Trial report

Variety testing of

Festuca arundinacea, Festuca rubra and *Poa pratensis*

2nd year harvest

AGRONOVA – Gefion Field Trials

2009

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Index

1. INTRODUCTION 3

2. TRIAL 2007.541.00 *POA PRATENSIS* (KENTUCKY BLUEGRASS) 3

2.1 VARIETIES 4
2.2 SITE DESCRIPTION 4
2.3 RESULTS 5

3. TRIAL 2007.542.00 *FESTUCA RUBRA* (RED FESCUE) 6

3.1 VARIETIES 6
3.2 SITE DESCRIPTION 6
3.3 RESULTS 7

4. TRIAL 2007.543.00 *FESTUCA ARUNDINACEA (TALL FESCUE)* 7

4.1 VARIETIES 8
4.2 SITE DESCRIPTION 8
4.3 RESULTS 8

5. TRIAL COMMENTS 9

6. APPENDIX 1. SINGLE PLOT DATA 10

7. APPENDIX 2. CLIMATIC DATA 15

1. Introduction

This report contains the results of three variety testing trials in *Poa pratensis*, *Festuca rubra* and *Festuca arundinacea.* All yields "per ha" are adjusted to a water content of 13 %.

The location of the trials was near Ringsted, Denmark.

Trial number by Agronova	Species
2007.541.00	*Poa pratensis*
2007.542.00	*Festuca rubra*
2007.543.00	*Festuca arundinacea*

The trials have been carried out by the GEP-unit at Agronova, Gefion in 2009 for Barenbrug, Holland.

01 March 2010

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Peter Hvid
Agronova –
Gefion Field Trials

2. Trial 2007.541.00 *Poa pratensis* (Kentucky Bluegrass)

2.1 Varieties

Trt No.	Treatment Name
1	Bartender
2	Barhelene

2.2 Site description

Basic information for trial 2007.541.00 *Poa pratensis*

Trial host	Helleskov Gefion			
Soil analysis	Coarse sand: Silt: Humus: Fine sand: Clay:	30,4 % 11,9 % 2,0 % 44,2 % 11,6 %	Rt: Pt: Kt: Mgt:	5,4 2,4 12,3 3,4
Previous crop	Spring barley 2007, grass seed 2008			
Drilling date	14-04-2007	**Seed rate**	8 kg/ha	
Fertilizer date type rate	06-10-2008 NS 28-4 70 N		11-03-2009 NPK 22-3-10 92 N	
Pesticides	15-09-2008: 0,05 DFF + 1 tbl Express 07-04-2009: 0,08 Hussar OD + 0,5 oil			

2.3 Results

To ensure full maturity at harvest all plots were swathed on the 26th of June. The trial was harvested on the 7th of July.

In the following table results from harvest, seed analysis and analysis of variance is given. Analysis was done by Student-Newman-Keuls test where different letters indicate statistical significant difference at 95% level.

Variety testing of *Poa pratensis* for Barenbrug

Trial ID: 2007.541.00 Protocol ID: 2007.541.00
Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code	POAPR	POAPR	POAPR	POAPR
BBCH Scale	BGRM	BGRM	BGRM	BGRM
Crop Name	Kentucky bl>	Kentucky bl>	Kentucky bl>	Kentucky bl>
Part Rated	GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date	7/7/09	7/7/09	7/7/09	7/7/09
Rating Data Type	YIELD	MOICON	Weight Loss	YIELD
Rating Unit	KG	%	%	kg/ha
Sample Size	25,2	1	1	1
Sample Size Unit	M2	PLOT	PLOT	PLOT
Crop Stage	90	90	90	90
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH
Footnote Number				3
SE Name	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval	815 DP-1	815 DP-1	815 DP-1	815 DP-1
ARM Action Codes				T4
Number of Decimals	2	1	1	1
Trt Treatment No. Name	6	7	8	10
1 Bartender	4,58 a	13,2	22,4	1408,1 a
2 Barhelene	3,85 b	12,8	31,1	1055,1 b
LSD (P=.05)	0,355	.	.	100,99
Standard Deviation	0,239	.	.	68,03
CV	5,68	.	.	5,52
Bartlett's X2	2,348	.	.	1,708
P(Bartlett's X2)	0,125	.	.	0,191
Replicate F	0,267			0,236
Replicate Prob(F)	0,9130			0,9305
Treatment F	28,140			80,796
Treatment Prob(F)	0,0032			0,0003

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

ARM Action Codes
T4 = [C9]-([9]*@MVAVGREP([C8])/100)

Footnote 3: Yield adjusted for water and purity

3. Trial 2007.542.00 *Festuca rubra* (Red Fescue)

3.1 Varieties

Trt No.	Treatment Name
1	Barustic
2	Barpalace
3	Barprince
4	Viktorka
5	Bargreen II
6	Sandrine

3.2 Site description

Basic information for trial 2007.542.00 *Festuca rubra*

Trial host	Helleskov Gefion			
Soil analysis	Coarse sand: Silt: Humus: Fine sand: Clay:	30,4 % 11,9 % 2,0 % 44,2 % 11,6 %	Rt: Pt: Kt: Mgt:	5,4 2,4 12,3 3,4
Previous crop	Spring barley 2007, grass seed 2008			
Drilling date	14-04-2007	**Seed rate**	10 kg/ha	
Fertilizer date type rate	06-10-2008 NS 27-4 80 N		11-03-2009 NPK 22-3-10 70 N	
Pesticides	15-09-2008: 0,05 DFF + 1 tbl Express 12-05-2009: 0,4 Moddus + 1,25 CCC			

3.3 Results

The trial was harvested on the 17th of July.

In the following table results from harvest, seed analysis and analysis of variance is given. Analysis was done by Student-Newman-Keuls test where different letters indicate statistical significant difference at 95% level.

