

Arboretum Wespelaar

Winterschade winter 2008 – 2009

Koen Camelbeke

De winter 2008-2009 was een echte, koude winter. Tijd dus voor een evaluatie van de winterhardheid van de planten in onze collectie. En hoewel dit verre van een compleet overzicht betreft, willen we toch iets verder zien dan “*the usual suspects*” zoals *Ceanothus*, *Cistus*, *Drimys*, *Escallonia*, *Magnolia delavayi* en *M. rostrata*, verschillende *Camellia*, enzovoort.

Om aan te tonen dat het toch wel degelijk een koude winter was, hieronder enkele van mijn aantekeningen over het weer uit die periode:

- 5 januari 2009: we gaan een zeer koude week tegemoet met verschillende ijsdagen waarbij de temperatuur, ook overdag, niet boven het vriespunt raakt; 7 cm sneeuw. In de *Magnoliaweide* (de koudste plaats in het Arboretum), maar ook in een “frost pocket” in Herkenrode, meet ik -10 °C op 1 meter hoogte. De sneeuw bedekt de laagste takken van veel planten die op deze manier toch van enige bescherming tegen de vrieskou genieten;
- 6 januari: koudste nacht sinds 1997 en komende nacht wordt nog kouder!
- 8 januari: dit is een echte winter die blijft duren. Deze nacht een absoluut minimum van -19 °C(!) gemeten;
- 14 januari: werken aan het toekomstige bezoekerscentrum, de Rode Poort, eindelijk terug gestart, dooi sinds de 12e maar enkele nachten voordien toch -17 °C gemeten!
- 26 januari: koude week met negatieve temperaturen tijdens de nacht (-3 °C) en koud overdag;
- 29 januari: tweede koudegolf (-7,5 °C); koudste januari in 12 jaar maar zonnig en normale neerslag;
- 6 februari: eerste lentegevoel, maar wordt terug koud komend weekend (-7 °C) en week met temperaturen rond het vriespunt 's nachts. De winter gaat verder;
- 18 februari: tweede keer een lentegevoel, maar winter gaat verder. Terug nachtvorst (opnieuw -7 °C gemeten op koudste plaats);
- 25 februari: de winter gaat verder; niet te koud nu maar geen lente in aantocht; somberste februari sinds metingen, andere waarden normaal;
- 9 maart: dunne laag sneeuw die snel zal smelten, d.i. de maartse bui van deze nacht; lichte vorst gehad ergens voorbij dagen (-3 °C).

Buddleja davidii is een exoot met invasieve neigingen. Deze soort staat op de zogenaamde “watch list” (zie <http://ias.biodiversity.be/>) omdat zij toch een impact heeft op het lokale milieu en zeer wijd verspreid is in België. Toch passen de meeste andere *Buddleja* soorten zich eerder moeilijk aan aan onze klimatologische omstandigheden. We hebben deze winter dan ook veel *Buddleja*'s verloren.

Deze winter hebben we verschillende jonge planten van de genera *Liquidambar* en *Fraxinus* verloren. Ik kan bijna niet geloven dat dit met de vorst te maken heeft (m.u.v. *F. paxiana* en misschien *F. sieboldiana*). Maar ik zie niet direct een andere verklaring (tenzij ik de houtboorder over het hoofd gezien zou hebben). Deelt iemand dezelfde ervaring?

TABEL EVALUATIE WINTERHARDHEID

In onderstaande tabel vindt u een overzicht van specimens waarbij een code voor winterhardheid is opgenomen tijdens de winter van 2008-2009. Hoewel het een uitgebreide tabel betreft, betekent dit niet dat specimens die niet in deze tabel voorkomen perfect winterhard zijn.

De tabel bevat volgende kolommen:

HARDINESS (H)

Volgende codes voor winterhardheid worden in de databank van Arboretum Wespelaar gebruikt:

- geen code: niet geëvalueerd
- A : winterhard (“hardy”)
- A+ : winterhard (“hardy”)
- A- : bloemknoppen bevroren (“flowerbuds frozen”)
- B : bladschade (“leaf damage”)
- B+ : lichte bladschade (“minor leaf damage”)
- B- : zware bladschade tot volledig bladverlies (“major leaf damage or defoliation”)
- C : takschade (“branch damage”)
- C+ : lichte takschade (“minor branch damage”)
- C- : zware takschade (“heavy branch damage”)
- D : tot de grond ingevroren, komt terug (“cut to the ground, recovering since”)
- E : dood (“killed by cold, not hardy”)

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NUMBER (N)

Accessionnummer van de plant. De eerste twee cijfers verwijzen naar het jaartal waarop de plant in de databank werd geregistreerd. Dit is een belangrijk gegeven aangezien de leeftijd zeker medebepalend is in de winterhardheid van een individu.

STATUS (S)

Gezondheidstoestand van de plant tijdens inventarisatie. Volgende codes worden gebruikt:

- 4 : gezond
- 3 : minder sterk of gezond, niet goed aangepast, afsterven van delen
- 2 : fysische schade door storm, ziektes, vorst, enz.
- 1 : zeer zwak tot stervend
- 0 : dood

NAME × QUANT

Wetenschappelijke naam en aantal specimens indien meer dan 1. Dit kan worden gevolgd door een teken waarbij ** staat voor uitzonderlijke plant, een echte aanrader; * voor aanrader en ° voor ontgoochelend in ons klimaat.

SOURCE (O)

Oorsprong van het plantenmateriaal. WLD = wilde origine, PDS = stekken of zaailingen door Ph. de Spoelberch of andere medewerkers van Arboretum Wespelaar. Voor een overzicht van de betekenis van de andere codes verwijs ik naar www.arboretumwespelaar.be.

VERIFIED (V)

Volgende codes voor identificaties worden gebruikt:

- T/V : geverifieerd
- C : leunt dicht aan bij het typische taxon (kleine afwijkingen)
- H : hybride
- K : hybride met gekende ouders
- ? : verder te identificeren
- X : fout, te determineren en aanpassen in databank

TOTAL DATA

Naar aanleiding van dit artikel worden in deze kolom enkel gegevens met betrekking tot winterhardheid opgenomen (in het Engels).

