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Supplementary Material

Tab. S1 Complete list of 376 tree cores sampled for three genotypes ("Dorskamp", "I-214" and "Koster") under each age class along with information of each site condition (Water available, WA and Water limiting, WL) and their GPS coordinates.

Genotypes	Sites	GPS co-ordinates	Age classes	Site conditions	Trees sampled
Dorskamp	Laigne enbelin	00° 14′ 61.6″ E; 47° 52′ 58.5″ N	4	WA	5
Dorskamp	Seuilly	00° 08′ 33.3″ E; 47° 08′ 35.1″ N	4	WL	5
Dorskamp	St. Paul aux bois	03° 13′ 05.4″ E; 49° 33′ 34.5″ N	4	WA	4
Dorskamp	Argenton	01° 52′ 12.8″ E; 46° 58′ 39.5″ N	7	WL	5
Dorskamp	Arueyres	00° 05′ 41.2″ E; 44° 22′ 8.22″ N	7	WA	5
Dorskamp	Flammerans (2)	00° 15′ 55.8″ W; 44° 54′ 6.98″ N	7	WA	5
Dorskamp	Lizeray	05° 25′ 15.9″ E; 47° 15′ 1.52″ N	7	WA	5
Dorskamp	Buzancais	01° 25′ 15.6″ E; 46° 53′ 10.5″ N	9	WA	5
Dorskamp	Gommegnies	00° 03′ 24.1″ W; 47° 41′ 37.8″ N	9	WL	5
Dorskamp	La Flèche	01° 14′ 15.5″ E; 43° 52′ 6.31″ N	9	WA	5
Dorskamp	Marcon	00° 23′ 32.6″ E; 44° 51′ 16.2″ N	9	WA	4
Dorskamp	Prigorrieux	03° 43′ 22.3″ E; 50° 14′ 57.2″ N	9	WL	5
Dorskamp	Vielverg (1)	05° 28′ 4.43″ E; 47° 16′ 39.3″ N	9	WL	5
Dorskamp	Rimons	00° 11′ 48.9″E; 44° 39′ 8.55″ N	11	WA	5
Dorskamp	St. Andre de lidon	00° 00′ 5.41″ W; 44° 40′ 6.12″ N	11	WA	5
Dorskamp	St. Pierre sur dropt	00° 43′ 59.5″ W; 45° 35′ 0.21″ N	11	WL	5
Dorskamp	Fontain francaise	05° 22′ 2.10″ E; 47° 31′ 0.76″ N	13	WA	5
Dorskamp	Siorac	05° 22′ 2.10″ E; 47° 31′ 0.76″ N	13	WL	5
Dorskamp	At. Germain de la Riviere	00° 19′ 55.8″ W; 44° 56′ 29.7″ N	15	WA	4
Dorskamp	Bioussac	00° 16′ 47.2″ E; 46° 01′ 59.4″ N	15	WL	5
Dorskamp	Deyme	01° 32′ 26.8″ E; 43° 29′ 18.5″ N	15	WL	5
Dorskamp	Lillers	00° 07′ 1.46″ E; 44° 28′ 24.6″ N	18	WA	5
Dorskamp	Mont Pouillan	00° 26′ 24.1″ W; 46° 01′ 11.5″ N	18	WA	4
Dorskamp	Onnaing	01° 45′ 53.0″ W; 46° 48′ 25.7″ N	18	WA	5
Dorskamp	Saint pierre de ile	02° 31′ 39.2″ E; 50° 33′ 55.1″ N	18	WL	4
Dorskamp	St. Christophe du ligneron	03° 34′ 37.9″ E; 50° 24′ 03.5″ N	18	WA	4
I214	Coincy (2)	03° 28′ 44.9″ E; 49° 09′ 34.1″ N	4	WL	5
I214	Laigne enbelin	00° 14′ 61.6″ E; 47° 52′ 58.5″ N	4	WA	5
I214	Seuilly	00° 08′ 33.3″ E; 47° 08′ 35.1″ N	4	WL	5
I214	Coincy (1)	03° 27′ 32.1″ E; 49° 09′ 39.0″ N	7	WL	5
I214	Flammerans (2)	05° 25′ 15.9″ E; 47° 15′ 1.52″ N	7	WA	5
I214	Lizeray	01° 52′ 12.8″ E; 46° 58′ 39.5″ N	7	WA	4
I214	St. Bazeille	00° 05′ 36.7″ E; 44° 31′ 28.6″ N	7	WL	4
I214	Buzancais	01° 25′ 15.6″ E; 46° 53′ 10.5″ N	9	WA	5
I214	Esternay	03° 33′ 31.3″ E; 48° 43′ 41.5″ N	9	WA	5
I214	Ste. Livière	04° 49′ 29.1″ E; 48° 35′ 17.5″ N	9	WA	4
I214	Verdun sur Geronne	01° 14′ 15.5″ E; 43° 52′ 6.31″ N	9	WL	5
I214	Vielverg (1)	05° 28′ 4.43″ E; 47° 16′ 39.3″ N	9	WL	5
I214	Allemant	03° 28′ 58.4″ E; 49° 27′ 20.2″ N	11	WL	5
I214	Bastide d'arminac (2)	00° 07′ 22.7″ W; 43° 56′ 54.4″ N	11	WA	5
I214	Manicamp	03° 10′ 20.3″ E; 49° 34′ 34.9″ N	11	WA	5