Variety testing of *Festuca rubra* for Barenbrug

Trial ID: 2007.542.00 Protocol ID: 2007.542.00
Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code	FESRU	FESRU	FESRU	FESRU
BBCH Scale	BGRM	BGRM	BGRM	BGRM
Crop Name	Red fescue	Red fescue	Red fescue	Red fescue
Part Rated	GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date	17/7/09	17/7/09	17/7/09	17/7/09
Rating Data Type	YIELD	MOICON	Weight Loss	YIELD
Rating Unit	KG	%	%	kg/ha
Sample Size	24,8	1	1	1
Sample Size Unit	M2	PLOT	PLOT	PLOT
Crop Stage	90	90	90	90
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH
Footnote Number				2
SE Name	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval	825 DP-1	825 DP-1	825 DP-1	825 DP-1
ARM Action Codes				T4
Number of Decimals	2	1	2	1
Trt No. Treatment Name	6	7	8	10
1 Barustic	5,70 a	16,5	9,55	1996,9 a
2 Viktorka	2,92 c	17,4	13,67	965,8 c
3 Barprince	3,62 bc	13,8	12,38	1268,2 bc
4 Barpalace	2,94 c	17,4	11,56	996,2 c
5 Bargreen II	3,98 b	14,3	15,55	1336,1 b
6 Sandrine	2,88 c	15,7	14,28	965,3 c
LSD (P=.05)	0,663	.	.	227,09
Standard Deviation	0,503	.	.	172,13
CV	13,69	.	.	13,72
Bartlett's X2	5,081	.	.	5,433
P(Bartlett's X2)	0,406	.	.	0,365
Replicate F	0,226			0,240
Replicate Prob(F)	0,9206			0,9124
Treatment F	23,496			26,717
Treatment Prob(F)	0,0001			0,0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

ARM Action Codes
T4 = [C9]-([9]*@MVAVGREP([C8])/100)

Footnote 2: Yield adjusted for water and purity

4. Trial 2007.543.00 *Festuca arundinacea* (Tall Fescue)

4.1 Varieties

Trt No.	Treatment Name
1	Barlexas II
2	Palladio
3	Barselect
4	Barelite
5	Bardavinci

4.2 Site description

Basic information for trial 2007.543.00 *Festuca arundinacea*

Trial host	Helleskov Gefion			
Soil analysis	Coarse sand: Silt: Humus: Fine sand: Clay:	30,4 % 11,9 % 2,0 % 44,2 % 11,6 %	Rt: Pt: Kt: Mgt:	5,4 2,4 12,3 3,4
Previous crop	Spring barley 2007, grass seed 2008			
Drilling date	14-04-2007	**Seed rate**	10 kg/ha	
Fertilizer date type rate	06-10-2008 NS 28-4 60 N		11-03-2009 NPK 22-3-10 150 N	
Pesticides	15-09-2008: 0,05 DFF + 1 tbl Express 12-05-2009: 0,4 Moddus + 1,25 CCC			

4.3 Results

To ensure full maturity at harvest all plots were swathed on the 17th of July. The trial was harvested on the 29th of July after a longer period of unstable weather.

In the following table results from harvest, seed analysis and analysis of variance is given. Analysis was done by Student-Newman-Keuls test where different letters indicate statistical significant difference at 95% level.

Variety testing of *Festuca arundinacea* for Barenbrug

Trial ID: 2007.543.00 Protocol ID: 2007.543.00
Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code	FESAR	FESAR	FESAR	FESAR
BBCH Scale	BGRM	BGRM	BGRM	BGRM
Crop Name	Tall fescue	Tall fescue	Tall fescue	Tall fescue
Part Rated	GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date	29/7/09	29/7/09	29/7/09	29/7/09
Rating Data Type	YIELD	MOICON	WEIGHT LOSS	YIELD
Rating Unit	KG	%	%	kg/ha
Sample Size	24,8	1	1	1
Sample Size Unit	M2	PLOT	PLOT	PLOT
Crop Stage	90	90	90	90
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH
Footnote Number				3
SE Name	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval	837 DP-1	837 DP-1	837 DP-1	837 DP-1
ARM Action Codes				T6
Number of Decimals	2	1	2	1
Trt No. Treatment Name	13	14	15	17
1 Barlexas ll	4,00 a	13,5	13,80	1382,8 a
2 Palladio	3,93 a	12,6	12,77	1391,2 a
3 Barselect	2,94 b	13,5	15,37	997,0 bc
4 Barelite	2,72 b	17,3	23,09	801,9 c
5 Bardavinci	3,34 ab	10,2	13,37	1206,7 ab
LSD (P=.05)	0,732	.	.	250,49
Standard Deviation	0,546	.	.	186,82
CV	16,12	.	.	16,16
Bartlett's X2	5,341	.	.	5,678
P(Bartlett's X2)	0,254	.	.	0,225
Replicate F	6,871			6,806
Replicate Prob(F)	0,0020			0,0021
Treatment F	5,561			9,312
Treatment Prob(F)	0,0053			0,0004

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

ARM Action Codes
T6 = [C16]-([C16]*@MVAVGREP([C15])/100)

Footnote 3: Yield adjusted for water and purity

5. Trial comments

Weather conditions for production of grass for seed in Denmark, 2008-2009

Generally autumn was warm and sunny with 7 % more precipitation than normal and grasses continued to grow longer than normal. Compared to normal, winter was rather warm with an average temperature of 1,5 ºC, with 34 % less precipitation than normal (106 mm). Generally spring was favourable for grass seed production but it was very dry in April and the crops were beginning to be short of water. May received average precipitation and in June a large weather system was responsible for a precipitation event of 88 mm within 24 hours. However, the conditions for flowering were good with long periods of dry weather. The harvest season was very hot and dry in the beginning, but later precipitation occurred which made the harvest difficult to some degree.
All together, conditions at the trial site were favourable for grass seed production except for lack of rain in spring.

*Poa pratensis (*Kentucky bluegrass)

Differences between varieties in yield were from (average) 1055-1408 kg/ha, with Barhelene as the lowest yielding and Bartender as the highest yielding. There was a significant difference between the two tested varieties.