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
C	91553	3	<i>Abies chensiensis</i> subsp. <i>salouenensis</i> × 3	waa	V	1997:B+, some leaves brown on plant b, 2009: C: 1 of 3 plants lost its head, others OK,
C	94057	3	<i>Abies recurvata</i> var. <i>ernestii</i>	wld	T	1994:A, 1997-04: very damaged by spring frost, 09: A, hardy to winter cold, only spring frost is problem
C	05005	2	<i>Abies sachalinensis</i>	pds	V	2009-01: C
C	05004	4	<i>Abies sachalinensis</i>	pds	V	2008-05: all new shoots killed by spring frost, 2009-01: C
C	94314	4	<i>Abies sachalinensis</i> (Sounkyo Gorge, Hokkaido, Japan)	wld	V	1997:new shoots frosted, 2009-01: C hardiness confirmed
C	04328	4	<i>Abies sachalinensis</i> × 3	pds	V	2008:new shoots were frosted early in spring, on all 3 plants, no growth for the year, 2009-01: hardiness status C confirmed
A	05187	4	<i>Acer calcaratum</i> *	waa	V	2005: overwintered in greenhouse, 2008-06: perfect health! 2009-05: A, perfectly hardy after -15°C
A	06231	4	<i>Acer elegantulum</i>	div	V	2009: A, perfectly hardy after -15°C
A	06230	4	<i>Acer elegantulum</i>	div	V	2009: A, perfectly hardy after -15°C
E	02538	0	<i>Acer oliverianum</i>	div		2009: E, dead from winter cold,
E	05360	0	<i>Acer (pseudosieboldianum</i> subsp. <i>takesimense</i> sdlg)	div	?	2009: E, dead
A?	92176	3	<i>Aesculus californica</i>	spi		1997:survived -13°C, 2009: perfectly hardy to -15°C, 2009-0925: possibly dead from frost, to be checked
C-	05189	3	<i>Aesculus wilsonii</i>	waa		2008-05: head and side branch dead, frost damage I guess, 2009: C-, recovering from base
C	p9277	2	<i>Ailanthus giraldii</i>	wld		2009-06: hardiness C
E	08086	0	<i>Alangium platanifolium</i> (Mt.Emei,China,1400m)	wld		2009: dead, cold winter I suppose
A	07129	4	<i>Albizia julibrissin</i> (Mt. Chiri,Korea)	wld		2009: A, hardy to winter cold, only spring frost is problem,
B	05314	4	<i>Arbutus unedo</i> 'Elfin King'	div		2009-03: B at least, as all <i>Arbutus</i>
B-	05315	3	<i>Arbutus unedo</i> 'Elfin King'	div		2009:B-, leaves brown, and wood?
B-	05191	3	<i>Arbutus unedo</i> 'Quercifolia'	waa		2009-03: B-
D	07235	4	<i>Arbutus unedo</i> f. <i>rubra</i>	pds		2009: 1 of 2 plants dead, must be hardiness
E	01059	0	<i>Arbutus unedo</i> f. <i>rubra</i>	pds		2009: dead
B	00279	4	<i>Arbutus unedo</i> f. <i>rubra</i>	pds		2001-09: doing well in protection of <i>Ilex</i> group, others frozen this year, 2009-03: B,
D	82133	1	<i>Argyrocystis battandieri</i> *	hil		1985:D, 1987:B, 2009:D
E	02338	0	<i>Azara integrifolia</i>	waa	?	2009-05: dead, not hardy I suppose
A	91671	4	<i>Berberis lempergiana</i> (upright clone)	waa	?	1997:A, 2009: A, one of two survivors there
C-	93016	4	<i>Betula chinensis</i> (Mt.Sobaek,S.Korea) × 2	wld		2009-05: both plants have damaged head, but not other accession 98120

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E	08115	0	<i>Betula luminifera</i> (Crosbie, Hubei,China,1800m)	wld	V	2009:E
C+	06015	3	<i>Betula utilis</i> (KR1645, Phephe La,Bumthang)	wld		2009: C+
A+	07043	4	<i>Buddleja albiflora</i> (AC4895, Lixiang,China,3000m)	wld	?	2009-06: good hardy Buddleja, one of the few this year together with B. alternifolia
E	05105	0	<i>Buddleja colvilei</i> (Bhutan)	wld		2009: dead from winter cold
C	92124	0	<i>Buddleja fallowiana</i>	pds	?	1992?: OK -10°C, 1996:B- probably from drought in 95 and mild frost, 2009: dead after cold winter
D	92123	1	<i>Buddleja fallowiana</i>	pds		1992?: OK -10°C, 2009: D, recovering from base,
E	07052	0	<i>Buddleja globosa</i> (Curacautin to Tolhuaca NP,Chile)	wld		2009-06: dead, E
D	07051	0	<i>Buddleja globosa</i> (Curacautin to Tolhuaca NP,Chile)	wld		2009: D, recovering from base, 2009-10: dead
E	05239	0	<i>Buddleja lindleyana</i>	rug		2009-06: E
E	03251	0	<i>Buddleja loricata</i> *	spi		2009: dead from winter cold
E	07044	0	<i>Buddleja</i> sp. (KR7689, Yunnan,China,2750m)	wld	?	2008: hardiness D!, 2009:E
?	02296	3	<i>Buddleja stenostachya</i>	waa		2008-12: half of plant dead, hardiness problem?, 2009-06: good half is ok after cold winter
E	08229	0	<i>Buxus henryi</i>	div		2009: dead, hardiness I suppose
D	02351	1	<i>Callicarpa cathayana</i>	dev		2009-09: main plant dead, 1 shoot from base, hardiness I suppose (young plant)
E	02547	0	<i>Calocedrus formosana</i>	div	V	2009:E
E	02511	0	<i>Calocedrus formosana</i>	div		2008-04: leaves bronze from frost I guess, 2009-02: B- does not look too good (will be E?), 2009-06: yes E (also all 4 cuttings in nursery died, not hardy!)
A+	97130	4	<i>Camellia</i> 'Cornish Spring' (<i>japonica</i> × <i>cuspidata</i>)	tre		2009: A+ under Pinus
E	08177	0	<i>Camellia japonica</i> 'Nobilissima'	bur		2009: dead, not hardy
?	08180	0	<i>Camellia japonica</i> 'Spencer's Pink'	bur		2009: dead, hardiness problem I suppose
B	77322	4	<i>Camellia japonica</i> 'Virgin's Blush' *	bis		1985:C+, lower branches, 1987:B+, 1997:A+,B+, 2009: A+, leaves slightly brown but healthy
B	83661	2	<i>Camellia japonica</i> 'Virgin's Blush'	bis		most hardy of all Camellias, 2009-01: not this year, seems more affected by cold wave than many others
E	07157	0	<i>Camellia sasanqua</i> 'Narumigata'	dcl		2009:dead after cold winter, while others are ok

