

Appendix D

BETA ANALYTIC, INC. REPORTS ON RADIOCARBON ASSAYS OF SAMPLES FROM THE ASHE FERRY SITE

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number: **Beta-305360** Feature 11

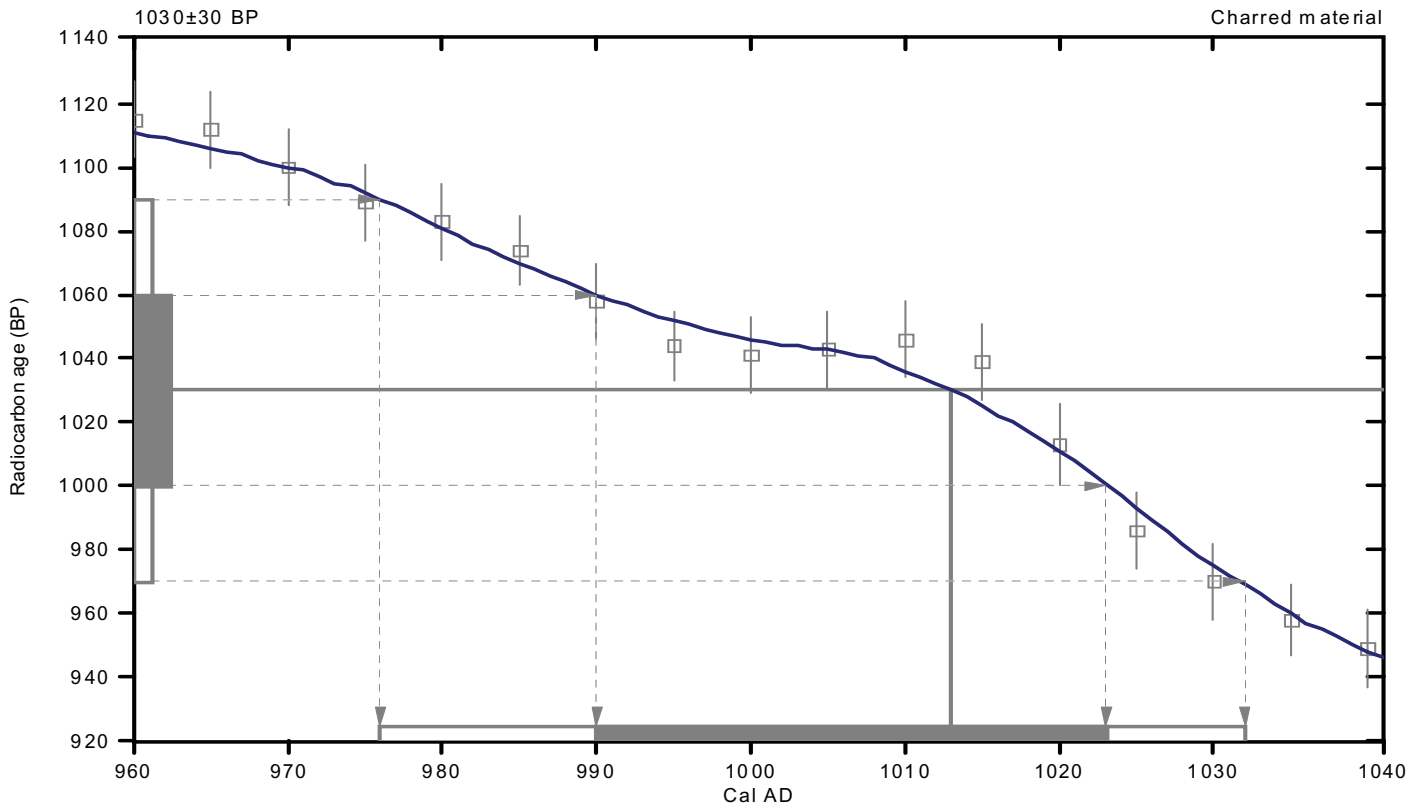
Conventional radiocarbon age: **1030±30 BP**

2 Sigma calibrated result: Cal AD 980 to 1030 (Cal BP 970 to 920)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1010 (Cal BP 940)

1 Sigma calibrated result: Cal AD 990 to 1020 (Cal BP 960 to 930)
(68% probability)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26:lab. mult=1)

Laboratory number: Beta-352108 Feature 22

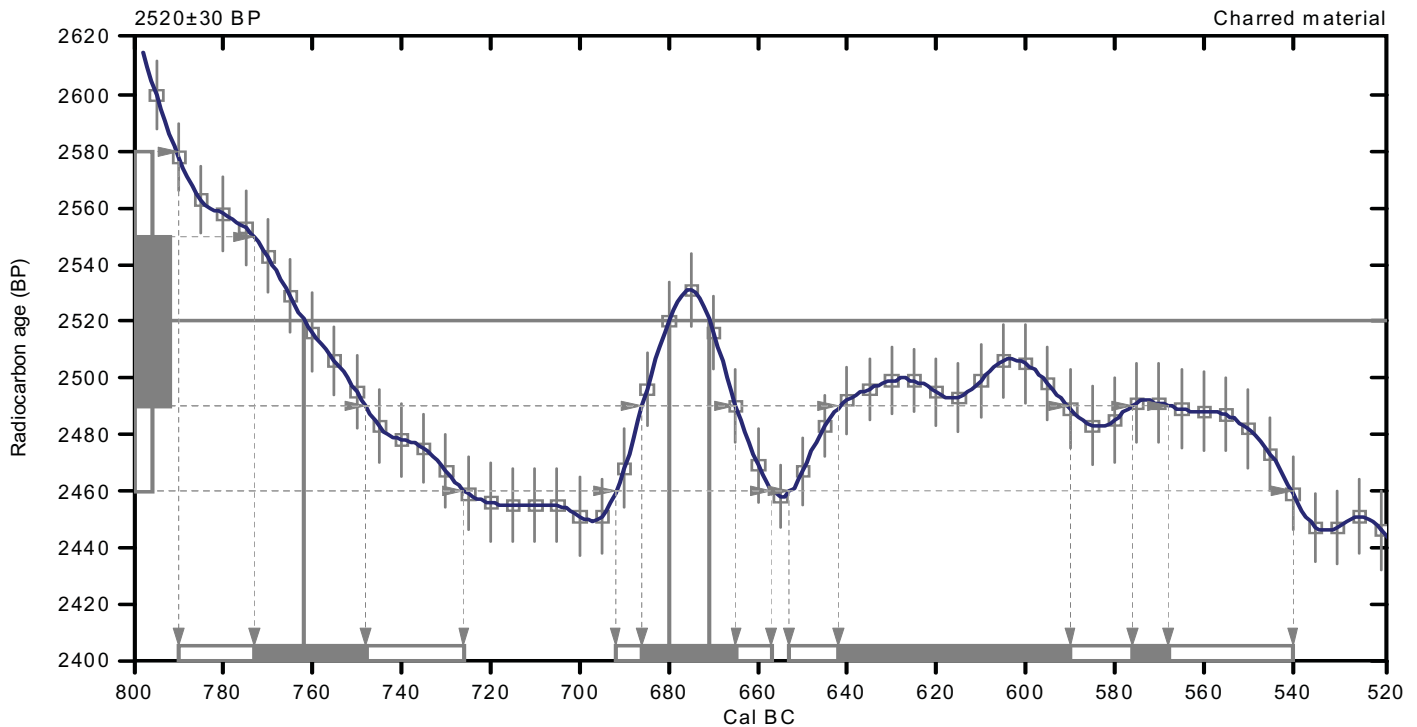
Conventional radiocarbon age: 2520±30 BP

2 Sigma calibrated results: Cal BC 790 to 730 (Cal BP 2740 to 2680) and
(95% probability) Cal BC 690 to 660 (Cal BP 2640 to 2610) and
Cal BC 650 to 540 (Cal BP 2600 to 2490)

Intercept data

Intercepts of radiocarbon age
with calibration curve: Cal BC 760 (Cal BP 2710) and
Cal BC 680 (Cal BP 2630) and
Cal BC 670 (Cal BP 2620)

1 Sigma calibrated results: Cal BC 770 to 750 (Cal BP 2720 to 2700) and
(68% probability) Cal BC 690 to 660 (Cal BP 2640 to 2620) and
Cal BC 640 to 590 (Cal BP 2590 to 2540) and
Cal BC 580 to 570 (Cal BP 2530 to 2520)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et.al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et.al., 2009, Radiocarbon 51(4):1111-1150,
Stuiver, et.al., 1993, Radiocarbon 35(1):137-189, Oeschger, et.al., 1975, Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.3:lab. mult=1)

