GRASS Vegetation Sample Analysis 2011 B1

Fluorine concentration (ppm)

related to the weight of washed and dried material

SAMPLING		GRASS					GRASS FERTILIZED				
		SPRING		FALL		AVERAGE Spring+Fall	SPRING		FALL		AVERAGE Spring+Fall
Point	Zone	F in material NMI	F in washwater NMI	F in material NMI	F in washwater NMI	F in material NMI	F in material NMI	F in washwater NMI	F in material NMI	F in washwater NMI	F in material NMI
1	0	21	4	30	6	25					
6	1	8	3	5	2	7					
7	3	6	1	4	1	5					
8	2	4	< 1	4	1	4					
9	1	5	< 1	5	1	5					
10	3	6	< 1	5	1	5					
26	4	4	< 1	3	< 1	3					
27	2	5	1	6	1	5					
34	2	2	1	3	2	3					
37	2	2	< 1	7	2	5					

Zone averages:

	0	21	4	30	6	25					
	1	7	2	5	2	6					
	2	3	1	5	1	4					
	3	6	1	4	1	5					
	1+2+3	5	1	5	1	5					
	4	4	< 1	3	< 1	3					

LEAVES **Vegetation Sample Analysis 2011** **B2**

Fluorine concentration (ppm)
related to the weight of washed and dried material

SAMPLING		SPRING		FALL		AVERAGE
		F in material	F dissolved in washwater	F in material	F dissolved in washwater	F in material Spring+Fall
Point	Zone	NMI	NMI	NMI	NMI	NMI
		BIRCH				
6	1	6	2	12	2	9
7	3	3	1	8	1	5
10	3	6	1	10	1	8
26	4	4	< 1	4	1	4
34	2	4	< 1	12	2	8
37	2	4	< 1	9	2	7
41	3	4	< 1	5	< 1	5
		MOUNTAIN-ASH				
6	1	4	< 1	5	< 1	5
26	4	3	1	10	3	6
34	2	2	< 1	5	2	4
		BIRCH + MOUNTAIN ASH				
		Zone averages:				
	1	5	1	9	1	7
	2	4	< 1	9	2	6
	3	4	1	8	1	6
	1+2+3	4	1	8	1	6
	4	3	1	7	2	5

NEEDLES Vegetation Sample Analysis 2011 B3

Fluorine concentration (ppm)
related to the weight of washed and dried material
Samples taken in fall

SAMPLING		NEEDLES ONE YEAR OLD		NEEDLES TWO YEARS OLD	
		F in material	F dissolved in washwater	F in material	F dissolved in washwater
Point	Zone	NMI	NMI	NMI	NMI
		SPRUCE			
6	1	< 1	1	1	2
26	4	4	< 1	4	< 1
31	0	17	3	28	3
32	1	27	1	9	1
34	2	2	< 1	2	< 1
37	2	2	< 1	4	< 1
38	3	4	< 1	5	< 1
41	3	3	< 1	3	< 1
		PINE			
7	3	2	< 1	2	1
32	1	1	< 1	1	< 1
34	2	3	< 1	3	< 1
37	2	< 1	< 1	1	1
41	3	3	< 1	3	1
		SPRUCE + PINE			
		Zone averages:			
	0	17	3	28	3
	1	10	1	4	1
	2	2	< 1	2	< 1
	3	3	< 1	3	< 1
	1+2+3	4	< 1	3	< 1
	4	4	< 1	4	< 1

WATER Analysis 2011 C

Fluorine concentration (mg/l)

Samples taken in fall

SAMPLING			
Point	Zone		NMI
19K	**3**	**Kaldársel**	**NA**

K: cold water

No water was available at time of sampling

2011 **METEROLOGICAL DATA** **H1**

of Reykjavík (R)