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
E	07159	0	<i>Camellia sasanqua</i> 'Narumigata'	dcl		2009-02: C-, these are poor plants, 2009-06: dead after cold winter, while others are mostly ok
B+	07158	4	<i>Camellia sasanqua</i> 'Narumigata'	dcl		2009-03: half of leaves damaged
B-	97131	4	<i>Camellia ×williamsii</i> 'Mary Phoebe Taylor'	tre		2009: B-, lost all of its leaves one of the less hardy of our Camellias
B-		2	<i>Carpenteria californica</i>			private garden, suffering after very cold winter
E	06031	0	<i>Carpinus henryana</i>	nie		2009: dead, is this not hardy?
?	P 10713	0	<i>Carpinus pubescens</i>			2009-08: 3 of 5 dead, hardiness?
D	05075	0	<i>Carpinus omeiensis?</i>	div	?	2009: D, recovering from base, 2009-09: dead
C	01018	4	<i>Carpinus tschonoskii</i>	div	V	2009-05: many branches dead after -15°C, or other cause?
D	08308	4	<i>Caryopteris ×clandonensis</i> 'Heavenly Blue'	vpl		2009: 2 of 3 dead winter frost, #08307 has survived (protected by neighbours?)
E	08346	0	<i>Caryopteris ×clandonensis</i> 'Petit Blue'	div		2009: E
D	95035	3	<i>Catalpa fargesii</i> *	pds	?	1993/94 winter hardy to -12°C, 1997: lost half of its shoots, C, recovering, 2009: D, recovering from base
E	97123	0	<i>Ceanothus arboreus</i> 'Trewithen Blue'	tre		2009: dead after cold
E	97128	0	<i>Ceanothus</i> 'Concha'	tre		2009: dead
E	07053	4	<i>Ceanothus</i> 'Concha'	pds		2009: 1 dead, completely frozen
D	08132	4	<i>Ceanothus thyrsiflorus</i> var. <i>repens</i>	pds		2009: 1 of 3 left, very healthy, somewhat protected under <i>Morus</i> , 2 others did not survive cold winter
E	07193	0	<i>Ceanothus thyrsiflorus</i> var. <i>repens</i>	pds		2009: D, but the new shoots died in July
D	09056	1	<i>Ceanothus thyrsiflorus</i> var. <i>repens</i> × 5	pds		2009-09: 1 dead, others recovering? (plant in private garden D, but the new shoots then died in July)
E	08048	0	<i>Celtis edulis</i> (Byonsan, S.Korea)	wld		2008-05: hit by spring frost, is coming back, 2009: dead from winter cold
C-	07001	3	<i>Celtis sinensis</i> (Mt Yudal, Korea)	wld		2009: C-, new shoots from base
E	04426	0	<i>Cercis siliquastrum</i> 'Bodnant'	bul		09: E; dead probably weak pl.,
?	98468	2	<i>Chimonanthus zhejiangensis</i>	rug		2009-05: status 2, top of branches dead, frost? pruned
E	07238	0	<i>Cistus salviifolius</i> × 3	div		2009: dead, hardiness I suppose
D	98085	1	<i>Clethra delavayi</i>	pds		2009: D
D	95274	1	<i>Clethra monostachya</i>	pds		1997: 4/6 plants left, 1997: 1/4 left, not the right place/not hardy? 2009-08: very dry, winter damage?

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
E	07239	0	<i>Convolvulus cneorum</i> × 2	div		2009: dead, hardiness I suppose
?	08074	0	<i>Cornus capitata</i> subsp. <i>emeiensis</i> 'Summer Passion'	dcl		2009: dead
C	00311	3	<i>Cornus elliptica</i>	pds		2009-06: for the first time, has lost branches to frost; this plant worse than other two which are A.
B	98101	3	<i>Cornus elliptica</i>	pds		2003-02: perfectly hardy after the -11°C and has not lost one leaf! 2004-03: again perfect evergreen, leaves a bit curled but OK, 2009-03: all leaves brown-grey but holding, recovers nicely.
E?	P 10700	0	<i>Cornus hongkongensis</i>	rug		2009-08: dead, hardiness I suppose
B-	92480	3	<i>Cornus</i> 'Norman Hadden' (<i>kousa</i> × <i>capitata</i>)	waa		1997: A, but miserable under the pines, 2009-03: B-
B	00374	3	<i>Cornus</i> 'Porlock' (<i>capitata</i> × <i>kousa</i>)	spi		2009-01: damaged by cold wave, B or worse?
B	02301	0	<i>Cotoneaster harrovianus</i>	waa		2009-01: leaves touched by frost in this very cold winter, 2009-09: cut, frost damage and untidy habit
D	07263	3	<i>Craibiodendron yunnanense</i> (KR 7523, Bang Dang Yunnan, China)	wld		2009: D
B	02546	4	<i>Cunninghamia konishii</i>	div		2006-03: top of some branches frozen, but otherwise ok
E	03232	0	<i>Cupressus duclouxiana</i> (Yunnan Sheng, China)	wld		2009-08: dead from frost, not hardy! E
E	08079	0	<i>Cupressus goveniana</i> var. <i>abramsiana</i> (Silba B422, San Mateo, CA, USA)	wld		2008-04: branch damage, frost I guess! 2009-03: E
B	85232	0	<i>Daphne bholua</i> (Dochu La, Bhutan) *	wld	T	1993: A, 1997: B-, no flowers at -13°C, the limit?, C+?, 2009: dead, cold winter I suppose?
B	85122	2	<i>Daphne bholua</i> (Dochu La, Bhutan)	wld		1992: hardy to -12°C, 1996-04: B+, and flowering, 1997: B- no flowers at -13°C, the limit, better than 85232, 2009-01: heavily damaged by cold winter spell, at least B-, possibly worse
C-	99120	3	<i>Deutzia taiwanensis</i>	div	V	2009: C-, recovering,
E	03137	0	<i>Dipelta floribunda</i>	hts		2009: dead from winter frost,
D	02360	0	<i>Dipelta yunnanensis</i>	dev		2009-06: to status 2, a lot of dead wood, frost?, 2009-09: dead
E	01126	0	<i>Distylium racemosum</i>	pds		2009-05: dead, not hardy! and fully exposed in that open location
B	01127	4	<i>Distylium racemosum</i>	pds		