Laboratory number: **Beta-352110** Feature 22

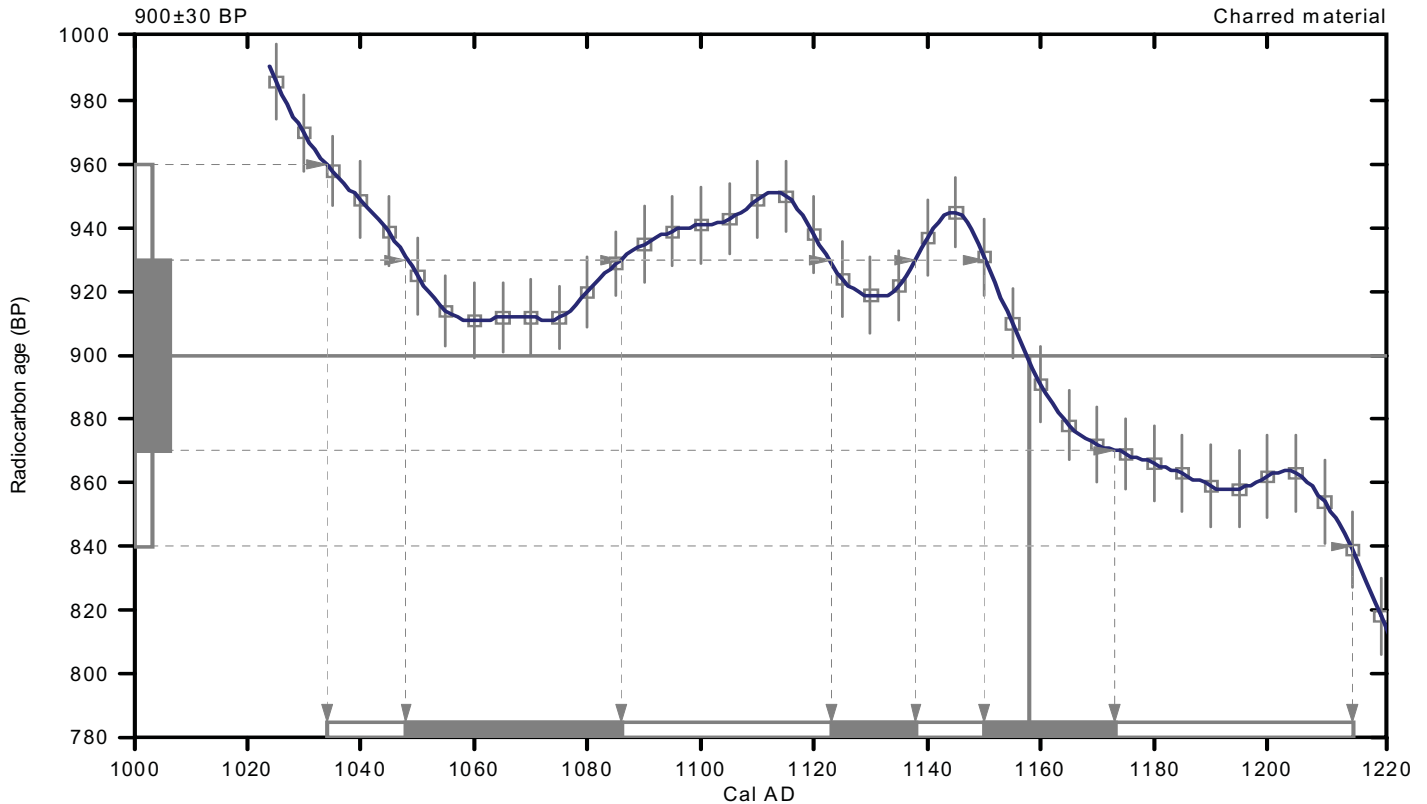
Conventional radiocarbon age: **900±30 BP**

2 Sigma calibrated result: Cal AD 1030 to 1220 (Cal BP 920 to 740)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1160 (Cal BP 790)

1 Sigma calibrated results: Cal AD 1050 to 1090 (Cal BP 900 to 860) and
(68% probability) Cal AD 1120 to 1140 (Cal BP 830 to 810) and
Cal AD 1150 to 1170 (Cal BP 800 to 780)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et.al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et.al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et.al., 1993, Radiocarbon 35(1):137-189, Oeschger, et.al., 1975, Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.7:lab. mult=1)

Laboratory number: **Beta-352943** Feature 22

Conventional radiocarbon age: **3820±30 BP**

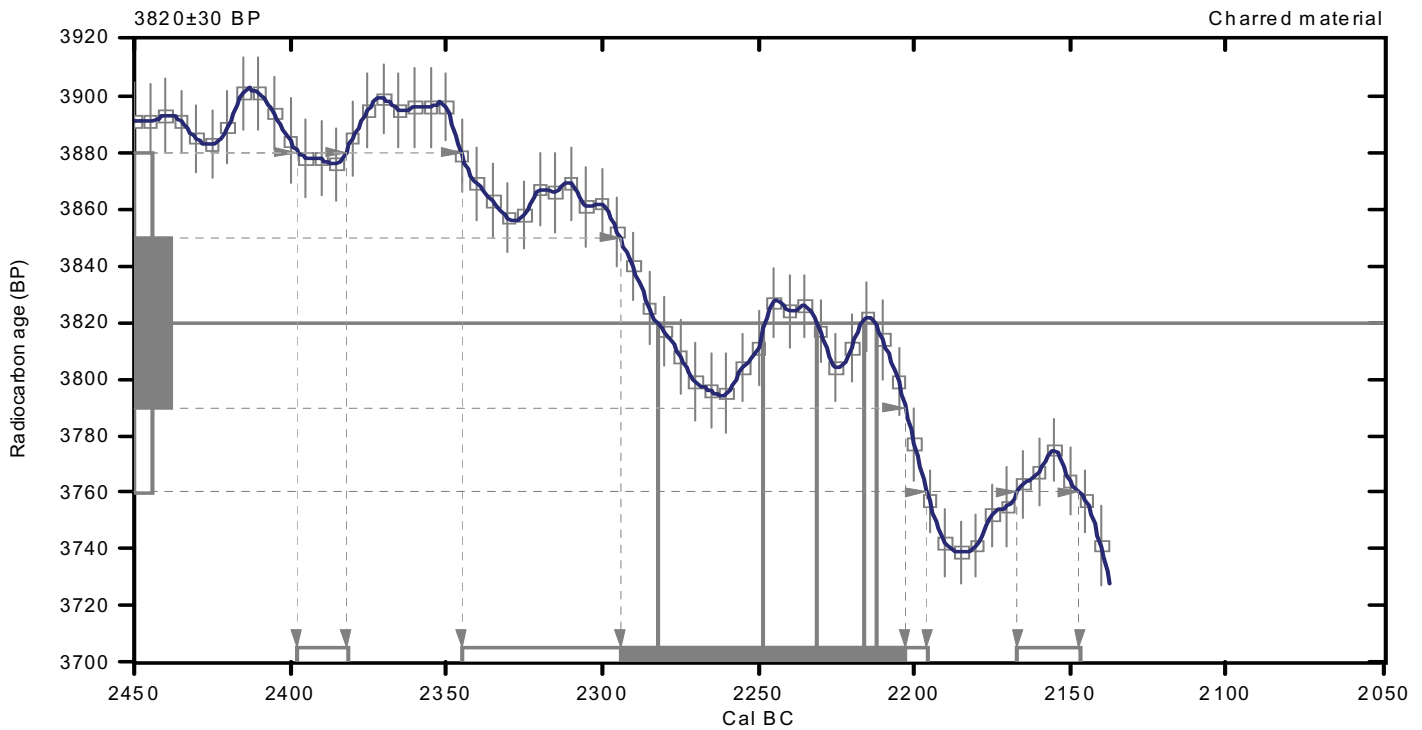
2 Sigma calibrated results: **Cal BC 2400 to 2380 (Cal BP 4350 to 4330) and
(95% probability) Cal BC 2340 to 2200 (Cal BP 4300 to 4150) and
Cal BC 2170 to 2150 (Cal BP 4120 to 4100)**

Intercept data

Intercepts of radiocarbon age
with calibration curve:

Cal BC 2280 (Cal BP 4230) and
Cal BC 2250 (Cal BP 4200) and
Cal BC 2230 (Cal BP 4180) and
Cal BC 2220 (Cal BP 4170) and
Cal BC 2210 (Cal BP 4160)