Festuca rubra (Red fescue)
Differences between varieties in yield were from (average) 965-1997 kg/ha, with Sandrine as the lowest yielding and Barustic as the highest yielding. Barustic differed significantly from the other tested varieties. Sandrine did not differ significantly from Barpalace, Viktorka and Barprince.

Festuca arundinacea (Tall fescue)

Differences between varieties in yield were from (average) 802-1391 kg/ha, with Barelite as lowest yielding and Palladio as highest yielding. The yield of Palladio did not differ significantly from Barlexas II and Bardavinci. The yield of Barselect did not differ statistically from Barelite.

6. Appendix 1. Single plot data

Variety testing of *Poa pratensis* for Barenbrug

Trial ID: 2007.541.00 Protocol ID: 2007.541.00

Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code		POAPR	POAPR	POAPR	POAPR
BBCH Scale		BGRM	BGRM	BGRM	BGRM
Crop Name		Kentucky bl>	Kentucky bl>	Kentucky bl>	Kentucky bl>
Part Rated		GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date		7/7/09	7/7/09	7/7/09	7/7/09
Rating Data Type		YIELD	MOICON	Weight Loss	YIELD
Rating Unit		KG	%	%	kg/ha
Sample Size		25,2	1	1	1
Sample Size Unit		M2	PLOT	PLOT	PLOT
Crop Stage		90	90	90	90
Crop Stage Scale		BBCH	BBCH	BBCH	BBCH
Footnote Number					3
SE Name		GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval		815 DP-1	815 DP-1	815 DP-1	815 DP-1
ARM Action Codes					T4
Number of Decimals		2	1	1	1
Trt No.	Treatment Name	Plot	6	7	8	10
1	Bartender	101	4,40	13,2	22,4	1351,8
		103	4,70			1444,0
		202	4,60			1413,3
		301	4,50			1382,5
		303	4,70			1444,0
		402	4,60			1413,3
		Mean =	4,58	13,2	22,4	1408,1
2	Barhelene	102	4,30	12,8	31,1	1178,4
		201	3,90			1068,8
		203	3,70			1014,0
		302	3,80			1041,4
		401	3,60			986,5
		403	3,80			1041,4
		Mean =	3,85	12,8	31,1	1055,1

ARM Action Codes
T4 = [C9]-([9]*@MVAVGREP([C8])/100)

Footnote 3: Yield adjusted for water and purity

Variety testing of *Festuca rubra* for Barenbrug

Trial ID: 2007.542.00 Protocol ID: 2007.542.00
Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code		FESRU	FESRU	FESRU	FESRU

BBCH Scale		BGRM	BGRM	BGRM	BGRM
Crop Name		Red fescue	Red fescue	Red fescue	Red fescue
Part Rated		GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date		17/7/09	17/7/09	17/7/09	17/7/09
Rating Data Type		YIELD	MOICON	Weight Loss	YIELD
Rating Unit		KG	%	%	kg/ha
Sample Size		24,8	1	1	1
Sample Size Unit		M2	PLOT	PLOT	PLOT
Crop Stage		90	90	90	90
Crop Stage Scale		BBCH	BBCH	BBCH	BBCH
Footnote Number					2
SE Name		GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval		825 DP-1	825 DP-1	825 DP-1	825 DP-1
ARM Action Codes					T4
Number of Decimals		2	1	2	1
Trt No.	Treatment Name	Plot	6	7	8	10
1	Barustic	101	6,50	16,5	9,55	2277,1
		302	5,90			2066,9
		502	4,90			1716,6
		801	6,00			2102,0
		903	5,20			1821,7
		Mean =	5,70	16,5	9,55	1996,9
2	Viktorka	201	3,00	17,4	13,67	992,3
		402	2,70			893,1
		602	2,50			826,9
		701	3,30			1091,5
		901	3,10			1025,4
		Mean =	2,92	17,4	13,67	965,8
3	Barprince	103	3,30	13,8	12,38	1156,1
		301	4,50			1576,5
		503	3,30			1156,1
		702	3,50			1226,2
		1002	3,50			1226,2
		Mean =	3,62	13,8	12,38	1268,2
4	Barpalace	102	2,80	17,4	11,56	948,8
		401	3,10			1050,4
		603	2,60			881,0
		802	3,30			1118,2
		1003	2,90			982,7
		Mean =	2,94	17,4	11,56	996,2
5	BargreenII	202	4,20	14,3	15,55	1410,0
		303	3,90			1309,3
		501	4,30			1443,5
		803	3,50			1175,0
		902	4,00			1342,8
		Mean =	3,98	14,3	15,55	1336,1

Crop Code		FESRU	FESRU	FESRU	FESRU
BBCH Scale		BGRM	BGRM	BGRM	BGRM
Crop Name		Red fescue	Red fescue	Red fescue	Red fescue
Part Rated		GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date		17/7/09	17/7/09	17/7/09	17/7/09
Rating Data Type		YIELD	MOICON	Weight Loss	YIELD
Rating Unit		KG	%	%	kg/ha
Sample Size		24,8	1	1	1
Sample Size Unit		M2	PLOT	PLOT	PLOT
Crop Stage		90	90	90	90
Crop Stage Scale		BBCH	BBCH	BBCH	BBCH
Footnote Number					2
SE Name		GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval		825 DP-1	825 DP-1	825 DP-1	825 DP-1
ARM Action Codes					T4
Number of Decimals		2	1	2	1
Trt No.	Treatment Name	Plot	6	7	8	10
6	Sandrine	203	2,10	15,7	14,28	703,9
		403	2,50			838,0
		601	3,50			1173,2
		703	2,80			938,5
		1001	3,50			1173,2
		Mean =	2,88	15,7	14,28	965,3

ARM Action Codes
T4 = [C9]-([9]*@MVAVGREP([C8])/100)