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
D	97120	1	<i>Drimys lanceolata</i>	tre		1997-12: ok after first small frosts, healthy looking plant, 1998-03: survived the -9° of this mild winter, 2003-03: has been damaged by frost, many leaves brown, has kept some, 2003-04: flowering, although some damaged buds and branchlets; all leaves touched by frost, 2005-03: shooting back from base, 2007-01: has recovered from base to status 4, but how hardy will it be?, 2009-05: D, but resprouting from base, again, pruned heavily
B+	93292	3	<i>Eriobotrya japonica</i>	div	C	1995: survived -10°C under pines, 1996: A, 1997: B-,C? recovering, 2009-03: B, but not worse than that, coped well with our cold 2009 winter, leaves burnt but holding on,
B-	98066	4	<i>Escallonia</i> 'Donard Seedling' ('Langleyensis' × <i>virgata</i>) × 4	pds		2003-03: many brown leaves, frost damage, should recover however; 2009-01: B- to C after cold wave
E	09070	0	<i>Eucalyptus coccifera</i> (Tasmania)	wld		2009-04: died after this very cold winter and in a too exposed spot
C	80046	4	<i>Eucryphia</i> × <i>intermedia</i> 'Rostrevor'	hil	V	1985: D, no interest here, 1997-02: B-, leaves brown, 1997-04: severely hit by spring frost, 1997-07: recovering, 2004: big healthy plant after mild winters, 2009-01: seems quite reasonable after this very cold spell, B+
B-	02308	4	<i>Euonymus bungeanus</i> var. <i>mongolicus</i>	waa		2009-01: leaves very hit by cold spell
B	04434	4	<i>Euonymus echinatus</i>	bul		
E	05210	0	<i>Euonymus spraguei</i>	waa		2009: dead after cold winter
D	80149	2	<i>Fatsia japonica</i>	hil		1985: D, 1987: B+, 1997-07: recovering after winter and spring frost, 2009-03: C or D
D	05327	2	<i>Firmiana simplex</i>	div		2009-07: D
B-	01014	4	<i>Fitzroya cupressoides</i> (P.N. Alerce Andino, Chile, 600m)	wld		2009-03: B-, lost half of its leaves
E	01009	0	<i>Fitzroya cupressoides</i> (Puerto Mont, Fundo Nunez, Chile, 50m)	wld		2003-05: completely brown, may recover from base, some green branches under mulch, 2009-05: D and status 1, 2010-01: dead,
B	01008	4	<i>Fitzroya cupressoides</i> (Chiloé, Abtao, 590m)	wld	V	2003-05: tallest, untouched by frost, best of group, 2009: lost some inner branches, but hardy here
E	09071	0	<i>Fraxinus paxiana</i> (KGB 659, Bei Ma Shan, Yunnan, 2950m)	wld		2009-05: dead, after cold winter and transplanting I guess

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C	98174	0	<i>Fraxinus sieboldiana</i> (Chiri San, Korea)	wld		2009-05: 2/3 of plant dead, frost?, 2009: C, recover from base, some on main stem, 2009: cut
?	04193	0	<i>Fraxinus sieboldiana</i> (<i>longicuspis</i>)	pav		2009: dead, too exposed and very cold winter
D	86528	2	<i>Garrya elliptica</i> 'James Roof' *	pds		1987: B+, 1993:ok, 2009-03: B at least
D	06087	1	<i>Hebe salicifolia</i> × 2	rug		2009-06: plant-B dead after cold winter, plant-A status 1, coming back
B	06085	2	<i>Hebe salicifolia</i> × 2	rug		2009-01: both plants very affected by cold wave (plant in my private garden is also dead, but a seedling there is completely ok)
E	05072	0	<i>Huodendron tibeticum</i>	div		2008-06: to status 3, frost I guess, leaves damaged, maybe also some branches? 2009: E
D	07301	4	<i>Hydrangea aspera</i> subsp. <i>strigosa</i> (Sichuan, China, 2950m)	wld		
D	00253	0	<i>Ilex kingiana</i>	pds		2009: completely defoliating, D, dead from winter cold, one small basal shoot!!! 2009-09: dead
C	03249	4	<i>Illicium parviflorum</i>	spi		2008-05: top frosted,
E?	P 10586	0	<i>Illicium simonsii</i> (as <i>I. yunnanense</i>)	wld?		2009-07: dead, not hardy?
C	08121	4	<i>Juglans sigillata</i> (KC, Arunachal, India, 2350m)	wld	?	2009-04: C at least
E	prop 8859	0	<i>Juglans sigillata</i> (KC, Arunachal, India, 2350m)	wld		2009-06: two dead, not hardy, two others status C
C	06233	3	<i>Lagerstroemia ×egolfii</i> 'Muskegee'	div		2009: C
E	04310	0	<i>Laurus nobilis</i>	div		2009-03: B at least
E	04311	0	<i>Laurus nobilis</i>	div		2009-03: B at least
E	08230	0	<i>Lespedeza davidii</i>	cec		2009-08: dead
C	03072	3	<i>Ligustrum japonicum</i> × 2	pds		2009-01: leaves touched by cold, 2009-06: plant-a, -b, and -e almost dead after cold winter, cut, 2 others maximum status 3
D	02366	4	<i>Lindera aggregata</i>	dev	?	2009-02: B, 2009-06: D,
C	91709	2	<i>Lindera chienii</i>	waa		2009: C, some low branches alive
E	05351	0	<i>Lindera obtusiloba</i> *	rug		2009: E, dead
C	89273	1	<i>Lindera obtusiloba</i> **	spi		1998-05: suffered from a spring frost or some branches not hardened on early autumn frost? damaged, 2009: status 1, continues to decline unfortunately
C	06089	2	<i>Lindera reflexa</i>	div		2009: C, new growth from base
C	06140	2	<i>Lindera reflexa</i> × 2	bul		2009-06: status 2, frost damage, C, 2009: 2 of 3 plants left, one of which status 1