1 Sigma calibrated result: **Cal BC 2290 to 2200 (Cal BP 4240 to 4150)**
(68% probability)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1111-1150,
Stuiver, et al., 1993, *Radiocarbon* 35(1):1-244, Oeschger, et al., 1975, *Tellus* 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.1:lab. mult=1)

Laboratory number: **Beta-352944** Feature 22

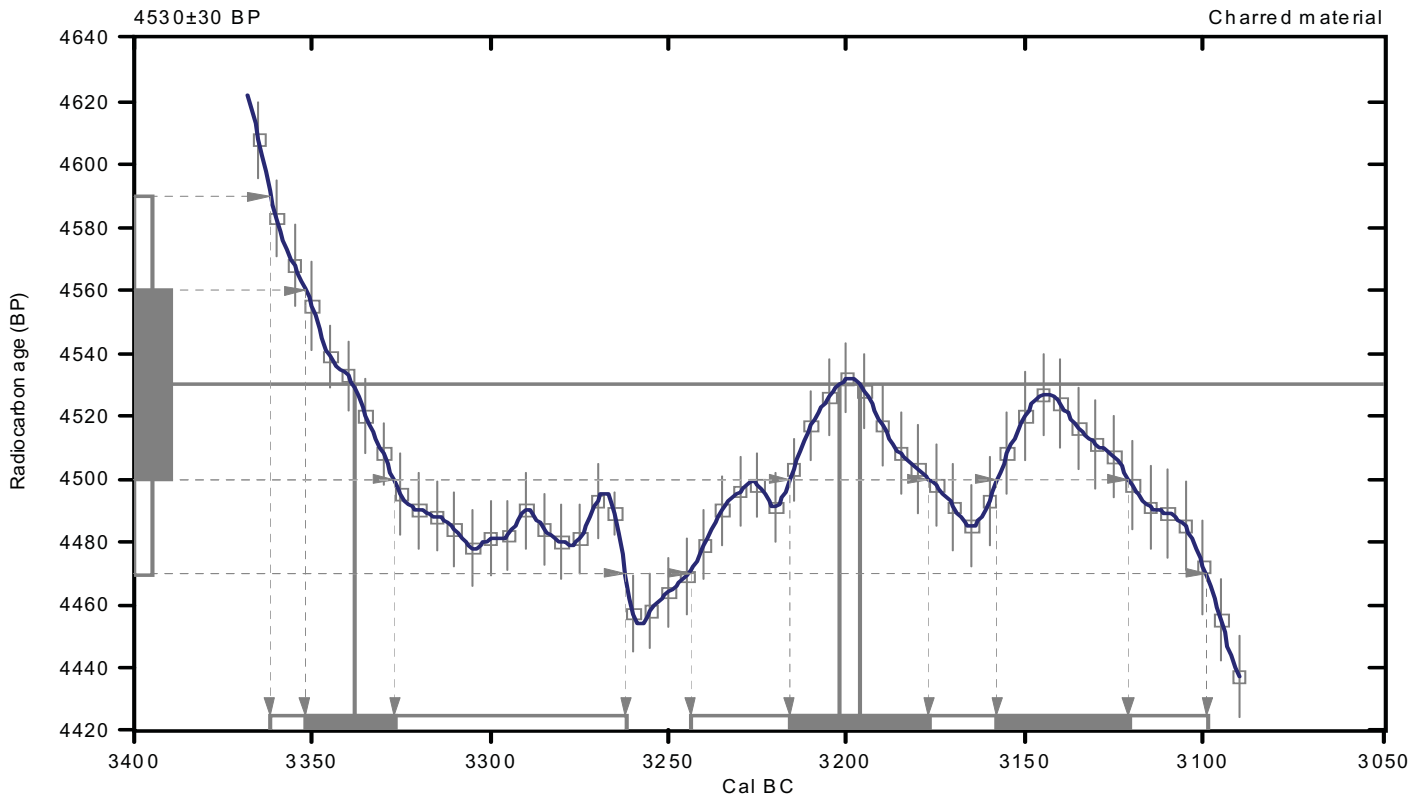
Conventional radiocarbon age: **4530±30 BP**

2 Sigma calibrated results: **Cal BC 3360 to 3260 (Cal BP 5310 to 5210) and
(95% probability) Cal BC 3240 to 3100 (Cal BP 5190 to 5050)**

Intercept data

Intercepts of radiocarbon age
with calibration curve: Cal BC 3340 (Cal BP 5290) and
Cal BC 3200 (Cal BP 5150) and
Cal BC 3200 (Cal BP 5150)

1 Sigma calibrated results: Cal BC 3350 to 3330 (Cal BP 5300 to 5280) and
(68% probability) Cal BC 3220 to 3180 (Cal BP 5170 to 5130) and
Cal BC 3160 to 3120 (Cal BP 5110 to 5070)



References:

Database used

INTCAL09

References to *INTCAL09* database

Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.4:lab. mult=1)

Laboratory number: **Beta-305361** Feature 28

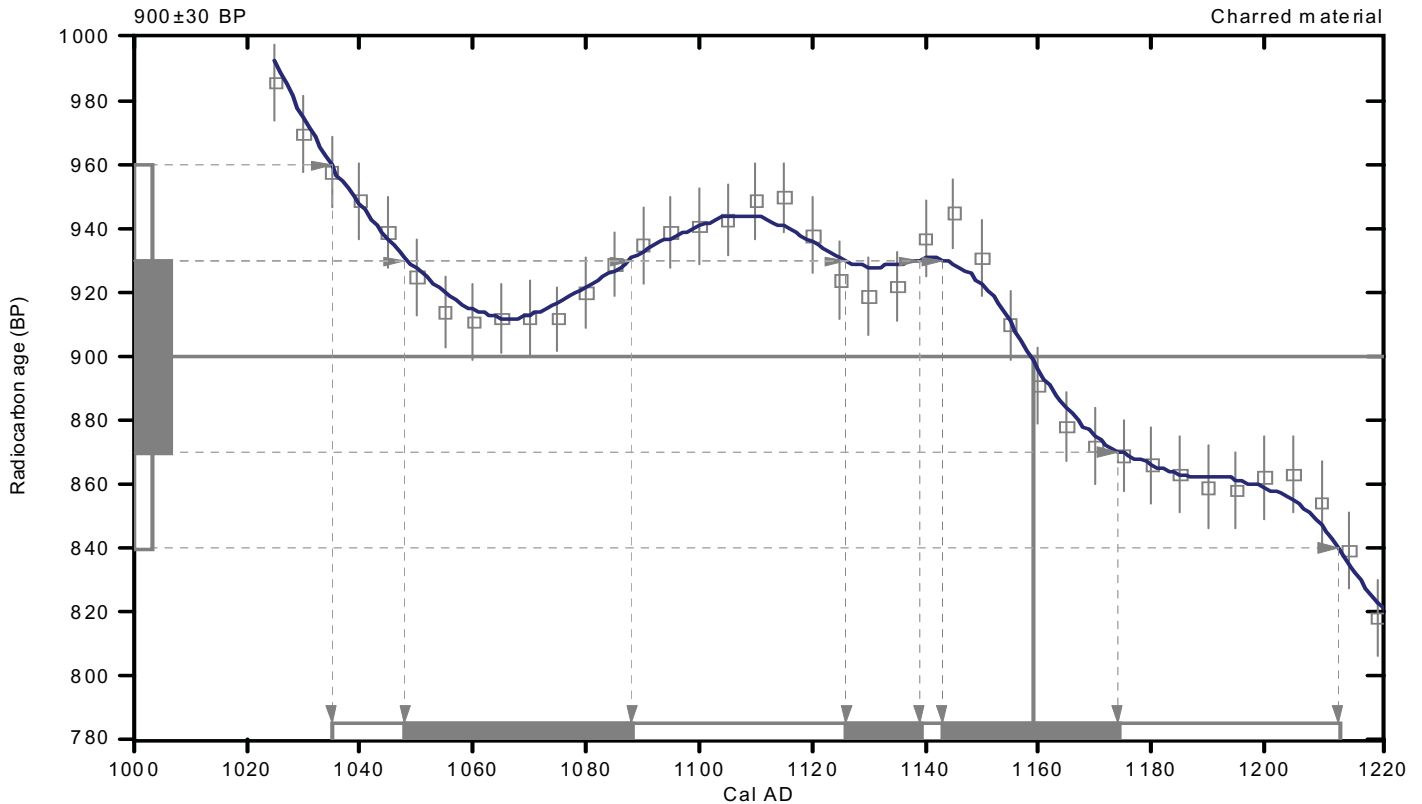
Conventional radiocarbon age: **900±30 BP**