2011	Jan.		Feb.		Mar.		Apr.		May		June		July		Aug.		Sept.		Okt.		Nov.		Dec.	
	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S	R	S
Mean temp (C°)	1,6		2,1		0,2		4,1		6,9		9,2		12,2		11,2		9,4		5,0		4,3		-1,9	
Deviation from mean 1931-60	2,0		2,2		-1,3		1,0		0,0		-0,3		1,0		0,4		0,8		0,1		1,7		-2,8	
Max temp mean (°C)	4,0		4,9		3,5		7,3		10,9		13,2		15,7		14,9		13,1		7,9		7,0		0,9	
Max temp abs (C°)	9,1		9,1		8,5		10,4		16,4		16,3		19,3		20,0		16,7		11,8		12,1		7,5	
Min temp mean (°C)	-0,6		0,0		-2,4		1,8		3,9		5,8		9,8		8,2		6,9		2,9		2,5		-4,4	
Min temp abs (C°)	-11,2		-7,5		-12,5		-1,6		-1,0		0,2		8,0		3,8		2,0		-2,5		-9,2		-11,7	
Rel humidity (%)	76		78		78		80		67		69		78		76		74		79		80		76	
Precipitation (mm)	62,1		107,7		101,5		138,9		66,2		15,1		45,0		23,1		72,7		104,3		89,9		78,4	
In % of mean 1931-60	69%		166%		156%		262%		158%		37%		94%		33%		101%		108%		107%		97%	
Sunshine (hrs)	15,9		55,5		65		114,3		228,7		268,1		184,1		216,1		168,4		100,7		35,2		13,1	
Deviation from mean 1931-60	-4,8		-1,6		-40,9		-23,2		43,7		79,4		6,4		56,7		63,3		29,3		3,4		4,8	

WIND FREQUENCY DURING GROWTH PERIOD H2
AT STRAUMSVÍK/REYKJAVÍK

2011	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	21	17	15	11	5	3	9	19
June	31	9	4	11	9	8	11	16
July	10	8	21	21	9	4	11	16
August	16	12	12	18	11	6	9	16

Average

2011	N	NE	E	SE	S	SW	W	NW
	8	5	10	16	19	12	13	15

Note: In the graph (H3) the windroses are direction inverted to reflect the possible spread of emissions

2010 AT STRAUMSVÍK

2010	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	24	5	5	15	9	6	13	23
June	11	5	11	17	13	8	16	19
July	16	11	12	15	10	6	12	18
August	16	10	10	17	11	6	11	18
Average	17	8	9	16	11	6	13	19

2010	N	NE	E	SE	S	SW	W	NW
	11	6	13	19	17	8	9	16

2009 AT STRAUMSVÍK

2009	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	14	9	13	25	15	7	7	11
June	16	4	7	16	11	5	15	25
July	29	7	5	19	9	3	7	21
August	16	12	13	22	10	4	7	16
Average	19	8	9	20	11	5	9	18

2009	N	NE	E	SE	S	SW	W	NW
Inverted	11	5	9	18	19	8	9	20

Note: In the graph (H3) the windroses are direction inverted to reflect the possible spread of emissions

2008 AT STRAUMSVÍK

2008	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	5	5	25	25	17	5	10	8
June	20	8	16	16	7	4	12	16
July	15	7	13	21	6	12	15	11
August	8	4	18	19	16	12	7	16
Average	12	6	18	20	12	8	11	13
2008	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Inverted	12	8	11	13	12	6	18	20

WIND FREQUENCY DURING GROWTH PERIOD AT STRAUMSVÍK/REYKJAVÍK

H2

cont.

2007 AT REYKJAVÍK

2007	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	23	10	23	12	10	7	9	7
June	15	4	7	25	13	6	17	12
July	13	5	7	14	14	14	17	16
August	19	5	13	12	14	17	13	7
Average	18	6	13	16	13	11	14	11
2007	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Inverted	13	11	14	11	18	6	13	16