Footnote 2: Yield adjusted for water and purity

Variety testing of *Festuca arundinacea* for Barenbrug

Trial ID: 2007.543.00 Protocol ID: 2007.543.00
Location: Helleskov Study Director: Peter Hvid
Investigator: Agronova

Crop Code		FESAR	FESAR	FESAR	FESAR
BBCH Scale		BGRM	BGRM	BGRM	BGRM
Crop Name		Tall fescue	Tall fescue	Tall fescue	Tall fescue
Part Rated		GRAIN C	GRAIN C	GRAIN C	GRAIN C
Rating Date		29/7/09	29/7/09	29/7/09	29/7/09
Rating Data Type		YIELD	MOICON	WEIGHT LOSS	YIELD
Rating Unit		KG	%	%	kg/ha
Sample Size		24,8	1	1	1
Sample Size Unit		M2	PLOT	PLOT	PLOT
Crop Stage		90	90	90	90
Crop Stage Scale		BBCH	BBCH	BBCH	BBCH
Footnote Number					3
SE Name		GRAIN YIELD	GRAIN YIELD	GRAIN YIELD	GRAIN YIELD
Plant-Eval Interval		837 DP-1	837 DP-1	837 DP-1	837 DP-1
ARM Action Codes					T6
Number of Decimals		2	1	2	1
Trt No.	Treatment Name	Plot	13	14	15	17
1	Barlexas ll	101	5,11	13,5	13,80	1767,4
		302	4,71			1629,0
		503	3,63			1255,5
		702	3,30			1141,3
		901	3,24			1120,6
		Mean =	4,00	13,5	13,80	1382,8
2	Palladio	102	4,98	12,6	12,77	1761,1
		303	5,21			1842,4
		501	2,94			1039,7
		601	2,43			859,3
		803	4,11			1453,4
		Mean =	3,93	12,6	12,77	1391,2
3	Barselect	103	3,28	13,5	15,37	1113,8
		401	3,42			1161,3
		403	3,01			1022,1
		603	2,80			950,8
		801	2,17			736,9
		Mean =	2,94	13,5	15,37	997,0
4	Barelite	201	4,03	17,3	23,09	1189,0
		203	2,44			719,9
		402	2,74			808,4
		602	2,22			655,0
		802	2,16			637,3
		Mean =	2,72	17,3	23,09	801,9
5	Bardavinci	202	3,62	10,2	13,37	1306,3
		301	3,88			1400,1
		502	2,89			1042,9
		701	3,00			1082,5
		703	3,33			1201,6
		Mean =	3,34	10,2	13,37	1206,7

ARM Action Codes
T6 = [C16]-([C16]*@MVAVGREP([C15])/100)

Footnote 3: Yield adjusted for water and purity

7. Appendix 2. Climatic data

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
01.07.2008	15.2	9.0	19.7	0.0	4.2
02.07.2008	17.5	13.2	21.5	0.0	3.4
03.07.2008	19.1	12.6	24.4	0.0	3.5
04.07.2008	17.7	11.4	23.3	0.0	3.4
05.07.2008	20.7	15.6	25.7	0.2	5.1
06.07.2008	18.6	13.7	23.6	5.3	3.6
07.07.2008	17.1	12.0	20.6	1.5	4.0
08.07.2008	15.6	11.7	18.5	8.9	2.7
09.07.2008	16.2	12.6	20.2	1.4	4.2
10.07.2008	17.5	16.0	20.3	15.1	3.2
11.07.2008	17.6	13.3	20.8	0.4	3.7
12.07.2008	15.6	9.8	20.1	0.8	4.0
13.07.2008	16.4	13.2	19.9	0.1	4.7
14.07.2008	16.6	14.4	18.7	0.2	2.9
15.07.2008	18.8	15.1	22.1	0.1	3.1
16.07.2008	15.4	11.8	18.7	0.7	3.2
17.07.2008	15.3	13.0	19.1	2.5	2.9
18.07.2008	15.5	13.2	18.7	3.1	2.3
19.07.2008	16.0	14.3	18.5	6.2	2.1
20.07.2008	14.3	10.4	18.0	0.6	3.7
21.07.2008	13.2	10.4	15.6	4.4	2.0
22.07.2008	16.2	10.3	21.0	0.0	4.3
23.07.2008	15.7	10.4	19.9	0.0	2.7
24.07.2008	19.5	15.6	23.9	0.0	3.3
25.07.2008	20.0	15.1	24.7	0.0	3.3
26.07.2008	20.7	15.7	26.1	0.0	3.4
27.07.2008	20.9	14.2	26.7	0.0	3.3
28.07.2008	21.0	13.9	26.5	0.0	3.3
29.07.2008	21.1	16.0	26.1	0.0	3.3
30.07.2008	19.0	12.7	23.5	0.0	3.2
31.07.2008	20.2	13.8	25.8	0.0	3.2
01.08.2008	21.6	17.1	25.8	3.6	4.4
02.08.2008	19.2	16.6	22.7	2.0	3.7
03.08.2008	18.6	16.1	22.0	16.8	2.8
04.08.2008	16.1	14.7	18.2	28.0	2.0
05.08.2008	16.2	11.9	19.1	12.9	2.4
06.08.2008	17.1	16.1	18.9	13.8	1.7
07.08.2008	20.8	17.8	25.7	18.8	4.1
08.08.2008	17.4	14.3	19.7	4.9	2.4
09.08.2008	16.5	13.4	20.1	5.0	3.5
10.08.2008	15.9	13.5	17.9	3.8	0.8
11.08.2008	17.6	14.6	21.2	1.4	3.5
12.08.2008	16.8	14.3	18.1	1.9	1.4
13.08.2008	16.8	13.9	20.7	3.0	3.1