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
D	82159	4	<i>Lithocarpus henryi</i>	hil		2009-03: perfectly healthy after this cold winter while <i>Magnolia delavayi</i> next to it has B at least
C-	04365	1	<i>Magnolia</i> 'Aashild Kalleberg'	rut		2009-09: C-, main stem dead, resprouting from near base
C	86617	2	<i>Magnolia campbellii</i> subsp. <i>mollicomata</i>	ddh		1999: damaged by frost, lost head and tip of branches, 2009-08: many branches and top of branches dead, C-
A	02251	4	<i>Magnolia decidua</i>	rut		(Manglietia), 2009-04: perfectly hardy, came through -15°C unscathed,
D	89417	1	<i>Magnolia delavayi</i>	esv		1991: ok through -10°C, 1996-01: all lvs frosted by long cold winter and -14°C, 1997: B-, C- after -13°C long january frosts, except against glass of greenhouse, 2009-01: leaves discol. after cold wave, 2009-03: B at least while neighbouring <i>Lithocarpus</i> is perfectly healthy, 2009-06: resprouting on stem
E	08212	0	<i>Magnolia doltsopa</i>	bur		(Michelia), 2009: dead, not hardy
E	08215	0	<i>Magnolia doltsopa</i>	bur		(Michelia), 2009: dead, not hardy
E	08214	0	<i>Magnolia doltsopa</i>	bur		(Michelia), 2009: dead, not hardy
E	08213	0	<i>Magnolia doltsopa</i>	bur		(Michelia), 2009: dead, not hardy
E	08211	0	<i>Magnolia doltsopa</i>	bur		(Michelia), 2009: dead, not hardy
E	09139	0	<i>Magnolia fordiana</i>	rut		(Manglietia), "yuyuan form", 2009: dead, hardiness I suppose
A	01002	4	<i>Magnolia fraseri</i> subsp. <i>pyramidata</i> (Jasper, Texas)	wld		2009-05: flowering well, perfectly hardy after -15°C,
D	07304	1	<i>Magnolia grandiflora</i> 'Gallissonnière Nana'	div		2009: very damaged by winter, D, recover from base seems to be above graft,
D	01221	0	<i>Magnolia grandiflora</i> 'Harold Pool'	rut		2003: leaves and young shoots cut back by frost, hardiness B, 2009-07: D, cut as probably stock was coming back
B+	96178	4	<i>Magnolia grandiflora</i> 'Samuel Sommer'	rut		1999-01: new growth hit by early frosts (nov 98), 2009-03: B+, most damaged of grandifloras, others all quite good after this cold winter
D	06172	1	<i>Magnolia</i> 'Jack Fogg' (<i>doltsopa</i> × <i>figo</i>)	rut		2008-02: seems quite hardy, 2009-02: B, 2009-05: D now, at least!
E	08251	0	<i>Magnolia</i> 'Jack Fogg' (<i>doltsopa</i> × <i>figo</i>)	rut		2009: dead
E	05282	0	<i>Magnolia</i> 'J.C. Williams' (<i>sprengeri</i> × <i>sarg. robusta</i>)	rut		2009: dead, winter frost probably, E
C	84573	4	<i>Magnolia</i> × <i>kewensis</i> 'Wada's Memory' *	hil		2009-09: this great plant has suffered, winter lows (-19°C) possibly, old age?
C	84690	4	<i>Magnolia</i> × <i>kewensis</i> 'Wada's Memory' **	spi		1989-04: C-, 1992: recovered, 1995: frosted again! 2009-04: have given two stars, this is a reliable and breathtaking plant

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
E	05284	0	<i>Magnolia laevifolia</i>	rut		2009-09: E, but was very exposed site
C-	08235	1	<i>Magnolia laevifolia</i> 'Michelle'	div		2009-06: resprouting from base, beware for stock but above graft I think
E	04419	0	<i>Magnolia laevifolia</i> 'Summer Snowflake'	rut		2009: dead from -15°C,
A+	04418	4	<i>Magnolia laevifolia</i> 'Summer Snowflake'	rut		2009: hardy, is A+ after -15°C
E	03128	4	<i>Magnolia</i> 'Marwood Spring' (<i>sprengeri</i> ×)	div		2009: E, dead from winter cold,
B	02249	4	<i>Magnolia</i> 'Mystery' (<i>grandiflora</i> × <i>sieboldii</i> ?)	rut		2009-02: leaves damaged by cold especially at top of branches
B-	92574	4	<i>Magnolia</i> 'Nimbus' (<i>obovata</i> × <i>virginiana</i>) *	waa		2003-05: B- hope it will survive; 2009-01: leaves very hit by cold spell
?	08203	0	<i>Magnolia nitida</i>	bur		2009: not hardy, gift to Gent BG
D	99250	1	<i>Magnolia rostrata</i>	pds		2003-05: all buds frozen, see how it recovers, 2004-05: quite damaged this year, 2009-05: D
D	99112	1	<i>Magnolia rostrata</i> (Gwavas Station)	div		2000: status 4 after this mild winter (-7°C in November), 2004-05: quite damaged this year, 2009-05: to status 1 after cold winter
A+	05020	4	<i>Magnolia virginiana</i> var. <i>australis</i> *	pds	V	
E	03047	0	<i>Magnolia virginiana</i> var. <i>australis</i> 'Aiken County'	div		2009: D or E, the only virginiana to go after the -19°C,
?	06218	0	<i>Magnolia virginiana</i> 'Ludoviciana'	div		2009-05: dead, was already status 1, too exposed I guess and very cold winter
B	05115	3	<i>Mahonia</i> × <i>media</i> 'Winter Sun'	div		2009-01: leaves discoloured after cold wave
C-	08087	1	<i>Maytenus boaria</i>	pds		2009: C-, recovering from lower stem,
D	84341	4	<i>Maytenus boaria</i>	esv	V	1987: D, 2009: C, bark split at base!,
D	08088	1	<i>Maytenus boaria</i>	pds		2009-06: resprouting from base after cold winter
E	07204	0	<i>Neolitsea sericea</i>	bul		2009: dead, not hardy I suppose
B+	06142	4	<i>Nothofagus dombeyi</i>	bul		2009-04: B after cold winter, 2009-06: B+, seems rather ok,
C	05215	0	<i>Nothofagus pumilio</i>	waa		2008-06: to status 1, frost I suppose, 2008-09: dead
C-	06144	1	<i>Nyssa ogeche</i>	bul		2007-11: still very green leaves and shoots, will this harden?, 2008-07: remains status 3, not fully hardy? 2009-06: to status 1
C	81305	3	<i>Osmanthus delavayi</i>	spi	V	1985: C, 1987: B, 1991: A, 2009: C
C-	06042	3	<i>Paulownia coreana</i> (Korea, Mt. Ungbong)	wld		2009-08: C-, resprouting from near base
C	01193	3	<i>Phillyrea angustifolia</i> × 2	esv		2009-01: suffered under weight of snow, one plant damaged and pruned, 2009-08: 1/3 plants dead, second damaged recovering from base, one OK after -19°C,