2006 AT REYKJAVÍK

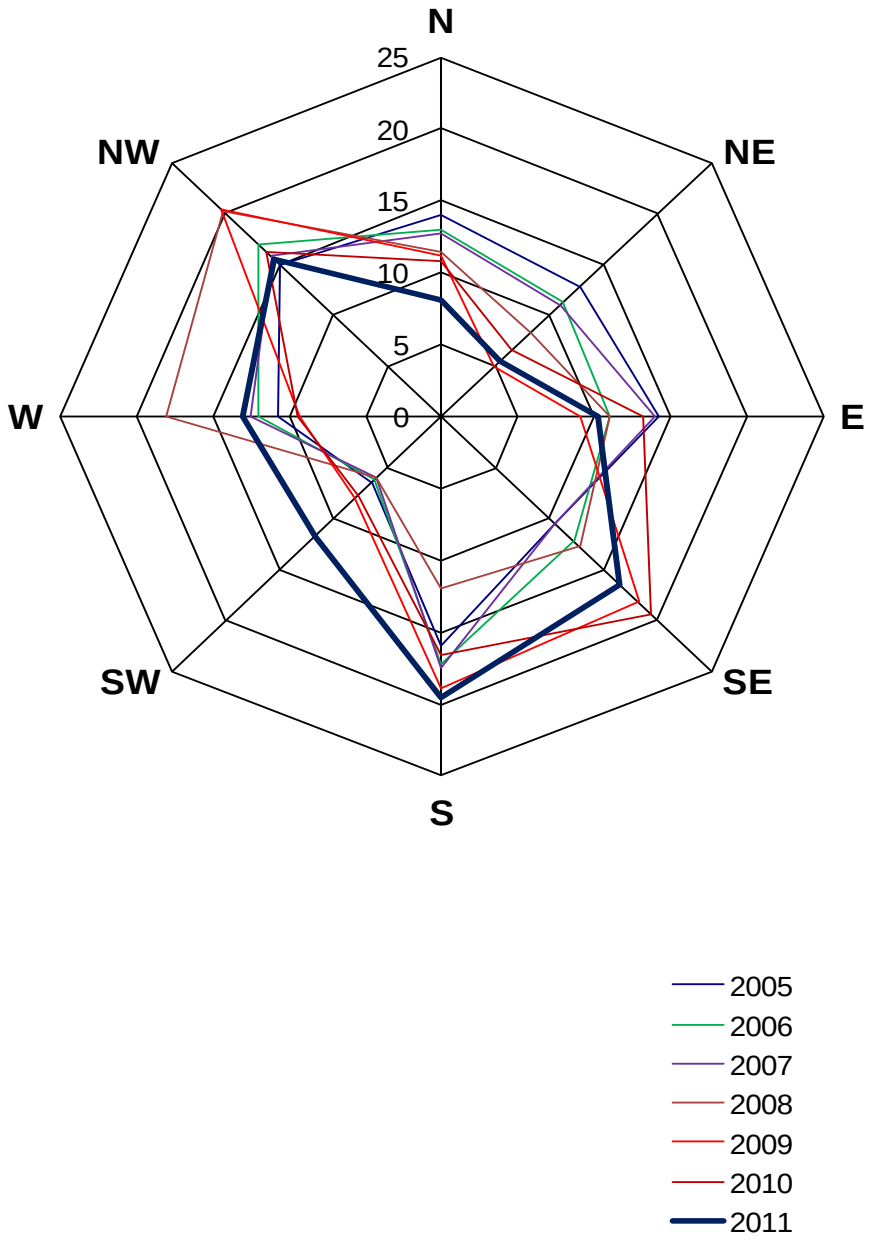
2006	N %	NE %	E %	SE %	S %	SW %	W %	NW %
May	26	13	16	14	8	5	5	13
June	12	4	10	17	20	20	9	8
July	17	3	9	18	14	11	15	13
August	14	5	13	19	10	9	15	15
Average	17	6	12	17	13	11	11	12
2006	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Inverted	13	11	11	12	17	6	12	17

2005 AT REYKJAVÍK

2005	N	NE	E	SE	S	SW	W	NW
May	18	12	8	9	8	16	15	14
June	18	4	8	13	12	11	19	14
July	10	4	10	12	20	17	16	11
August	18	6	17	26	16	7	7	3
Average	16	7	11	15	14	13	14	11
2005	**N**	**NE**	**E**	**SE**	**S**	**SW**	**W**	**NW**
Inverted	14	13	14	11	16	7	11	15

2011 FREQUENCY OF WIND (%) H3

Inverted to reflect emissions in directions from the smelter
Average May - August (Growth period).