2 Sigma calibrated result: Cal AD 1040 to 1210 (Cal BP 920 to 740)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1160 (Cal BP 790)

1 Sigma calibrated results: Cal AD 1050 to 1090 (Cal BP 900 to 860) and
(68% probability) Cal AD 1130 to 1140 (Cal BP 820 to 810) and
Cal AD 1140 to 1170 (Cal BP 810 to 780)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.2:lab. mult=1)

Laboratory number: **Beta-321926** Feature 41

Conventional radiocarbon age: **630±30 BP**

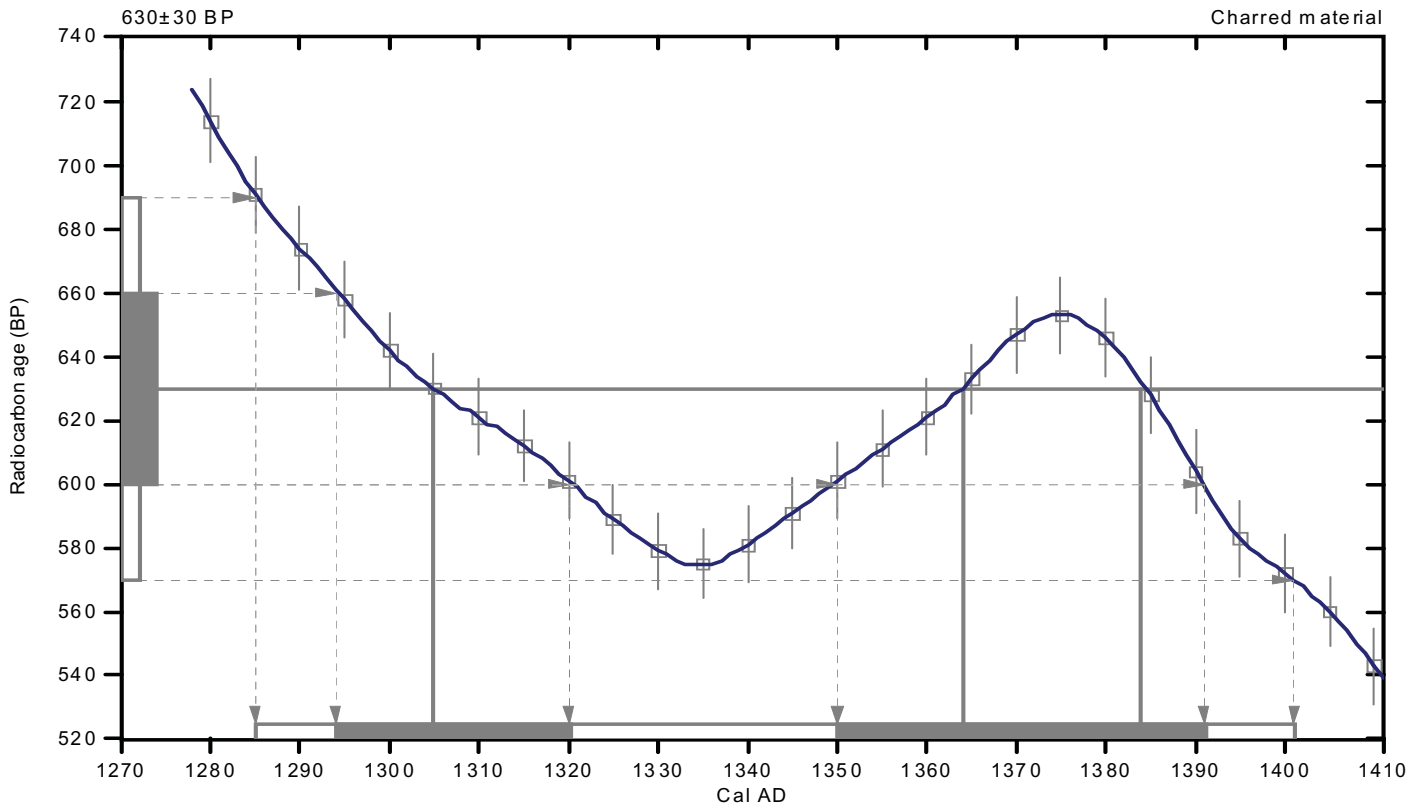
2 Sigma calibrated result: Cal AD 1280 to 1400 (Cal BP 660 to 550)
(95% probability)

Intercept data

Intercepts of radiocarbon age
with calibration curve:

Cal AD 1300 (Cal BP 640) and
Cal AD 1360 (Cal BP 590) and
Cal AD 1380 (Cal BP 570)

1 Sigma calibrated results: Cal AD 1290 to 1320 (Cal BP 660 to 630) and
(68% probability) Cal AD 1350 to 1390 (Cal BP 600 to 560)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1111-1150, Stuiver, et al., 1993, *Radiocarbon* 35(1):137-189, Oeschger, et al., 1975, *Tellus* 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.5:lab. mult=1)

Laboratory number: **Beta-321927** Feature 46

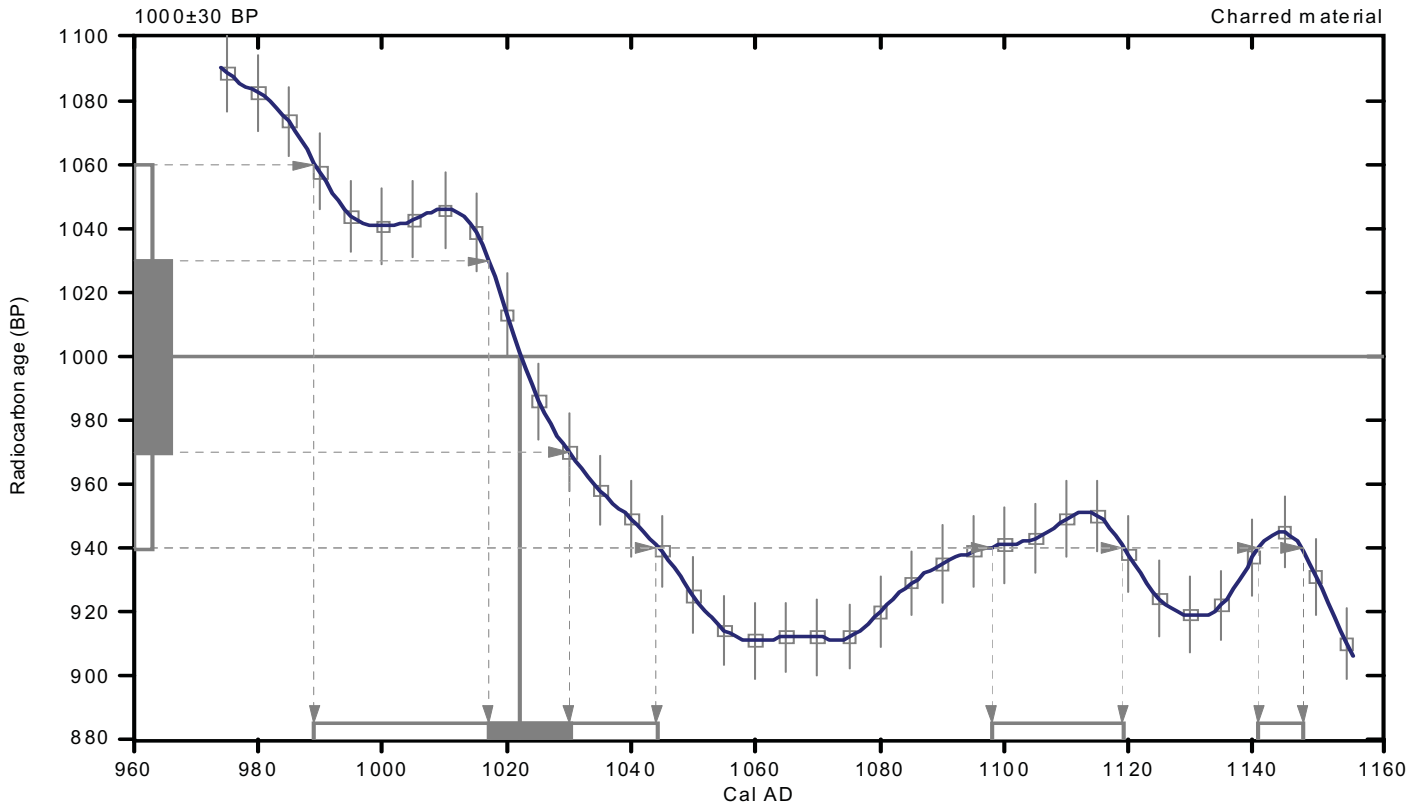
Conventional radiocarbon age: **1000±30 BP**

