	95	67
C-28	-	97	70	98	98	75
C-409	-	-	-	100	98	44
Lewis	25	35	53	70	35	0
Clark	30	16	23	74	1	0
Jemstegaard	95	44	65	99	48	0
Barcelona	30	32	45	98	75	7
LSD	40	42	18	22	27	16

Cultivar Trials: Yield (kg/tree) Planted 2009

Cultivar	Simcoe				Vineland	
	2011	2012	2013	2014	2012	2013
Geneva	0.14	1.12	1.6	0.08	1.49	3.0
Slate	0.34	0.89	0.9	0.40	2.44	1.0
Jefferson	0	0.41	2.5	0.02	1.55	1.0
Gamma	0.09	0.95	2.8	0.03	1.11	1.4
Yamhill	0.06	0.25	2.3	0	1.09	1.2
Santiam	0.05	0.56	1.5	0	0.86	0.8
Tonda di G	0.01	0.08	0.05	0.02	0.59	0.7
Halle's Giant	0.03	0.52	1.6	0.05	0.38	0.3
Delta	0.01	0.12	0.5	0	0.34	0.5
G-17	0	0.17	0.3	0	0.29	0.7
Barcelona	0.03	0.26	0.2	0	0.23	0.2
Epsilon	0	0.17	0.8	0	0.10	0.7
Sacajawea	0.05	0	0	0	0.06	0.4

Catkin Survival (%) – Simcoe 2009

Cultivar	Catkin Survival (%)				
	2010	2011	2012	2013	2014
Gamma	-	25	100	83	3
Jefferson	-	-	100	95	34
Geneva	96	91	98	96	81
Slate	61	32	99	84	1
Yamhill	97	27	3	8	43
Halle's Giant	81	90	99	96	52
Santiam	100	50	95	15	24
Epsilon	-	25	100	83	0
Delta	7	16	64	13	0
G-17	-	-	43	4	29
Barcelona	-	-	100	59	5
Tonda di Giffoni	91	9	24	0	2
Sacajewea	-	-	-	-	0
LSD	29	31	34	29	44

Provisional Recommendations

	S-alleles
• Geneva	15&23
• Jefferson	1&3
• Lewis (Zone 7)	3&8
• Tonda di Giffoni (Zone 7)	2&23
• C-16	not known
• C- 28	not known
• Yamhill	8&26

Variety	Blight Resistant	Catkin Hardiness	Growth Zone (2000 zones)	Nut shape and size	Markets
Geneva	yes	Good	Zones 6 & 7	Round, medium	All except Ferrero
Jefferson	tolerant	Good	Zones 6 & 7	Round, large	All
C-16	Yes	Good	Zones 6 & 7	Oval , medium	All except Ferrero
C- 28	Yes	Good	Zones 6 & 7	Oval, small	All except Ferrero
Lewis	tolerant	Poor	Zone 7 only	Round, small	All
Tonda di Giffoni	Somewhat tolerant	Poor	Zone 7 only	Round, medium	All
Yamhill	tolerant	Poor	Zone 7 only	Round, small	All

NOT Recommended

- Barcelona
- Delta
- Epsilon
- Gasaway
- Hall's Giant
- Jemstegaard
- Sacajewea
- Theta
- Zeta

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Planting

- Dormant trees
 - 2-3ft (1-year), 4-6ft(2-yr)
- Early April
- Organic mulch around trees
 - Keep clear from trunk
- Inter-cropping

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Orchard Management

- Single/ Multi-stem
- Pruning
- Nutrients
 - Similar to apples
- Orchard floor
 - Bare
 - Grass
- Pests and Diseases