VEGETATION

Table 1/1

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
1968	spring	0	2,1	...	...	1,7	...	3,8
	fall	0	5,1	...	...	3,3	2,8	3,5
	av.	0	4,3	...	...	3,1	...	3,6
1969	spring	1.9. - 25.9.	8,0	...	...	3,3	...	10,4
	fall	30´000	7,0	...	...	9,3	3,4	19,0
	av.		7,5	...	...	6,7	...	14,7
1970	spring	15.4. - 8.5.	6,8	...	...	7,9	...	15,3
	fall	40´000	5,8	...	...	15,0	4,7	15,6
	av.		5,7	...	...	11,8	...	15,5
1971	spring	...	2,6	...	...	4,5	...	14,5
	fall	...	2,5	1,1	4,6	10,0	4,8	24,1
	av.	...	2,5	...	...	9,0	...	19,2
1972	spring	12.9. - 27.10.	2,9	...	5,9	8,0	...	17,0
	fall	70´000	4,3	2,6	5,6	10,4	5,4	20,8
	av.		4,3	...	5,8	10,6	...	18,9
1973	spring	...	3,4	...	7,2	5,5	...	16,0
	fall	...	3,2	2,4	6,0	21,0	5,2	25,2
	av.	...	3,3	...	6,6	19,0	...	20,6
1974	spring	...	2,2	...	4,4	10,8	...	17,8
	fall	...	3,1	1,7	5,0	21,8	6,6	33,1
	av.	...	3,1	...	4,7	20,8	...	25,4
1975	spring	...	3	...	7	10	...	25
	fall	...	4	4	7	20	11** 9***	41
	av.	...	4	...	7	19	...	33
1976	spring	...	3	...	6	9	...	22
	fall	...	5	3	5	25	16** 13***	49
	av.	...	5	...	6	25	...	35

Sampling points included: see table 4

* **Grass fertilized + Grass not fertilized.**

** **Figure based on all samples.**

*** **Figure based on the previous sampling points only.**

VEGETATION

Table 1/2

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
1977	spring	...	4	...	7	9	...	15
	fall	...	6	4	8	12	12** 11***	29
	av.	...	6	...	8	12	...	22
1978	spring	...	5	...	1	8	...	17
	fall	...	4	2	1	14	12** 9***	30
	av.	...	4	...	1	13	...	24
1979	spring	...	2	...	1	13	...	20
	fall	...	5	4	2	14	9** 7***	22
	av.	...	4	...	2	13	...	21
1980	spring	5.5. - 16.5.	4	...	2	16	...	12
	fall	80´000	5	3	4	19	10** 5***	38
	av.		5	...	3	17	...	25
1981	spring	...	2	...	2	6	...	10
	fall	...	2	1	5	16	7** 4***	18
	av.	...	2	...	4	14	...	14
1982	spring	...	2	...	2	3	...	7
	fall	...	2	1	2	8	6** 3***	14
	av.	...	2	...	2	7	...	10
1983	spring	...	1	...	1	2	...	5
	fall	...	2	1	1	18	4** 2***	24
	av.	...	1	...	1	14	...	14
1984	spring	...	...	...	...	2	...	6
	fall	...	2	2	2	11	9** 6***	17
	av.	...	...	...	...	10	...	12

Sampling points included: see table 4

*** Grass fertilized + Grass not fertilized.**

**** Figure based on all samples.**

***** Fig. based on the prev. sampl. points only.**

VEGETATION Table 1/3

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
1985	spring	...	1	...	1	1	...	4
	fall	...	2	1	2	8	4** 2***	11
	av.	...	2	...	1	7	...	8
1986	spring	...	3	...	2	6	...	9(9)
	fall	...	1	1	1	8(9)	6(6)** 4(4)***	23(22)
	av.	...	2	...	2	7(9)	...	16(15)
1987	spring	...	2	...	2	5	...	6(7)
	fall	...	1	1	2	11(13)	6(6)** 3***	18(17)
	av.	...	1	...	2	10(12)	...	12(12)
1988	spring	...	1	...	1	8	...	28(27)
	fall	...	1	1	1	21(25)	10(9)** 5***	37(36)
	av.	...	1	...	1	18(22)	...	32(32)
1989	spring	...	1	...	1	3	...	5(6)
	fall	...	1	1	1	12(12)	6(6)** 3***	11(10)
	av.	...	1	...	1	10(10)	...	8(8)
1990	spring	...	1	...	1	3	...	4(4)
	fall	...	1	1	1	8(10)	5(4)** 1***	14(13)
	av.	...	1	...	1	7(8)	...	9(9)
1991	spring	...	1	...	2	4	...	8(9)
	fall	...	1	1	2	8(8)	7(7)** 2***	12(12)
	av.	...	1	...	2	9(9)	...	10(10)
1992	spring	...	1	...	1	3	...	3(3)
	fall	...	1	1	1	5(5)	3(3)** 2***	5(5)
	av.	90´000	1	...	1	4(5)	...	4(4)