**2 Sigma calibrated results: Cal AD 990 to 1040 (Cal BP 960 to 910) and
(95% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830) and
Cal AD 1140 to 1150 (Cal BP 810 to 800)**

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1020 (Cal BP 930)

1 Sigma calibrated result: Cal AD 1020 to 1030 (Cal BP 930 to 920)
(68% probability)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et al., 2009, *Radiocarbon* 51(4):1151-1164, Reimer, et al., 2009, *Radiocarbon* 51(4):1111-1150, Stuiver, et al., 1993, *Radiocarbon* 35(1):137-189, Oeschger, et al., 1975, *Tellus* 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.9:lab. mult=1)

Laboratory number: **Beta-305362** Feature 48

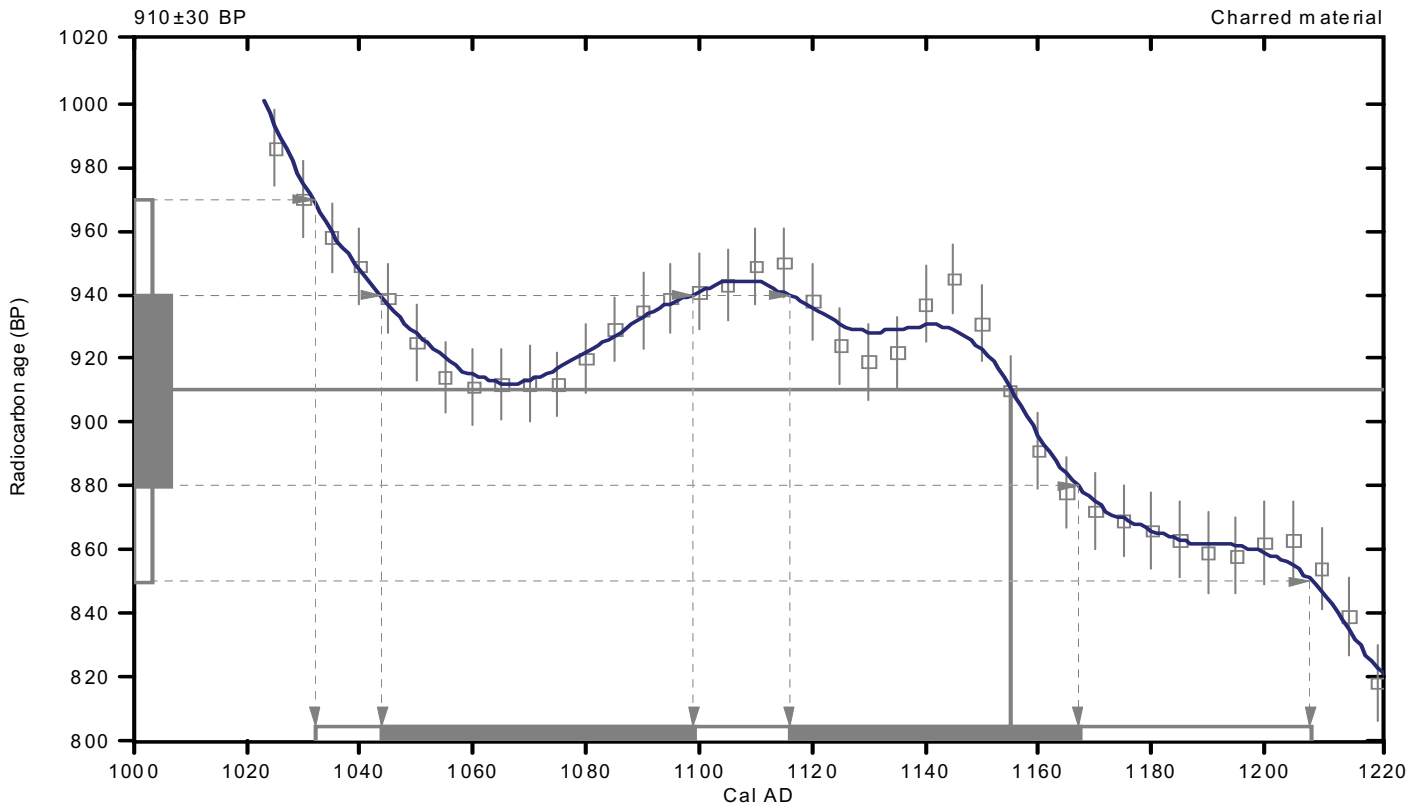
Conventional radiocarbon age: **910±30 BP**

2 Sigma calibrated result: Cal AD 1030 to 1210 (Cal BP 920 to 740)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1160 (Cal BP 800)

1 Sigma calibrated results: Cal AD 1040 to 1100 (Cal BP 910 to 850) and
(68% probability) Cal AD 1120 to 1170 (Cal BP 830 to 780)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.8:lab. mult=1)

Laboratory number: **Beta-305363** Feature 50

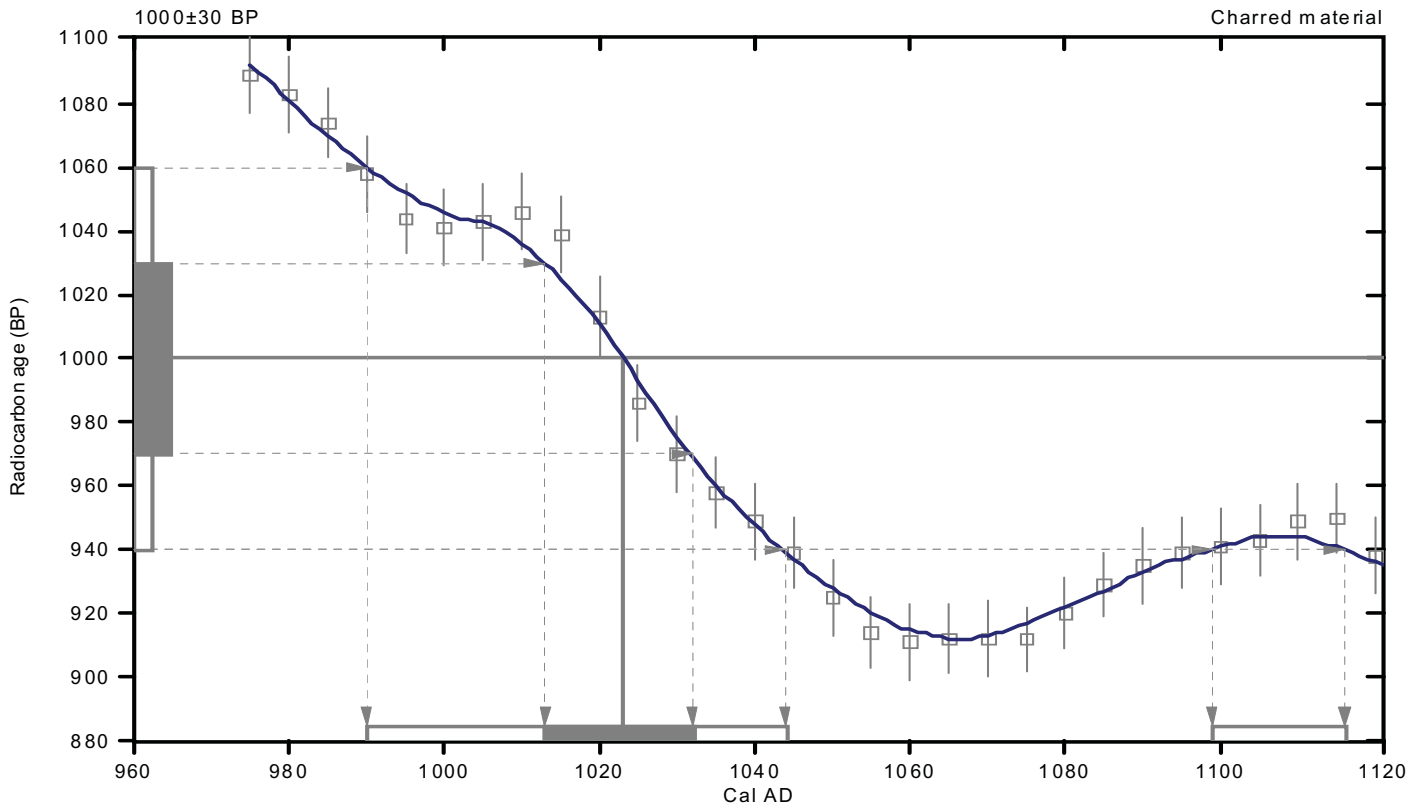
Conventional radiocarbon age: **1000±30 BP**