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
14.08.2008	15.8	12.4	19.2	2.9	2.6
15.08.2008	15.9	11.4	19.3	0.0	2.7
16.08.2008	16.7	12.8	20.9	0.2	3.4
17.08.2008	15.2	9.7	19.9	0.0	3.5
18.08.2008	15.6	13.1	18.3	1.1	1.8
19.08.2008	18.3	15.5	21.9	0.6	2.5
20.08.2008	17.3	15.3	19.7	1.7	2.1
21.08.2008	17.3	15.3	19.7	1.2	2.8
22.08.2008	17.2	14.2	20.8	12.7	2.9
23.08.2008	14.6	14.1	15.1	27.9	0.3
24.08.2008	15.9	14.1	18.2	0.6	2.3
25.08.2008	16.2	14.2	19.0	0.2	1.6
26.08.2008	17.5	15.9	20.6	4.3	1.2
27.08.2008	16.7	14.9	17.7	2.8	0.8
28.08.2008	16.2	14.7	18.1	3.3	2.2
29.08.2008	14.5	9.3	18.6	0.0	3.1
30.08.2008	15.0	9.3	20.0	0.0	2.3
31.08.2008	16.8	13.2	20.0	0.0	2.3
01.09.2008	16.5	12.3	18.6	0.1	2.3
02.09.2008	17.3	14.0	19.3	1.3	2.4
03.09.2008	14.2	11.4	16.8	2.5	1.8
04.09.2008	14.9	12.2	18.0	0.1	2.7
05.09.2008	16.3	13.5	19.0	9.4	2.7
06.09.2008	17.7	14.7	20.8	0.8	2.0
07.09.2008	16.7	13.1	20.8	0.1	2.3
08.09.2008	15.9	13.8	18.4	1.8	2.0
09.09.2008	15.4	11.8	18.2	0.2	2.2
10.09.2008	15.4	10.6	18.4	0.4	1.0
11.09.2008	14.7	12.0	17.4	0.0	1.3
12.09.2008	12.5	10.3	14.5	0.0	1.4
13.09.2008	12.0	8.8	15.5	0.0	2.6
14.09.2008	12.4	8.7	15.4	0.0	2.3
15.09.2008	12.2	10.0	14.5	0.0	2.4
16.09.2008	10.6	7.7	12.5	0.7	1.6
17.09.2008	10.7	7.9	13.5	0.1	2.1
18.09.2008	9.5	7.5	11.8	0.0	1.5
19.09.2008	10.0	6.5	13.7	0.0	1.5
20.09.2008	12.3	9.7	16.2	0.2	1.3
21.09.2008	12.7	10.9	15.4	0.0	2.0
22.09.2008	11.8	10.3	13.3	2.5	0.5
23.09.2008	13.2	11.1	15.9	0.2	1.3
24.09.2008	11.9	9.6	15.7	0.0	1.8
25.09.2008	9.6	5.2	15.1	0.0	1.6
26.09.2008	12.4	5.9	16.4	0.0	2.0
27.09.2008	13.8	11.1	17.5	0.1	2.2
28.09.2008	11.8	8.8	14.5	0.0	1.7
29.09.2008	11.2	8.6	13.9	0.5	1.5
30.09.2008	10.6	9.3	12.5	6.4	1.0
01.10.2008	9.6	8.3	11.1	7.4	0.8

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
02.10.2008	10.6	9.3	12.5	2.9	1.3
03.10.2008	10.1	8.9	12.0	1.1	1.1
04.10.2008	9.0	6.8	11.3	6.0	1.7
05.10.2008	8.3	5.7	10.4	8.3	0.3
06.10.2008	8.0	3.0	13.9	0.0	1.1
07.10.2008	10.0	2.8	13.0	0.9	1.7
08.10.2008	12.2	10.0	13.6	0.2	1.5
09.10.2008	11.4	9.0	14.0	0.1	1.5
10.10.2008	12.6	10.6	14.1	0.1	1.0
11.10.2008	13.1	11.8	14.3	0.4	0.7
12.10.2008	12.6	10.5	14.9	0.1	1.1
13.10.2008	13.9	10.8	15.9	1.2	1.1
14.10.2008	11.0	8.0	14.7	0.1	1.3
15.10.2008	11.8	9.7	13.1	9.1	0.3
16.10.2008	8.7	7.1	12.0	3.7	0.6
17.10.2008	8.2	5.9	11.8	0.0	1.2
18.10.2008	9.7	7.0	10.5	4.8	0.4
19.10.2008	11.3	9.2	12.5	1.0	1.3
20.10.2008	12.0	10.5	13.1	0.2	1.2
21.10.2008	9.8	6.7	13.2	2.1	0.3
22.10.2008	8.3	6.2	10.6	0.8	0.6
23.10.2008	9.2	5.0	11.6	0.3	1.2
24.10.2008	8.9	7.4	9.8	3.5	0.3
25.10.2008	9.6	5.9	12.1	1.3	1.1
26.10.2008	10.3	9.4	11.2	7.7	0.1
27.10.2008	7.6	5.5	9.7	1.1	0.5
28.10.2008	6.3	3.8	9.1	1.6	0.8
29.10.2008	3.7	0.6	7.6	0.0	0.5
30.10.2008	4.2	2.9	4.9	1.6	0.1
31.10.2008	3.2	-0.4	7.6	0.2	0.9
01.11.2008	5.0	1.6	6.3	0.0	0.3
02.11.2008	8.3	6.3	8.9	0.1	0.4
03.11.2008	8.7	7.9	9.9	0.1	0.4
04.11.2008	8.6	8.5	8.7	0.5	0.1
05.11.2008	7.8	7.2	8.5	0.1	0.1
06.11.2008	9.1	8.4	9.8	0.2	0.1
07.11.2008	8.9	7.9	9.9	6.5	0.1
08.11.2008	9.1	7.9	10.8	0.1	0.6
09.11.2008	8.1	7.1	9.3	3.0	0.3
10.11.2008	10.1	8.3	13.0	9.7	0.3
11.11.2008	8.9	7.5	10.5	4.6	0.2
12.11.2008	7.7	5.5	8.6	1.1	0.2
13.11.2008	7.4	5.1	9.1	2.7	0.5
14.11.2008	10.1	7.1	11.6	3.1	0.1
15.11.2008	9.8	8.1	10.9	0.5	0.1
16.11.2008	5.5	1.1	7.7	1.3	0.4
17.11.2008	3.4	-0.1	6.3	0.3	0.5
18.11.2008	4.8	2.3	6.9	7.1	0.1
19.11.2008	8.1	3.5	9.7	3.4	0.1