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
D	94148	1	<i>Phoebe formosana</i>	mal	V	1997: B-, C+, bark split at base?, 1998-11: new shoot from base surviving, main stem dead! 1999-05: new shoots again! 2001-11: new shoots from base, 2009-05: D and status 1
B	86020	4	<i>Photinia lindleyana</i>	ros		1987: B, 1997: A, good new growth, early, 1999-03: superb after -9°C, 2009-02: B
A	74080	0	<i>Photinia villosa</i> *	hil		2009: dead
C	91737	4	<i>Picea crassifolia</i>	waa	V	1997-04: young shoots hit by spring frosts, but is ok has recovered to status 3 from '94 miseries, 2001: back to status 4, got through the spring frosts, 2009-01: young shoots hit again by frost, 2009-09: healthy and cones,
D	79005	0	<i>Pteris formosa</i>	hil		1985: D, 1997: A, 2009: D, leaves have fallen all green
D	92261	1	<i>Pteris formosa</i> 'Jermyns'	spi		1997: B-, 2009-04: C at least, 2009-06: D, heavily pruned, resprouting from lower branches
?	08223	0	<i>Pinus pinea</i> (Antalia, Turkey)	wld		2009-06: dead after cold winter, hardiness problem I suppose
A	93102	4	<i>Poliothyrsis sinensis</i>	waa		1997: A, 1998: C-, status 1, 1998-11: will probably be killed by early frosts, not mature yet, 2009: A, hardy
?	08224	0	<i>Prumnopitys andina</i> (Valle de Maule, Chile, 1000m)	wld		2009-06: dead, winter was very cold, maybe hardiness problem?
E	91455	0	<i>Prunus ilicifolia</i>	waa		1992: A, 1997: B+, 1997-09: seems dead, all leaves shed, could be spring frost, new shoots from base, 2009: E
B	09129	3	<i>Quercus argyrotricha</i> (Coombes 900, Yunnan, China)	wld		2009: hardiness B at least
?	prop 8592	0	<i>Quercus austrina</i> (Lance R., USA)	wld		2009-06: dead, hardiness?
C	05318	0	<i>Quercus faginea</i> (Sierra de Grazalema, Spain)	wld		2007: branch damage from frost, 2009: dead
B	00602	4	<i>Quercus glauca</i>	div		2009-01: B, so far the <i>Q. myrsinifolia</i> is untouched by the cold winter! (will change later though)
D	04130	1	<i>Quercus glauca</i>	pav		2009-05: not cut because some green leaves left, but heavily pruned, hope for recovery
E	08013	0	<i>Quercus glauca</i> (Fukuoka, Japan)	wld		2009-03: dead from -15°C
E	01142	0	<i>Quercus glauca</i>	cec		2006-03: some leaf damage, 2009-06: dead
B	04131	2	<i>Quercus glauca</i>	pav		2009-04: one of the only <i>glauca</i> who did not suffer too badly from the cold winter
D	07142	1	<i>Quercus glauca</i> (Fukuoka, Japan)	wld		2009: E, dead from winter cold,

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
B	04036	4	<i>Quercus ×hispanica</i> 'Fulhamensis'	vpl		2009-01: B, perfect evergreen in other years but lvs now brownish after very cold wave
D	02444	1	<i>Quercus ilex</i>	pav		2004-03: head frozen but otherwise OK, 2009: D, coming back from base
E	07140	0	<i>Quercus insignis</i> (Huatusco,Mexico,1344m)	wld		2007-02: leaf and young branch frost damage, C, 2008-06: new growth from base but this is seedling, thus no stock (mail Lamant 080715), not hardy he says, 2009-05: E
A	00261	4	<i>Quercus myrsinifolia</i>	pds		2009: survived the -15° C,!!
A	02132	4	<i>Quercus myrsinifolia</i>	div		2009: A: this one perfectly hardy,
A	00262	4	<i>Quercus myrsinifolia</i>	pds		2009: survived the -15° C,!!
C-	89251	2	<i>Quercus myrsinifolia</i> *	spi	V	1991:B+, at -10°C, 1997: A, B+ on old leaves, 2009-03: looked great after cold winter but top half dry and turning yellow now, 2009-05: 3/4 of plant dead after cold winter
D	83129	4	<i>Quercus phillyreoides</i>	hil		1985: D, 1987: B-/D, 1997: B+ after -13°C, 2009: A
A	03119	4	<i>Quercus rysophylla</i>	dev		2009: only slightly damaged leaves
A	07141	4	<i>Quercus salicina</i> (Okayama,Japan)	wld		2009-06: A, perfectly hardy contrary to glauca and myrsinifolia,
E	04173	0	<i>Quercus suber</i>	pav		relatively hardy selection from Sopron, Hungary, 2009: dead from winter cold
B	04450	4	<i>Rhamnus alaternus</i>	bul		
C-	03120	1	<i>Rhamnus caroliniana</i>	dev		
E	07101	0	<i>Rhamnus imeretina</i> (Georgia)	wld		2009: dead after cold winter
B	00257	4	<i>Rhododendron aberconwayi</i>	pds		2009-03: B, lost top leaves,
C-	98071	1	<i>Rhododendron</i> 'Albatross Townhill White'	pds		2009: C-, few branches left, stem damaged, dying
E	02101	0	<i>Rhododendron amagianum</i> (Cheju do)	wld		2009: E, probably weak plant before cold,
E	08255	0	<i>Rhododendron arboreum</i> var. <i>roseum</i> (Manang,Nepal,3100m)	wld		2009: dead, not hardy although high altitude
B	75035	0	<i>Rhododendron</i> <i>argyrophyllum</i>	hil	V	1985:B+, 2009: dead
B-	73044	0	<i>Rhododendron</i> ('Britannia' × <i>yakushmanum</i>)	dbl	K	2009-03: B- at least or worse, but probably already suffering before transplanting, 2009-03: dead
C	97047	4	<i>Rhododendron calophytum</i> × 3	pds		2009: one plant hardiness B
B	85606	4	<i>Rhododendron</i> 'Cilpinense' (<i>ciliatum</i> × <i>moupinense</i>)	pds		2009-03: B, top of leaves brown, some flowers,
C	02082	2	<i>Rhododendron cinnabarinum</i> Roylei Group × 2	pds		2009: C/E one dead of group of 3