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Genotypes	Sites	GPS co-ordinates	Age classes	Site conditions	Trees sampled
I214	Melincourt	06° 08′ 50.8″ E; 47° 53′ 33.7″ N	11	WA	5
I214	Rimons	00° 00′ 5.41″ W; 44° 40′ 6.12″ N	11	WA	3
I214	St. Andre de lidon	00° 43′ 59.5″ W; 45° 35′ 0.21″ N	11	WA	5
I214	St. Pierre sur dropt	00° 11′ 48.9″ E; 44° 39′ 8.55″ N	11	WL	5
I214	Fontain francaise	05° 22′ 02.1″ E; 47° 31′ 0.76″ N	13	WA	4
I214	Siorac	00° 56′ 33.1″ E; 44° 50′ 7.28″ N	13	WL	4
I214	Bioussac	01° 32′ 26.8″ E; 43° 29′ 18.5″ N	15	WL	5
I214	Deyme	00° 16′ 47.2″ E; 46° 01′ 59.4″ N	15	WL	5
I214	Ste hermino	01° 03′ 0.36″ W; 46° 33′ 29.2″ N	15	WA	4
I214	Lillers	00° 07′ 1.46″ E; 44° 28′ 24.6″ N	18	WA	5
I214	Mont Pouillan	00° 26′ 24.1″ W; 46° 01′ 11.5″ N	18	WA	4
I214	Saint pierre de ile	01° 45′ 53.0″ W; 46° 48′ 25.7″ N	18	WA	5
I214	St. Christophe du ligneron	02° 31′ 39.2″ E; 50° 33′ 55.1″ N	18	WL	5
Koster	Coincy (2)	03° 28′ 44.9″ E; 49° 09′ 34.1″ N	4	WL	5
Koster	Houdain les Bavay	03° 47′ 46.3″ E; 50° 19′ 23.6″ N	4	WA	5
Koster	St. Paul aux bois	03° 13′ 05.4″ E; 49° 33′ 34.5″ N	4	WA	5
Koster	Argenton	00° 05′ 41.2″ E; 44° 22′ 8.22″ N	7	WL	4
Koster	Begaar	00° 52′ 5.05″ E; 43° 48′ 31.3″ N	7	WA	5
Koster	Flammerans (2)	05° 25′ 15.9″ E; 47° 15′ 1.52″ N	7	WA	5
Koster	Buzancais	01° 25′ 15.6″ E; 46° 53′ 10.5″ N	9	WA	5
Koster	Esternay	03° 33′ 31.3″ E; 48° 43′ 41.5″ N	9	WA	5
Koster	Gommegnies	00° 03′ 24.1″ W; 47° 41′ 37.8″ N	9	WL	5
Koster	Havrincourt	03° 03′ 38.3″ E; 50° 05′ 25.1″ N	9	WL	5
Koster	Prigorrieux	03° 43′ 22.3″ E; 50° 14′ 57.2″ N	9	WL	5
Koster	Ste. Livière	04° 49′ 29.1″ E; 48° 35′ 17.5″ N	9	WA	4
Koster	Vielverg (1)	05° 28′ 4.43″ E; 47° 16′ 39.3″ N	9	WL	4
Koster	Allemant	03° 28′ 58.4″ E; 49° 27′ 20.2″ N	11	WL	5
Koster	Bastide d'arminac (2)	00° 07′ 22.7″ W; 43° 56′ 54.4″ N	11	WA	5
Koster	Flavy le Martel	03° 09′ 44.9″ E; 49° 40′ 57.5″ N	11	WL	5
Koster	Manicamp	03° 10′ 20.3″ E; 49° 34′ 34.9″ N	11	WA	5
Koster	Rimons	00° 00′ 5.41″ W; 44° 40′ 6.12″ N	11	WA	5
Koster	St. Andre de lidon	00° 43′ 59.5″ W; 45° 35′ 0.21″ N	11	WA	5
Koster	St. Pierre sur dropt	00° 11′ 48.9″ E; 44° 39′ 8.55″ N	11	WL	4
Koster	Fontain francaise	05° 22′ 2.10″ E; 47° 31′ 0.76″ N	13	WA	5
Koster	Siorac	00° 56′ 33.1″ E; 44° 50′ 7.28″ N	13	WL	5
Koster	Deyme	00° 16′ 47.2″ E; 46° 01′ 59.4″ N	15	WL	5
Koster	Norrois	04° 36′ 53.1″ E; 48° 40′ 24.6″ N	15	WA	5
Koster	St. Christophe du ligneron	02° 31′ 39.2″ E; 50° 33′ 55.1″ N	18	WL	5
Koster	Lillers	00° 07′ 1.46″ E; 44° 28′ 24.6″ N	18	WA	5