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
20.11.2008	5.4	1.5	8.1	0.6	0.4
21.11.2008	0.5	-1.3	2.9	1.6	0.5
22.11.2008	0.5	-0.9	1.5	0.3	0.4
23.11.2008	-1.5	-4.5	1.4	0.8	0.3
24.11.2008	-0.4	-3.6	1.7	1.3	0.4
25.11.2008	0.7	-2.6	2.3	0.3	0.3
26.11.2008	7.0	2.9	8.8	0.6	0.1
27.11.2008	7.6	7.0	8.6	0.3	0.1
28.11.2008	4.9	3.4	6.4	0.4	0.2
29.11.2008	2.7	1.3	4.5	6.4	0.0
30.11.2008	3.0	1.7	4.1	0.8	0.1
01.12.2008	3.7	2.3	4.6	16.3	0.1
02.12.2008	3.6	3.0	4.4	9.4	0.0
03.12.2008	1.2	0.2	2.8	4.6	0.1
04.12.2008	2.7	0.3	4.4	2.7	0.1
05.12.2008	4.7	4.4	5.4	2.7	0.2
06.12.2008	4.0	3.0	5.1	0.4	0.1
07.12.2008	3.4	1.4	4.6	0.4	0.2
08.12.2008	5.6	4.4	6.2	1.3	0.1
09.12.2008	3.2	1.9	5.0	7.7	0.0
10.12.2008	0.4	-1.7	3.5	0.1	0.3
11.12.2008	0.4	-1.0	1.5	2.2	0.1
12.12.2008	0.8	-0.1	2.2	0.2	0.1
13.12.2008	3.0	-0.3	4.9	0.1	0.0
14.12.2008	4.3	3.5	4.8	0.0	0.1
15.12.2008	3.4	3.2	3.7	0.0	0.0
16.12.2008	4.0	3.9	4.1	0.0	0.0
17.12.2008	3.3	2.8	3.9	0.2	0.1
18.12.2008	3.8	2.8	4.5	1.6	0.1
19.12.2008	4.2	2.4	6.2	4.0	0.2
20.12.2008	6.3	5.0	7.3	0.1	0.2
21.12.2008	6.2	3.6	8.2	2.0	0.2
22.12.2008	5.8	2.5	8.0	0.1	0.2
23.12.2008	2.8	0.5	5.1	0.6	0.2
24.12.2008	4.7	2.4	6.7	0.3	0.1
25.12.2008	0.9	-0.6	2.5	0.0	0.2
26.12.2008	-1.3	-2.2	-0.2	0.0	0.1
27.12.2008	1.4	0.5	1.8	0.1	0.1
28.12.2008	-0.3	-1.0	1.3	0.1	0.2
29.12.2008	0.5	-2.4	2.0	0.4	0.1
30.12.2008	-2.2	-4.0	-1.1	0.0	0.1
31.12.2008	-1.6	-3.6	-0.2	0.0	
01.01.2009	-2.6	-6.1	0.0	0.0	0.2
02.01.2009	-2.8	-6.2	-0.2	0.0	0.3
03.01.2009	1.0	-1.2	3.1	0.8	0.1
04.01.2009	-3.6	-6.2	-1.5	0.1	0.1
05.01.2009	-6.1	-8.0	-3.7	0.0	0.3
06.01.2009	-0.2	-3.2	1.2	1.1	0.2
07.01.2009	-3.4	-8.5	0.7	0.0	0.3

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
08.01.2009	0.8	-5.1	3.1	0.2	0.2
09.01.2009	3.8	2.9	4.9	0.0	0.4
10.01.2009	1.6	-0.7	3.0	0.0	0.1
11.01.2009	1.3	-1.1	3.5	0.0	0.3
12.01.2009	3.8	2.9	4.6	1.6	0.3
13.01.2009	3.7	3.0	4.5	0.8	0.0
14.01.2009	2.8	1.4	3.7	0.2	0.1
15.01.2009	0.4	-1.7	2.4	0.0	0.1
16.01.2009	0.2	-0.8	0.7	0.0	0.2
17.01.2009	0.3	0.0	0.9	0.2	0.2
18.01.2009	2.4	1.4	3.1	5.4	0.1
19.01.2009	2.3	1.8	3.8	4.1	0.1
20.01.2009	2.7	0.0	4.5	0.1	0.3
21.01.2009	1.2	0.1	3.6	0.1	0.4
22.01.2009	1.2	0.2	2.0	1.0	0.1
23.01.2009	1.3	0.5	2.9	3.3	0.1
24.01.2009	2.6	1.3	3.3	0.5	0.2
25.01.2009	1.9	0.7	2.9	0.0	0.1
26.01.2009	1.2	0.6	1.8	0.0	0.1
27.01.2009	1.3	0.8	2.2	0.0	0.2
28.01.2009	-0.6	-2.9	0.9	0.0	0.2
29.01.2009	-2.4	-3.1	-2.0	0.0	0.1
30.01.2009	0.0	-1.5	0.7	0.0	0.1
31.01.2009	0.1	-2.6	1.5	0.1	0.2
01.02.2009	-0.6	-1.6	0.1	0.1	0.1
02.02.2009	0.6	0.1	1.1	0.1	0.1
03.02.2009	0.7	0.1	1.1	0.0	0.1
04.02.2009	0.6	0.2	1.2	2.9	0.1
05.02.2009	1.3	0.1	2.3	2.5	0.2
06.02.2009	3.0	1.1	4.4	0.2	0.2
07.02.2009	2.0	1.3	2.5	7.1	0.1
08.02.2009	1.2	0.6	2.3	0.1	0.5
09.02.2009	0.6	0.2	0.9	0.3	0.2
10.02.2009	0.6	-0.6	1.8	3.5	0.2
11.02.2009	-0.2	-0.5	0.5	0.4	0.4
12.02.2009	-2.0	-5.4	-0.2	0.0	0.6
13.02.2009	-3.3	-6.9	-0.1	0.0	0.5
14.02.2009	-1.7	-4.2	1.0	0.0	0.5
15.02.2009	-0.6	-1.3	0.3	2.1	0.3
16.02.2009	-1.7	-4.3	-0.6	1.2	0.4
17.02.2009	-6.1	-10.1	-2.1	0.1	0.5
18.02.2009	-2.8	-9.3	-0.3	1.7	0.5
19.02.2009	-1.5	-2.6	-0.6	2.2	0.4
20.02.2009	-0.7	-1.2	0.1	0.4	0.3
21.02.2009	0.1	-1.3	1.9	5.3	0.6
22.02.2009	3.6	1.0	5.2	0.3	0.7
23.02.2009	0.6	-1.0	1.7	0.0	0.3
24.02.2009	1.9	-1.8	3.7	0.1	1.1
25.02.2009	4.5	3.8	5.4	0.7	0.4