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
B+	02090	4	<i>Rhododendron cinnabarinum</i> subsp. <i>xanthocodon</i> 'Concatenans'	pds		2009-02: less damaged than #09091
B-	02091	0	<i>Rhododendron cinnabarinum</i> subsp. <i>xanthocodon</i> 'Concatenans'	pds		2009: dead, winter frost probably, curious in this protected spot
B-	03036	3	<i>Rhododendron dauricum</i> 'Midwinter' *	pds		2009-03: B- young shoots maybe C, pruned
B-	91606	3	<i>Rhododendron</i> 'De Ross'	waa		1997:B, 1999: badly bark split, but surviving, 2009-01: leaves damaged in cold wave, B-
E	85103	0	<i>Rhododendron falconeri</i> (Dochu La,Bhutan)	wld		1996-03: B+, were kept inside to 1992, then moved to 175 under pine trees, 1997: B+, C+ no growth, 2008-05: to status 3, frost, 2009-02: B at least, possibly C, 2009-06: E
C	00295	4	<i>Rhododendron</i> 'Geisha' ('Pineapple' × <i>dichroanthum</i>)	pds		2001:bark split here, in full sun and open conditions, should be more protected, 2009-01: B
B	01032	4	<i>Rhododendron</i> 'Gristede' × 7 **	pds		2008-03-25: good display while everything else is frozen, 2009-02: B
B	95110	4	<i>Rhododendron</i> 'Gristede' × 3 **	pds		2008-03-25: good display while everything else is frozen, 2009-02: B
E	05035	0	<i>Rhododendron hanceanum</i> 'Canton Consul'	pds		2009: dead after cold winter in bad spot
E	08007	0	<i>Rhododendron hanceanum</i> 'Canton Consul'	pds		2009: dead after cold winter in bad spot
D	83316	0	<i>Rhododendron insigne</i>	rsf		1985:D, 2009: status 1, and dead, no obvious reason
C	08045	0	<i>Rhododendron</i> 'Jack Skelton' ('Dr. Stocker' × 'M. L. Smith')	pds	T	2009-01: very damaged in cold winter, 2009-03: dead
B	84048	0	<i>Rhododendron keiskei</i> 'Ebino' *	ggd		1986: B, 1987: B+, 1991-04: C, 2009: dead
A	85197	4	<i>Rhododendron kesangiae</i> (Dochu La,Bhutan,3500m)	wld	V	1997: A, 2009-05: both plants hardy,
B+	85199	4	<i>Rhododendron kesangiae</i> (Dochu La,Bhutan,3500m)	wld		1997: A, 2009-05: hardest of all after -15°C
E	94276	0	<i>Rhododendron kesangiae</i> (C&S 1632,Bhutan)	wld	?	1997: B+ buds less frozen than next, 2009-03: C, although well protected, poor origin! 2009-06: E
B-	85313	4	<i>Rhododendron</i> 'Lady Alice Fitzwilliam'	ggd		2009-03: B-,
C	82017	0	<i>Rhododendron lepidostylum</i>	reu		1997: B-, deciduous but probably ok, 2009: dead
C	76067	4	<i>Rhododendron</i> 'Letty Edwards' (<i>campylocarpum</i> × <i>fort.</i>)	hil		1985: C, 1986: B, 1994: recovered, 2009-03: B, half of leaves are brown,
D	98180	0	<i>Rhododendron leucaspis</i>	pds		2009-06: D some layers surviving, under snow, 2009-09: dead