Tab. S2 - Coefficients of predictor variable for Carbon, Nitrogen and along with variance explained by sites which was taken as random factor. Multiple R^2 = 0.547, with Adjusted R^2 = 0.3934. Although the R^2 is not so good for the model but AIC (Akaka Information Criteria) is less than BIC (Basic Information Criteria).

Linear mixed-effect model fit by REML		
Data: Ring		
AIC	BIC	logLik
1567.739	1656.733	-760.8694

Random effects:		
Formula: ~1| Site		
	(Intercept)	Residual
StdDev:	0.731394	1.841785

Fixed effects: C ~ clone * Age					
	Value	**Std.Error**	**DF**	**t-value**	**p-value**
(Intercept)	47.32607	0.625045	318	75.71623	0
cloneI214	0.69148	0.694782	318	0.99525	0.3204
cloneKoster	0.04905	0.785821	318	0.06241	0.9503
Age7	-0.10814	0.825148	36	-0.13105	0.8965
Age9	0.38628	0.76214	36	0.50683	0.6154
Age11	-0.45546	0.855119	36	-0.53262	0.5976
Age13	-1.88419	1.017926	36	-1.85101	0.0724
Age15	-1.91863	0.885615	36	-2.16644	0.037
Age18	-0.60228	0.820492	36	-0.73405	0.4677
cloneI214:Age7	0.29492	0.969144	318	0.30431	0.7611
cloneKoster:Age7	0.70808	1.064715	318	0.66504	0.5065
cloneI214:Age9	-0.86875	0.903461	318	-0.96158	0.337
cloneKoster:Age9	0.16584	0.925597	318	0.17917	0.8579
cloneI214:Age11	0.09506	0.921805	318	0.10313	0.9179
cloneKoster:Age11	0.87615	0.99762	318	0.87824	0.3805
cloneI214:Age13	0.80846	1.194197	318	0.67699	0.4989
cloneKoster:Age13	1.40653	1.155316	318	1.21744	0.2243
cloneI214:Age15	2.17574	1.018377	318	2.13647	0.0334
cloneKoster:Age15	2.3452	1.171614	318	2.00168	0.0462
cloneI214:Age18	-0.26419	0.958334	318	-0.27568	0.783
cloneKoster:Age18	0.76724	1.280272	318	0.59928	0.5494

Tab. S3 - Coefficients of predictor variable for Nitrogen along with variance explained by sites which was taken as random factor. Multiple R-squared = 0.53 with Adjusted R-squared = 0.37. Although the R-squared is not so good for the model but AIC (Akaka Information Criteria) is less than BIC (Basic Information Criteria).