Sampling points included: see table 4

*** Grass fertilized + Grass not fertilized.**

(..) previously tentative sampling points no.27,28 and 41 included

**** Figure based on all samples.**

***** Fig. based on the prev. sampl. points only.**

VEGETATION

Table 1/4

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
1993	spring	...	2	...	1	1	...	1(1)
	fall	...	1	1	1	4(4)	3(2)** 2***	5(5)
	av.	...	2	...	1	3(3)	...	3(3)
1994	spring	...	2	...	1	2	...	2(2)
	fall	...	1	1	1	4(4)	2(2)** 1***	6(7)
	av.	...	1	...	1	4(4)	...	4(4)
1995	spring	...	1°	...	1	3°	...	2(2)
	fall	...	1°	1	1	3(4)°	3(3)** 2***	5(7)
	av.	...	1°	...	1	3(4)°		3(4)
1996	spring	...	2	-	1	2°	-	2(2)
	fall	...	1	1	1	2(1)°	2(2)** 1***	4(4)
	av.	...	1	-	1	2(2)	-	3(3)
1997	spring	120´000	1	...	1	2	...	2 (2)
	fall	...	1°	1	1	3 (3)°	3 (3) 2***	11 (9)
	av.	...	1°	...	1	2 (3)°	...	6 (6)
1998	spring	160´000	1	...	1	3	...	5 (5)
	fall	...	1°	1	1	4 (4)°	2 (2)	6 (6)
	av.	...	1°	...	1	4 (4)***	...	5 (5)
1999	spring	160´000	2	...	1	2	...	4 (4)
	fall	...	1°	1	1	3 (3)°	4 (4)	10 (8)
	av.	...	1°	...	1	2 (3)°	...	6 (6)

Sampling points included: see table 4

*** Grass fertilized + Grass not fertilized.**

(..) previously tentative sampling points no.27,28 and 41 included

**** Figure based on all samples.**

***** Fig. based on the prev. sampl. points only.**

° No hay samples are included in these averages

VEGETATION Table 1/5

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
2000	spring	168´000	1	...	1	2	...	2 (2)
	fall	...	2°	1	1	2 (3)°	3 (2)	5 (5)
	av.	...	1°	...	1	2 (2)°	...	3 (3)
2001	spring	...	1	...	1	2	...	2
	fall	...	2°	1	2	5°	3	5
	av.	...	2	...	1	4	...	3
2002	spring	...	1	...	1	2	...	4
	fall	...	1	1	1	3	2	3
	av	...	1	...	1	3	...	3
2003	spring	...	1	...	1	2	...	3
	fall	...	1	...	2	5	2	5
	av	...	1	...	2	5	...	4
2004	spring	...	2	...	2	3	...	4
	fall	...	1	1	3	3	3	6
	av	...	2	...	2	3	...	5
2005	spring	...	1	...	1	3	...	6
	fall	...	1	<1	3	2	2	5
	av	...	1	...	2	2	...	5
2006	spring	...	1	...	3	3	...	5
	fall	...	1	1	4	3	2	5
	av	...	1	...	3	3	...	5
2007	spring	178´000	1	...	3	2	...	5
	fall	...	2	<1	2	2	2	4
	av	...	1	...	2	2	...	5

Sampling points included: see table 4
*** Grass fertilized + Grass not fertilized.**
(..) previously tentative sampling points no.27,28 and 41 included
° No hay samples are included in these averages. From 2001 there are no hay samples.
From 2001 values of the sampling points 27, 28 and 41 are included in this averages.
In 2007 there were a change of sampling points.
For grass the sampling points 3, 4, 5, 28 and 32 were deleted and 34 and 37 were added.
For leaves the sampling points 11, 12 and 13 were deleted and 34 and 37 were added.
For needles the sampling points 11, 12, 13, 33, 35 and 36 were deleted.