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
E	05323	0	<i>Rhododendron</i> 'Loder's White' (<i>arboreum album</i> × <i>griffithianum</i>)	pds		2009-01: to status 1 after serious winter period, probably dead, 2009-03: cut, was too exposed here
C	89384	0	<i>Rhododendron maculiferum</i> (Guiz 148)	ggd		1997: C, 2009: dead
C	87162	2	<i>Rhododendron</i> 'Mah-Jong' ('Chink' × <i>valentianum</i>)	ggd		1991-04: C, 1997: B+ recovering, 2009-08: center dead (-15°C), 2 lateral branches survive
B-	98367	4	<i>Rhododendron pachysanthum</i>	esv		
B+	84070	1	<i>Rhododendron pachytrichum</i>	ggd		1987: A, 1992: B+, damaged leaves,
D	76077	0	<i>Rhododendron</i> 'Seta' (<i>moupinense</i> × <i>spinuliferum</i>) **	hil		1987: A+, 1990-04: A, not damaged by spring frost, excellent plant in protected spot, perfectly hardy to -12°C, 1997: A+, 2009-06: status 1, D, 2009-09: dead
A+	01106	4	<i>Rhododendron</i> 'Silkcap' (<i>leucaspis</i> × <i>Cilpinense</i> Group)	pds		2009-03: A+, slightly brown on some tips,
B	94250	4	<i>Rhododendron</i> ('Sir Charles Lemon' × <i>rex</i>) × 2	pds	K	1997: B for plant-b, but new shoots are OK, plant-a is better 1997:A, 2009-03: hardiness B at least, leaves drop
C	09394	4	<i>Rhododendron strigillosum</i> (Tower Court Form)	ggd		2009: new shoots frozen
C	09396	4	<i>Rhododendron strigillosum</i> (Tower Court Form)	ggd		2009: new shoots frozen
C	09395	4	<i>Rhododendron strigillosum</i> (Tower Court Form)	ggd		2009: new shoots frozen
C	84728	0	<i>Rhododendron</i> 'Surrey Heath' ('Fabia' × <i>yakushimanum</i>)	spi		has been spring frosted, much understock, weak plant will be overtaken by understock, 2009: dead
D	82374	1	<i>Rhododendron</i> (<i>vernicosum</i> × <i>aberconwayi</i>) × 2	pds	K	1985: B-, 1986: B+, 1987: B+, 2009: D, but were unhappy, recovering nicely from base, 2009-10: 2/3 left
E	84622	0	<i>Rhododendron viscosum</i>	hil	?	1985: C, 1987: B-, 1994: recovered, 2009: dead from -15°C,
C	01368	4	<i>Rosa</i> 'Zigeunerblut'	sch		2009: C
D	09050	2	<i>Sarcococca ruscifolia</i> × 2	pds		2009-04: C at least, 2009-12: pl-a dead, hardiness
A	86431	4	<i>Sciadopitys verticillata</i>	esv	V	1997: brown, frozen or unhappy there, 2009-03: got through the -17° without problem,
C	95166	4	<i>Sinojackia xylocarpa</i>	div		2009-06: B
C-	95279	3	<i>Sorbaria sorbifolia</i> var. <i>stellipila</i> (Mt.Odae,S.Korea) × 4	wld		1997-03: 4/5 survived winter, 2009-09: main portion of plants dead, back from base, C-
D	05070	1	<i>Stewartia calcicola</i>	div	?	2008-03: leaves somewhat burned by frost, 2009: D, probably E

H	N°	S	NAME × QUANT	O	V	TOTAL DATA
?	06108	0	<i>Styrax wuyuanensis</i>	rug		2009-06: dead, hardy?, or just typical difficulties with young <i>Styrax</i> ?
B-	95149	4	× <i>Sycoparrotia semidecidua</i> (<i>Sycopsis</i> × <i>Parrotia</i>)	dbl		2009-02: B-
B+	92649	4	<i>Taiwania cryptomerioides</i>	waa		1996: survived three winters at minimum of -10°C, in this protected site under Pinus, 1997: A after -13°C, 2009-03: B+
A	09101	4	<i>Taxus cuspidata</i> (Mt.Halla,Cheju-Do,S.Korea,1200m)	wld		2009-06: A, quite hardy, all of them
B	09097	4	<i>Torreya californica</i> (Yosemite,CA,USA)	wld		2009: B, lost some leaves,
B	03297	3	<i>Torreya grandis</i> (China,220m)	wld		2009-03: chlorotic and also brown leaves after cold winter
C-	03107	1	<i>Torreya</i> sp.	div	?	2009-03: C-, but was very weak
B+	06177	4	<i>Trochodendron aralioides</i> (Taiwan,2355m) *	wld		2009-01: B, less adapted to our climate than the non-taiwan plants, but reasonably ok, lost old leaves
A	84721	3	<i>Trochodendron aralioides</i>	spi	T	2006-12: to status 3, many leaves, especially the older ones are brown, but was a big move and is now in very open and chalky spot, and had a warm summer, wait and see... 2009-05: recovering!
E	06035	0	<i>Tsuga chinensis</i> var. <i>forrestii</i> (Guangxi,China)	wld		2009-01: leaves brown and plant unhealthy, was it too cold?, 2009-03: E, dead, not hardy
E	06034	0	<i>Tsuga chinensis</i> var. <i>forrestii</i> (Guangxi,China)	wld	V	2009: C, leaves brown, does not look good! 2009-03: cut, was dead,
B+	85119	4	<i>Tsuga dumosa</i> (Dochu La,Bhutan)	wld	T	1997: B, but new growth visible, C+ on some not ripen shoots, 2009-03: B+, end of shoots ok, old needles dead,
C	82250	3	<i>Vaccinium arctostaphylos</i>	hil		2009-01: leave damage after cold winter spell; <i>Eucryphia</i> behind seems much better
B-	04454	4	<i>Viburnum davidii</i>	bul		2009-01: leaves purplish brown after cold wave
A	08587	4	<i>Viburnum</i> 'Eskimo' (<i>carlcephalum</i> × <i>utile</i>)	div		2009: hardy
E	05139	0	<i>Viburnum</i> × <i>globosum</i> 'Jermyns Globe' (<i>calvum</i> × <i>davidii</i>)	rug		2009-08: E
A	08586	4	<i>Viburnum nudum</i> 'Pink Beauty'	div		2009: hardy
B-	08109	4	<i>Viburnum propinquum</i>	pds	V	2009-01: leaves completely purplish brown after cold spell
E	05140	0	<i>Viburnum rigidum</i> (Tenerife,Spain)	wld		2009: E
D	79046	2	<i>Viburnum tinus</i>	hil	V	1985: D, 1996: B, 10 % brown, 1997: B, misery, 2009-01: oops, leaves very dark brown after cold winter, B- at least

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H	N°	S	NAME × QUANT	O	V	TOTAL DATA
E	05084	0	<i>Viburnum tinus</i> 'Purpureum'	klm		2006-01: leaves damaged by frost; 2009-02: B-, probably C, 2009-06: E
C-	07167	1	<i>Wollemia nobilis</i>	klm	V	2009: C- at least after cold winter
C-	92308	0	<i>Zelkova sinica</i>	spi		2009-05: 2/3 of plant dead, damaged by winter frost possibly, C-, 2009-09: cut