**2 Sigma calibrated results: Cal AD 990 to 1040 (Cal BP 960 to 910) and
(95% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830)**

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1020 (Cal BP 930)

1 Sigma calibrated result: Cal AD 1010 to 1030 (Cal BP 940 to 920)
(68% probability)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-305364** Feature 52

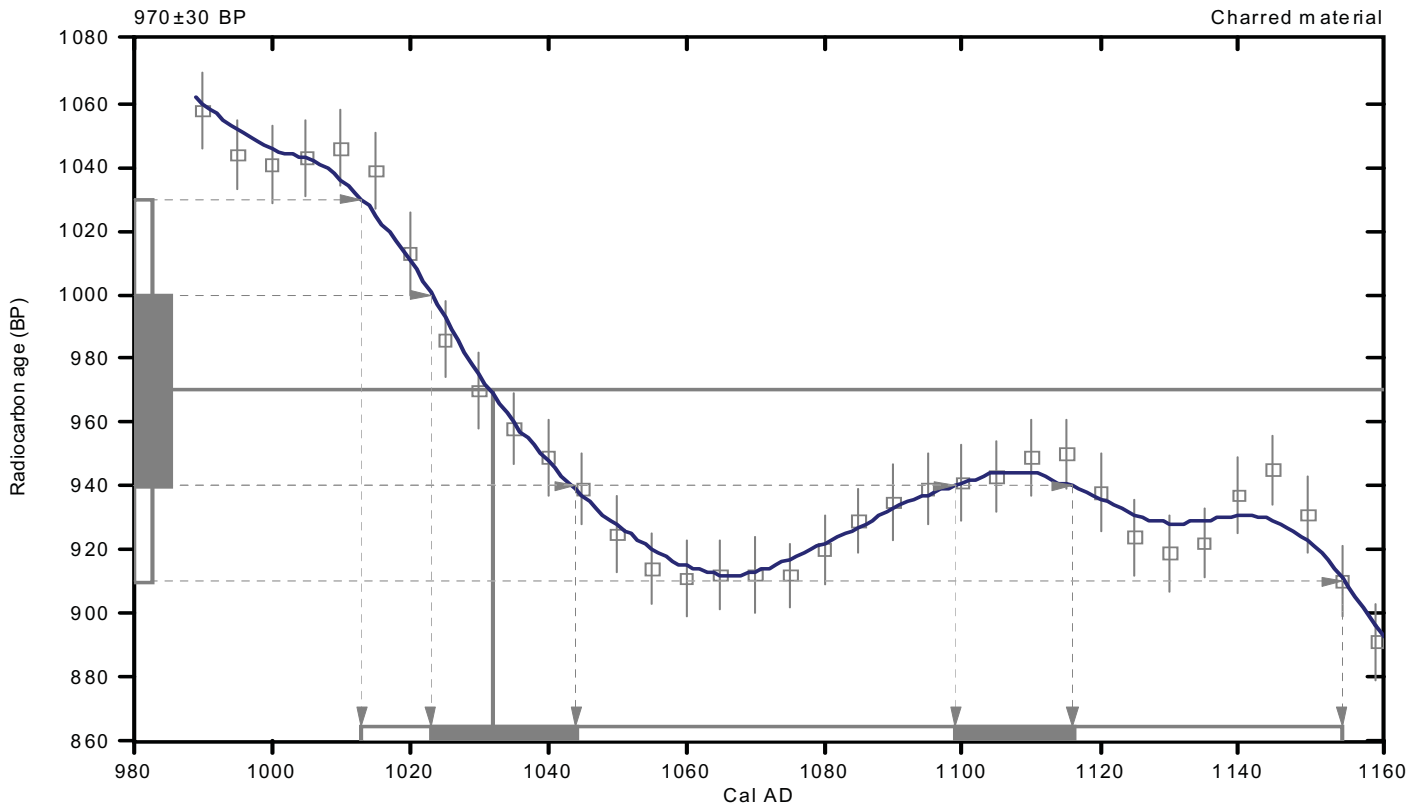
Conventional radiocarbon age: **970±30 BP**

2 Sigma calibrated result: Cal AD 1010 to 1160 (Cal BP 940 to 800)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1030 (Cal BP 920)

1 Sigma calibrated results: Cal AD 1020 to 1040 (Cal BP 930 to 910) and
(68% probability) Cal AD 1100 to 1120 (Cal BP 850 to 830)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25:lab. mult=1)

Laboratory number: **Beta-352109** Feature 53

Conventional radiocarbon age: **920±30 BP**

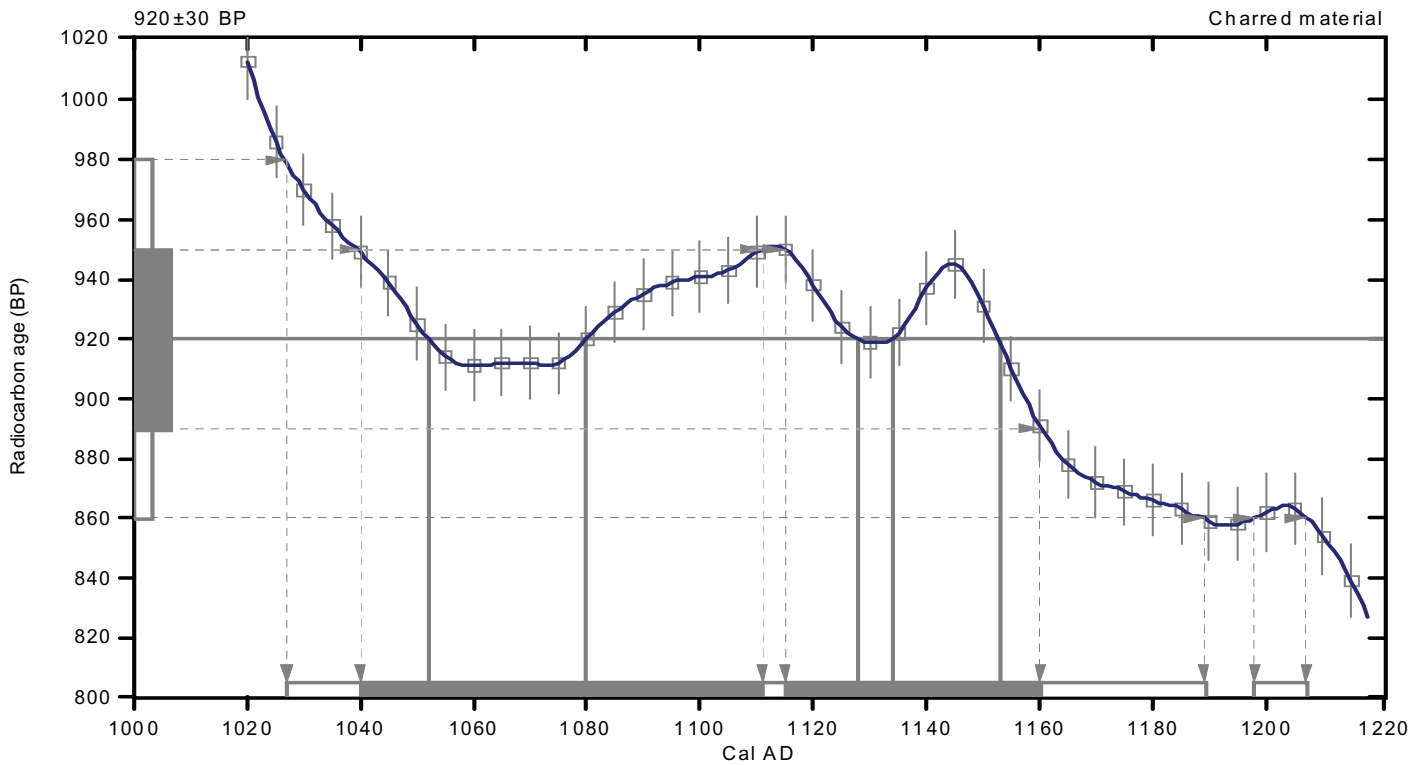
2 Sigma calibrated results: **Cal AD 1030 to 1190 (Cal BP 920 to 760) and
(95% probability) Cal AD 1200 to 1210 (Cal BP 750 to 740)**

Intercept data

Intercepts of radiocarbon age
with calibration curve:

Cal AD 1050 (Cal BP 900) and
Cal AD 1080 (Cal BP 870) and
Cal AD 1130 (Cal BP 820) and
Cal AD 1130 (Cal BP 820) and
Cal AD 1150 (Cal BP 800)