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
26.02.2009	4.1	1.4	6.2	1.6	0.5
27.02.2009	3.0	0.1	6.3	0.0	0.4
28.02.2009	1.5	-0.3	2.7	0.1	0.6
01.03.2009	2.8	1.9	3.6	0.5	0.2
02.03.2009	3.5	2.3	4.4	3.0	0.3
03.03.2009	4.8	3.4	6.8	0.0	1.0
04.03.2009	3.7	2.9	5.5	0.1	0.7
05.03.2009	3.9	2.5	5.3	0.0	0.6
06.03.2009	2.4	1.6	3.3	2.9	0.1
07.03.2009	2.4	1.3	3.7	0.9	0.2
08.03.2009	3.1	0.4	6.6	3.7	0.3
09.03.2009	2.9	1.1	4.6	2.6	0.5
10.03.2009	3.5	1.6	5.7	1.4	0.8
11.03.2009	2.1	-2.2	5.5	0.0	0.9
12.03.2009	1.9	-2.5	4.3	7.1	0.4
13.03.2009	5.0	3.0	6.8	0.7	0.5
14.03.2009	5.4	1.9	7.3	4.2	1.1
15.03.2009	5.2	3.5	6.6	0.1	0.4
16.03.2009	5.5	3.1	7.0	3.9	0.6
17.03.2009	5.8	2.7	8.7	0.0	1.3
18.03.2009	5.4	2.7	8.9	0.0	1.3
19.03.2009	3.0	-1.9	7.4	0.0	1.2
20.03.2009	2.3	-2.4	5.7	0.0	1.7
21.03.2009	3.7	1.6	4.7	0.0	0.4
22.03.2009	6.0	4.4	8.5	0.5	1.2
23.03.2009	2.9	1.0	4.7	4.4	0.7
24.03.2009	-1.2	-5.4	1.2	0.2	1.4
25.03.2009	-0.8	-2.6	0.8	0.0	1.6
26.03.2009	3.0	-1.2	4.9	6.7	1.2
27.03.2009	4.9	3.6	6.5	0.7	1.3
28.03.2009	4.8	2.5	7.1	0.2	1.6
29.03.2009	4.2	-0.1	8.8	0.1	1.4
30.03.2009	4.6	1.0	7.1	0.1	1.1
31.03.2009	7.3	5.2	9.7	0.0	1.3
01.04.2009	5.0	-0.1	8.6	0.0	0.6
02.04.2009	3.2	-1.0	8.3	0.0	1.8
03.04.2009	6.5	0.4	14.0	0.0	1.6
04.04.2009	10.0	3.3	15.2	0.0	1.8
05.04.2009	6.9	1.8	11.0	0.0	1.8
06.04.2009	7.8	3.0	11.6	0.0	2.6
07.04.2009	9.0	6.0	12.4	1.9	2.0
08.04.2009	9.5	6.6	13.3	2.8	2.1
09.04.2009	9.1	4.4	14.1	0.0	1.9
10.04.2009	9.4	6.6	13.5	0.0	1.9
11.04.2009	8.4	4.8	12.3	0.0	1.9
12.04.2009	7.3	4.0	11.6	0.0	1.9
13.04.2009	8.8	4.6	13.4	0.0	2.8
14.04.2009	10.3	6.8	15.4	0.0	2.9
15.04.2009	8.8	5.2	12.5	0.0	2.9