VEGETATION Table 1/6

ppm F in dry matter,
samples collected in spring and fall

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Average Zone 4 (zero pnts> 50 km)			Aver. Zones 1+2+3 (3 - 15 km)		
			Grass* Hay	Needles one year old	Leaves	Grass* Hay	Needles one year old	Leaves
2008	spring	178´000	1	...	1	3	...	3
	fall	...	1	<1	3	3	3	6
	av.	...	1	...	2	3	...	5
2009	spring	...	1	...	6	2	...	7
	fall	...	2	<1	5	3	2	8
	av.	...	2	...	5	3	...	7
2010	spring	...	2	...	3	4	...	7
	fall	...	1	1	4	3	2	4
	av.	...	1	...	3	4	...	6
2011	spring	...	4	...	3	5	...	4
	fall	...	3	4	7	5	4	8
	av.	...	3	...	5	5	...	6

Sampling points included: see table 4
*** Grass fertilized + Grass not fertilized.**
(..) previously tentative sampling points no.27,28 and 41 included
° No hay samples are included in these averages. From 2001 there are no hay samples.
From 2001 values of the sampling points 27, 28 and 41 are included in this averages.
In 2007 there were a change of sampling points.
For grass the sampling points 3, 4, 5, 28 and 32 were deleted and 34 and 37 were added.
For leaves the sampling points 11, 12 and 13 were deleted and 34 and 37 were added.
For needles the sampling points 11, 12, 13, 33, 35 and 36 were deleted.

GRASS

Table 2/1

ppm F in dry matter,
samples collected in spring and fall.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1 3 - 4,5 km Grass	Zone 2 4,5 - 6,5 km Grass	Zone 3 6,5 - 15 km Grass	Zone 4 > 50 km Grass
2000	spring	168´000	3	2	1	1
	fall	...	3 (4)	2 (2)	2	2
	av.	...	3 (3)	2 (2)	2	1
2001	spring	...	1	1	2	1
	fall	...	6	5	3	2
	av.	...	5	4	3	2
2002	spring	...	2	3	2	1
	fall	...	5	3	3	1
	av.	...	4	3	2	1
2003	spring	...	1	2	1	1
	fall	...	13	3	2	1
	av.	...	11	3	2	1
2004	spring	...	3	2	2	2
	fall	...	6	2	2	1
	av.	...	6	2	2	2
2005	spring	...	7	3	2	1
	fall	...	3	1	1	1
	av.	...	4	2	1	1
2006	spring	...	4	3	2	1
	fall	...	3	2	2	1
	av.	...	4	2	2	1
2007	spring	178´000	3	2	4	1
	fall	...	4	2	1	2
	av.	...	3	2	3	1
2008	spring	...	4	4	2	1
	fall	...	3	3	2	1
	av.	...	3	4	2	1
2009	spring	...	2	2	1	1
	fall	...	2	3	2	2
	av.	...	2	3	2	1
2010	spring	...	4	4	4	1
	fall	...	2	3	3	1
	av.	...	3	4	4	1

Sampling point included: see table 4

Since 2001 the values of sampling points 27 and 28 are included in all averages.

Until this year those averages were presented in parentheses.
In 2007 the sampling points 3, 4, 5, 28 and 32 were deleted and sampling points 34 and 37 were added.

GRASS

Table 2/2

ppm F in dry matter,
samples collected in spring and fall.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1 3 - 4,5 km Grass	Zone 2 4,5 - 6,5 km Grass	Zone 3 6,5 - 15 km Grass	Zone 4 > 50 km Grass
2011	spring	178´000	5	3	6	4
	fall	...	5	5	4	3
	av.	...	6	4	5	3

Sampling point included: see table 4
Since 2001 the values of sampling points 27 and 28 are included in all averages.
Until this year those averages were presented in parentheses.
In 2007 the sampling points 3, 4, 5, 28 and 32 were deleted and sampling points 34 and 37 were added.