1 Sigma calibrated results: Cal AD 1040 to 1110 (Cal BP 910 to 840) and
(68% probability) Cal AD 1120 to 1160 (Cal BP 840 to 790)



References:

Database used

INTCAL09

References to INTCAL09 database

Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150,
Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-352111** Feature 53

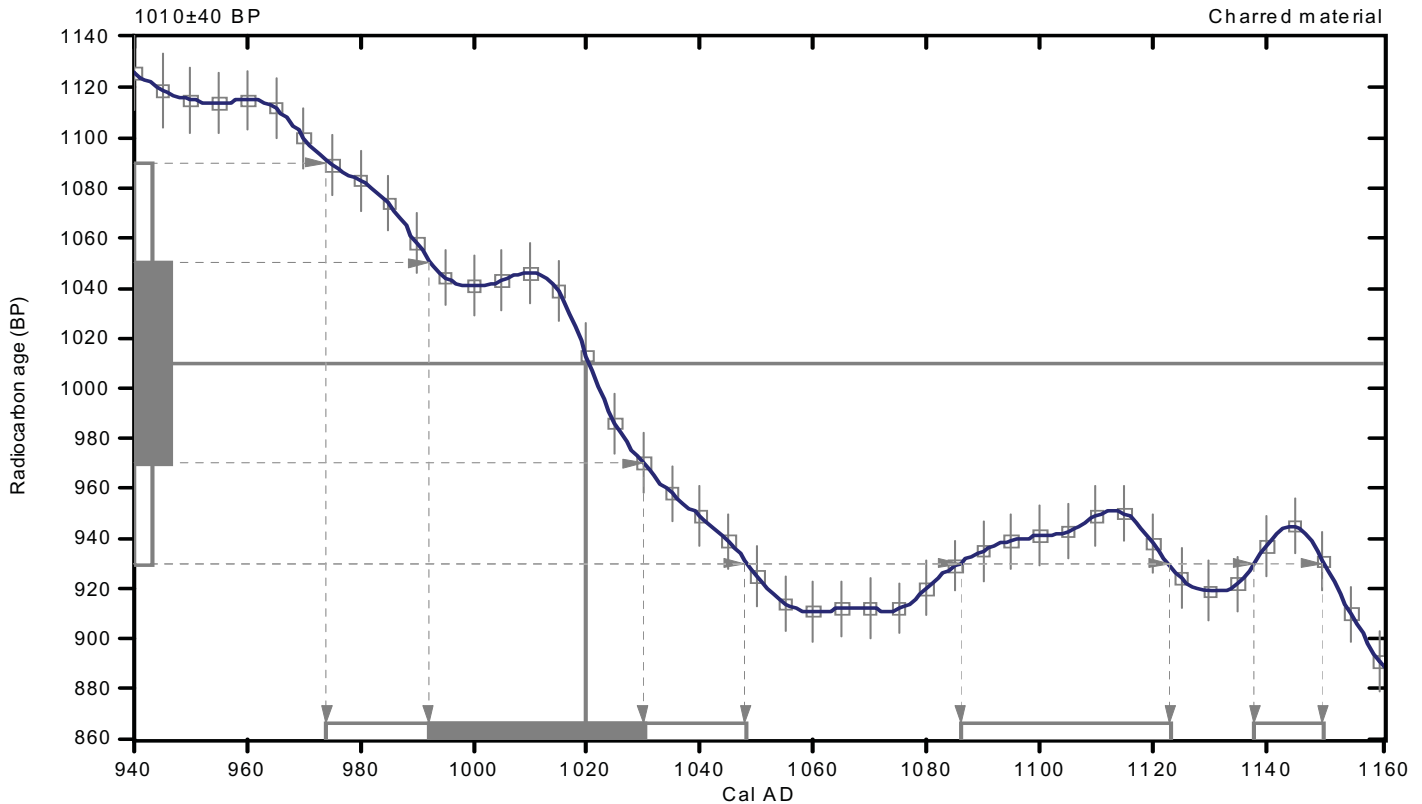
Conventional radiocarbon age: **1010±40 BP**

2 Sigma calibrated results: **Cal AD 970 to 1050 (Cal BP 980 to 900) and
(95% probability) Cal AD 1090 to 1120 (Cal BP 860 to 830) and
Cal AD 1140 to 1150 (Cal BP 810 to 800)**

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1020 (Cal BP 930)**

1 Sigma calibrated result: **Cal AD 990 to 1030 (Cal BP 960 to 920)**
(68% probability)



References:

Database used

INTCAL09

References to *INTCAL09* database

Heaton, et al., 2009, Radiocarbon 51(4):1151-1164, Reimer, et al., 2009, Radiocarbon 51(4):1111-1150, Stuiver, et al., 1993, Radiocarbon 35(1):1-244, Oeschger, et al., 1975, Tellus 27:168-192

Mathematics used for calibration scenario

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2):317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.8:lab. mult=1)

Laboratory number: **Beta-305365** Feature 76

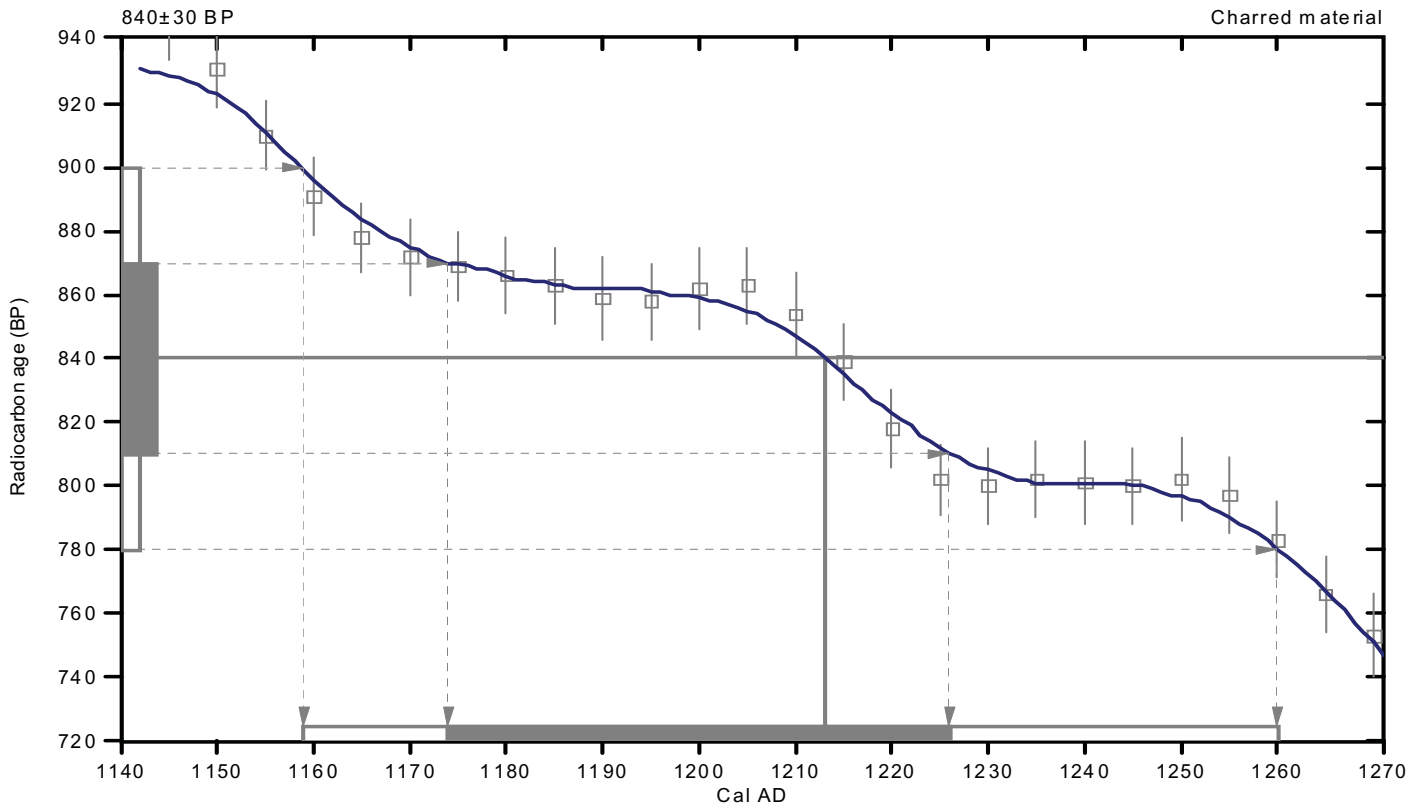
Conventional radiocarbon age: **840±30 BP**