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
16.04.2009	7.4	3.4	11.0	0.0	2.8
17.04.2009	7.1	2.8	12.9	0.0	2.0
18.04.2009	7.3	3.1	12.6	0.0	2.0
19.04.2009	4.4	-0.3	8.3	0.0	1.8
20.04.2009	9.2	4.6	14.3	0.0	2.1
21.04.2009	6.6	2.7	10.3	0.0	2.0
22.04.2009	6.9	1.9	9.9	0.0	1.2
23.04.2009	9.0	1.9	14.9	0.0	2.2
24.04.2009	10.1	3.6	15.6	0.0	2.3
25.04.2009	11.3	9.3	14.6	0.0	2.4
26.04.2009	13.7	9.5	18.2	0.0	3.4
27.04.2009	14.7	10.3	20.3	0.6	3.5
28.04.2009	12.5	7.6	16.5	0.0	2.4
29.04.2009	13.9	9.6	18.5	0.0	2.6
30.04.2009	12.1	6.0	18.4	0.0	2.5
01.05.2009	9.3	2.0	14.9	0.0	2.4
02.05.2009	10.8	7.9	14.9	0.0	2.5
03.05.2009	11.0	7.3	15.1	4.1	2.4
04.05.2009	9.4	7.0	12.4	3.4	2.4
05.05.2009	9.4	7.3	12.5	5.6	1.2
06.05.2009	9.1	5.8	11.9	0.6	1.9
07.05.2009	10.9	7.2	13.8	0.0	1.8
08.05.2009	12.0	6.4	18.0	4.9	3.0
09.05.2009	11.3	5.7	15.2	0.3	3.7
10.05.2009	11.3	4.7	15.4	0.0	2.6
11.05.2009	9.4	5.3	13.0	0.0	3.7
12.05.2009	9.9	4.4	14.6	0.0	2.6
13.05.2009	9.1	2.0	13.9	0.0	2.7
14.05.2009	9.9	6.1	12.8	0.1	2.8
15.05.2009	10.1	8.4	12.6	0.1	2.7
16.05.2009	7.8	6.7	8.7	7.1	0.6
17.05.2009	10.1	8.9	11.7	1.0	2.3
18.05.2009	13.0	6.8	18.2	0.2	4.0
19.05.2009	14.4	10.3	17.5	5.9	3.8
20.05.2009	13.4	7.7	17.5	0.0	3.0
21.05.2009	13.6	10.4	17.1	5.4	3.2
22.05.2009	10.9	8.4	14.6	3.8	2.6
23.05.2009	12.3	8.9	15.9	0.2	2.4
24.05.2009	12.5	10.5	16.2	0.7	2.5
25.05.2009	12.6	8.7	17.0	0.0	4.1
26.05.2009	15.9	11.6	22.3	4.3	3.6
27.05.2009	12.6	10.5	15.1	5.4	3.6
28.05.2009	12.5	10.1	14.4	0.3	4.3
29.05.2009	13.3	8.3	16.9	0.0	3.0
30.05.2009	16.1	12.1	21.0	0.0	4.6
31.05.2009	16.7	9.7	23.3	0.0	3.3
01.06.2009	17.9	10.9	24.1	0.0	3.4
02.06.2009	16.4	10.2	21.8	1.4	4.3
03.06.2009	10.6	5.2	13.8	1.9	3.9

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
04.06.2009	9.5	5.9	13.1	4.3	2.6
05.06.2009	8.5	2.9	12.9	1.3	3.4
06.06.2009	10.3	8.1	12.6	0.4	3.5
07.06.2009	10.6	8.5	13.3	0.6	3.0
08.06.2009	9.8	3.8	13.5	0.6	3.2
09.06.2009	11.8	10.6	13.5	5.3	2.0
10.06.2009	12.9	8.5	15.7	1.6	2.1
11.06.2009	11.2	9.7	12.7	66.1	0.7
12.06.2009	11.1	9.9	11.9	21.7	1.1
13.06.2009	12.5	7.8	16.8	0.0	3.1
14.06.2009	13.5	9.0	16.8	0.4	4.4
15.06.2009	12.1	6.0	16.2	0.0	3.1
16.06.2009	11.6	7.0	15.3	0.0	3.8
17.06.2009	13.7	11.1	16.8	0.8	4.8
18.06.2009	14.0	9.5	17.6	0.0	3.9
19.06.2009	13.2	10.8	15.8	2.9	3.6
20.06.2009	13.5	9.9	16.6	0.4	3.9
21.06.2009	12.6	7.8	16.4	0.8	3.3
22.06.2009	15.2	10.5	19.8	0.0	3.3
23.06.2009	16.9	12.5	20.8	0.0	3.4
24.06.2009	18.5	13.9	24.0	0.0	3.5
25.06.2009	18.6	15.8	21.2	0.1	3.5
26.06.2009	17.6	13.8	21.2	0.0	3.5
27.06.2009	16.2	11.5	20.6	0.0	4.4
28.06.2009	17.4	12.4	21.5	0.0	4.7
29.06.2009	17.6	13.0	20.8	0.0	2.8
30.06.2009	20.8	16.8	25.1	0.2	4.4
01.07.2009	20.7	15.5	24.6	1.8	4.1
02.07.2009	21.2	15.5	26.0	0.0	4.8
03.07.2009	20.3	13.0	25.7	0.0	3.6
04.07.2009	22.7	18.4	27.3	0.0	5.5
05.07.2009	18.1	13.3	21.1	0.2	1.6
06.07.2009	18.4	14.6	22.2	1.0	3.7
07.07.2009	17.6	12.4	21.6	1.1	4.6
08.07.2009	16.9	13.4	20.7	2.1	4.4
09.07.2009	15.1	11.2	18.8	0.7	4.1
10.07.2009	14.2	12.5	16.9	8.3	2.3
11.07.2009	14.9	11.0	17.7	0.7	3.7
12.07.2009	16.3	14.4	18.7	4.3	3.4
13.07.2009	17.9	14.2	21.6	0.3	4.6
14.07.2009	18.8	13.3	23.7	0.0	4.0
15.07.2009	20.3	14.6	25.3	0.3	4.3
16.07.2009	18.7	11.8	23.1	0.0	4.6
17.07.2009	20.1	18.1	23.2	1.2	3.7
18.07.2009	17.5	15.0	20.2	5.3	1.6
19.07.2009	16.0	12.1	18.7	2.7	2.1
20.07.2009	15.5	12.8	18.4	2.7	3.3
21.07.2009	16.7	11.3	20.5	0.1	3.0
22.07.2009	19.0	16.2	22.1	6.2	1.8

Date	Temp,°C	Min. temp,°C	Max. temp,°C	Precipitation, mm	Evaporation, mm
23.07.2009	17.9	13.3	21.6	7.6	2.2
24.07.2009	16.6	12.6	20.9	4.1	3.4
25.07.2009	16.0	12.8	18.5	2.8	2.8
26.07.2009	16.3	13.9	18.7	0.5	2.8
27.07.2009	19.6	15.2	24.0	0.3	3.0
28.07.2009	17.6	11.5	22.8	0.0	3.6
29.07.2009	19.8	16.3	23.1	0.0	3.6
30.07.2009	16.4	11.8	20.3	3.2	3.0
31.07.2009	15.6	8.4	20.8	0.1	3.1