Linear mixed-effect model fit by REML		
Data: Ring		
AIC	BIC	logLik
-756.3091	-667.3153	401.1546

Random effects:		
Formula: ~1| Site		
	(Intercept)	Residual
StdDev:	0.00913504	0.0713795

Fixed effects: C ~ clone * Age					
	Value	**Std.Error**	**DF**	**t-value**	**p-value**
(Intercept)	0.19	0.02	318	9.84	0.00
cloneI214	-0.02	0.03	318	-0.88	0.38
cloneKoster	0.01	0.03	318	0.25	0.80
Age7	-0.02	0.03	36	-0.71	0.48
Age9	-0.03	0.02	36	-1.29	0.20
Age11	-0.05	0.03	36	-1.79	0.08
Age13	-0.08	0.03	36	-2.51	0.02
Age15	-0.09	0.03	36	-3.10	0.00
Age18	-0.05	0.03	36	-1.84	0.07
cloneI214:Age7	0.03	0.04	318	0.96	0.34
cloneKoster:Age7	0.03	0.04	318	0.85	0.40
cloneI214:Age9	0.00	0.03	318	-0.03	0.98
cloneKoster:Age9	0.00	0.03	318	0.14	0.89
cloneI214:Age11	0.01	0.03	318	0.31	0.76
cloneKoster:Age11	0.02	0.04	318	0.51	0.61
cloneI214:Age13	0.05	0.05	318	1.18	0.24
cloneKoster:Age13	-0.02	0.04	318	-0.50	0.62
cloneI214:Age15	0.02	0.04	318	0.52	0.60
cloneKoster:Age15	-0.01	0.04	318	-0.36	0.72
cloneI214:Age18	-0.02	0.04	318	-0.52	0.61
cloneKoster:Age18	0.00	0.05	318	-0.05	0.96

Tab. S4 - Coefficients of predictor variable for Carbon isotope discrimination along with variance explained by sites which was taken as random factor. Multiple R-squared = 0.9997 with Adjusted R-squared = 0.9996. R-squared value is good for model to predict Delta.

Linear mixed-effect model fit by REML		
Data: Ring		
AIC	BIC	logLik
688.1395	777.1334	-321.07

Random effects:		
Formula: ~1| Site		
	(Intercept)	Residual
StdDev:	0.379952	0.509803

Fixed effects: C ~ clone * Age					
	Value	**Std.Error**	**DF**	**t-value**	**p-value**
(Intercept)	19.08	0.23	318	82.86	0.00
cloneI214	0.29	0.20	318	1.49	0.14
cloneKoster	-0.99	0.24	318	-4.16	0.00
Age7	1.2	0.30	36	3.95	0.00
Age9	0.98	0.28	36	3.52	0.00
Age11	1.91	0.31	36	6.25	0.00
Age13	1.72	0.39	36	4.39	0.00
Age15	1.57	0.33	36	4.79	0.00
Age18	1.78	0.31	36	5.74	0.00
cloneI214:Age7	-0.75	0.28	318	-2.64	0.01
cloneKoster:Age7	-0.25	0.32	318	-0.79	0.43
cloneI214:Age9	-0.10	0.26	318	-0.39	0.70
cloneKoster:Age9	0.62	0.28	318	2.23	0.03
cloneI214:Age11	-1.34	0.26	318	-5.13	0.00
cloneKoster:Age11	-0.05	0.29	318	-0.18	0.85
cloneI214:Age13	-0.72	0.33	318	-2.16	0.03
cloneKoster:Age13	0.50	0.33	318	1.50	0.13
cloneI214:Age15	-0.88	0.29	318	-3.04	0.00
cloneKoster:Age15	0.14	0.36	318	0.39	0.69
cloneI214:Age18	-1.34	0.27	318	-5.05	0.00
cloneKoster:Age18	-0.22	0.37	318	-0.59	0.56