**2 Sigma calibrated result: Cal AD 1160 to 1260 (Cal BP 790 to 690)
(95% probability)**

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1210 (Cal BP 740)

**1 Sigma calibrated result: Cal AD 1170 to 1230 (Cal BP 780 to 720)
(68% probability)**



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.3:lab. mult=1)

Laboratory number: **Beta-305366** Feature 77

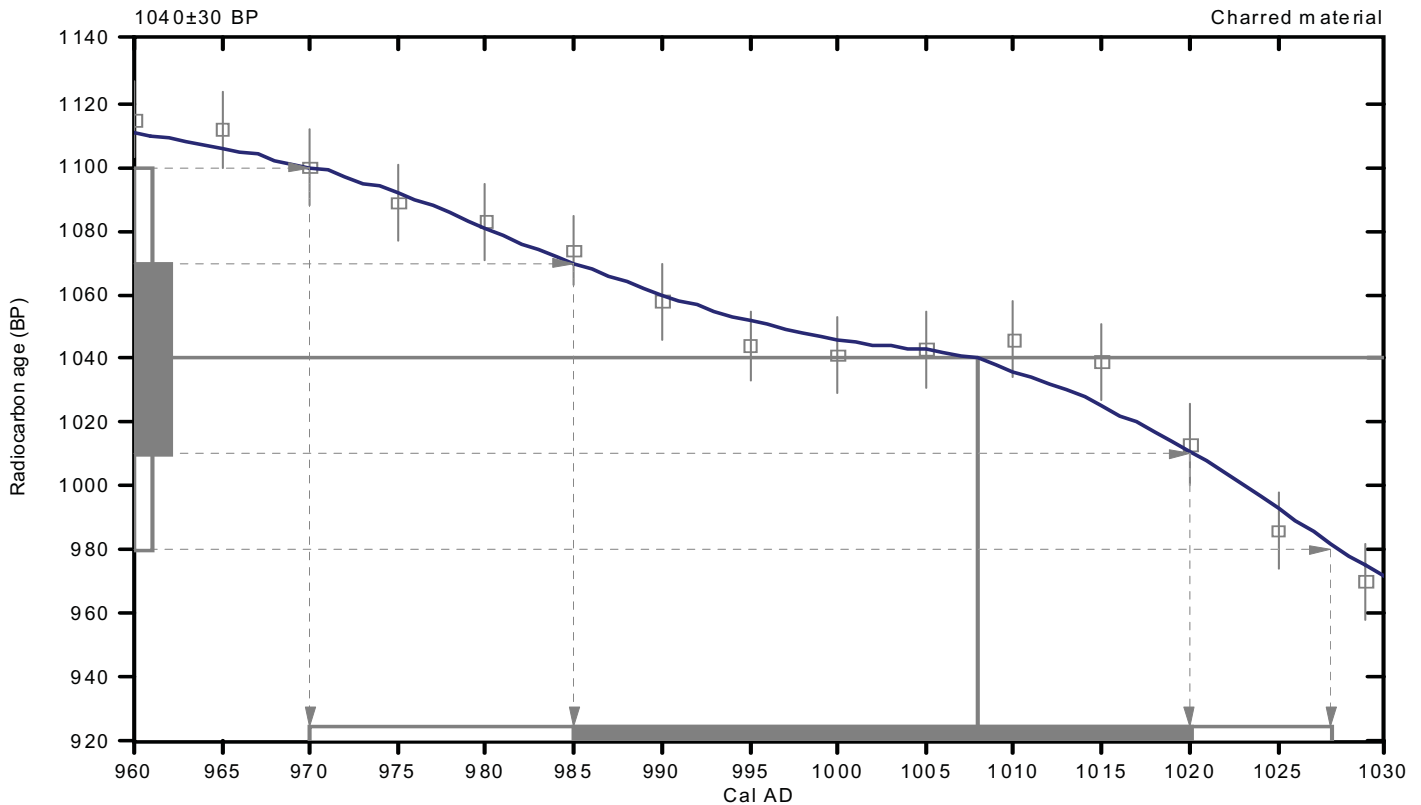
Conventional radiocarbon age: **1040±30 BP**

2 Sigma calibrated result: Cal AD 970 to 1030 (Cal BP 980 to 920)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1010 (Cal BP 940)

1 Sigma calibrated result: Cal AD 980 to 1020 (Cal BP 960 to 930)
(68% probability)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.7:lab. mult=1)

Laboratory number: **Beta-305367** Feature 78

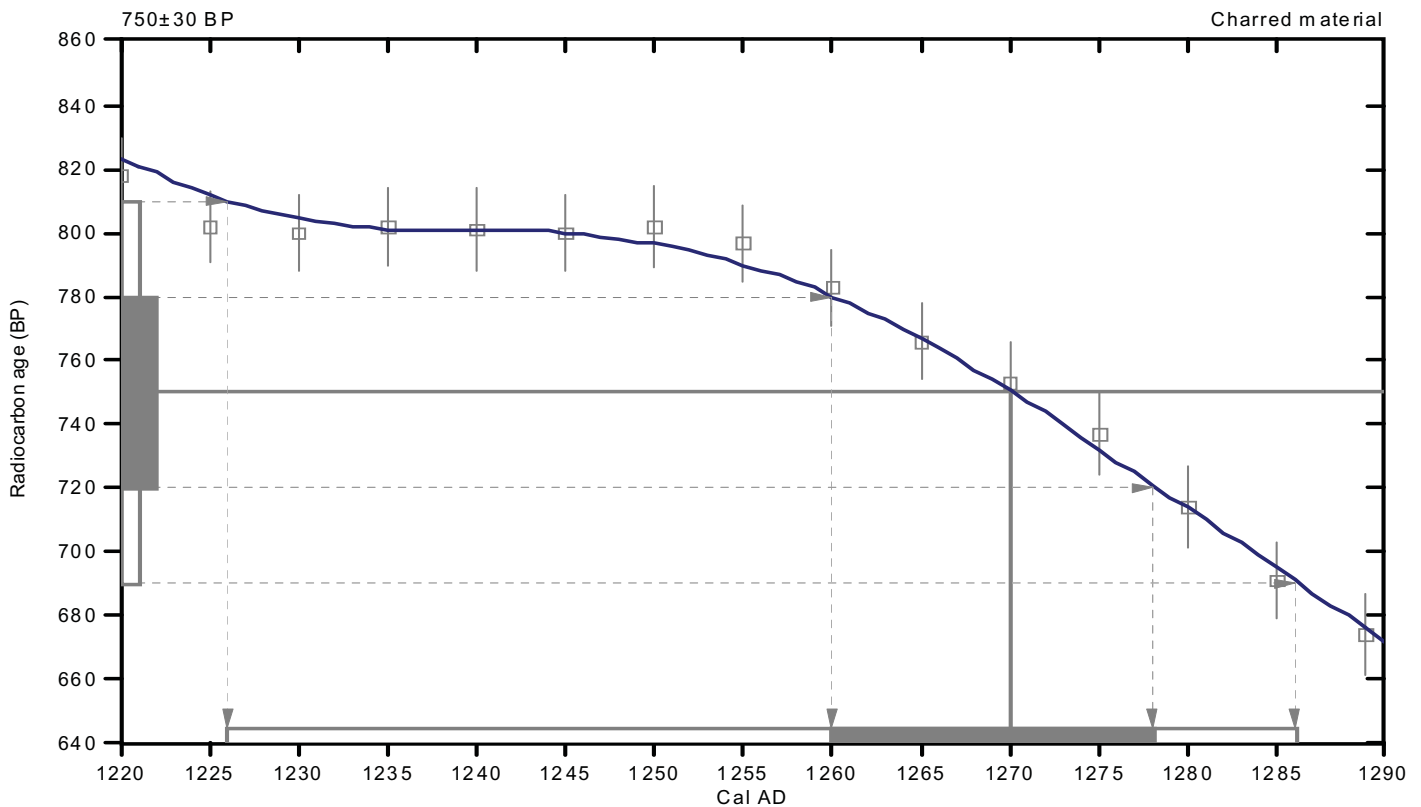
Conventional radiocarbon age: **750±30 BP**

2 Sigma calibrated result: Cal AD 1230 to 1290 (Cal BP 720 to 660)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal AD 1270 (Cal BP 680)

1 Sigma calibrated result: Cal AD 1260 to 1280 (Cal BP 690 to 670)
(68% probability)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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