LEAVES AND NEEDLES

Table 3/1

ppm F in dry matter, spring and fall samples.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1		Zone 2		Zone 3*		Zone 4	
			Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old
1968	spring	0	4,0	...	there were		3,1	...	there were	
	fall	0	3,8	2,6			2,7	2,0		
	av.	0	3,4	...	no sampling		2,8	...	no sampling	
1969	spring	1.9. - 25.9.	7,0	...	points for		6,5	...	points for	
	fall	30´000	27,8	4,1			13,2	3,2		
	av.		17,4	...	trees taken		9,8	...	trees taken	
1970	spring	15.4. - 8.5.	18,8	...	into		14,0	...	into	
	fall	40´000	14,2	5,8			14,7	4,2		
	av.		16,5	...	consideration		14,4	...	consideration	
1971	spring	...	12,8	...			14,0	...	...	...
	fall	...	28,1	5,7			20,0	3,5	4,6	1,1
	av.	...	20,4	...			17,0	...	...	...
1972	spring	12.9. - 27.10.	11,5	...			15,6	...	5,9	...
	fall	70´000	22,5	9,8			16,5	4,2	5,6	2,6
	av.		17,0	...			16,1	...	5,8	...
1973	spring	...	15,8	...			14,4	...	7,2	...
	fall	...	22,7	6,4			23,9	3,6	6,0	2,4
	av.	...	19,2	...			19,1	...	6,6	...
1974	spring	...	17,7	...			15,9	...	4,4	...
	fall	...	43,9	11,6			25,2	4,8	5,0	1,7
	av.	...	31,0	...			20,5	...	4,7	...
1975	spring	...	27	...	...	...	18	...	7	...
	fall	...	38	13** 11***	...	12	38	8** 8***	7	4
	av.	...	33	...	...	...	28	...	7	...
1976	spring	...	28	...	...	...	15	...	6	...
	fall	...	69	20** 16***	...	18	35	12** 11***	5	3
	av.	...	49	...	...	...	25	...	6	...
1977	spring	...	16	...	...	...	14	...	7	...
	fall	...	36	15** 20***	...	10	24	9** 8***	8	4
	av.	...	25	...	...	...	19	...	8	...

Sampling point included: see table 4

*** Not included in above figures are the samples from the Park of Reykjavík (12), Zone 3.**

**** Figure based on all samples.**

***** Figure based on the previous sampling points only.**

LEAVES AND NEEDLES

Table 3/2

ppm F in dry matter, spring and fall samples.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1		Zone 2		Zone 3*		Zone 4	
			Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old
1978	spring	...	18	...	...	...	16	...	1	...
	fall	...	41	14** 17***	...	14**	21	6** 8***	1	2
	av.	...	30	...	...	...	18	...	1	...
1979	spring	...	26	...	...	...	18	...	1	...
	fall	...	26	12** 9***	...	9**	16	6** 6***	2	4
	av.	...	26	...	...	...	18	...	2	...
1980	spring	5.5. - 16.5.	11	...	...	...	13	...	2	...
	fall	80´000	45	13** 8***	...	9**	33	7** 4***	4	3
	av.		28	...	...	...	23	...	3	...
1981	spring	...	11	...	...	...	9	...	2	...
	fall	...	20	10** 6***	...	9**	15	4** 3***	5	1**
	av.	...	16	...	...	...	12	...	4	...
1982	spring	...	6	...	...	...	8	...	2	...
	fall	...	17	8** 6***	...	6**	12	4** 2***	2	1**
	av.	...	12	...	...	...	10	...	2	...
1983	spring	...	5	...	...	...	4	...	1	...
	fall	...	29	5** 4***	...	6**	20	2** 2***	1	1**
	av.	...	17	...	...	...	12	...	1	...
1984	spring	...	7	...	...	...	5	...	...	...
	fall	...	18	12** 5***	...	7**	11	6** 5***	2	2**
	av.	...	12	...	...	...	8	...	2	...
1985	spring	...	3	...	...	...	4	...	1	...
	fall	...	14	6** 1***	...	4**	9	2** 2***	2	1**
	av.	...	8	...	...	...	6	...	1	...

Sampling points included: see table 4

*** Not included in above figures are the samples from the Park of Reykjavík (12), Zone 3.**

**** Figure based on all samples.**

***** Figure based on the previous sampling points only.**

LEAVES AND NEEDLES

Table 3/3

ppm F in dry matter, spring and fall samples.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1		Zone 2		Zone 3*		Zone 4	
			Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old
1986	spring	...	9	...	...	...	7(8)	...	2	...
	fall	...	40	10** 6***	...	6**	16(16)	3(3)** 4***	1	1**
	av.	...	25	...	...	...	12(12)	...	2	...
1987	spring	...	6	...	...	...	5(6)	...	2	...
	fall	...	26	11**	...	5**	14(14)	3(3)** 2***	2	1**
	av.	...	16	...	...	...	10(10)	...	2	...
1988	spring	...	46	...	...	...	19(20)	...	1	...
	fall	...	64	17**	...	7**	27(26)	6(5)** 5***	1	1**
	av.	...	55	...	...	...	23(23)	...	1	...
1989	spring	...	9	...	...	...	3(4)	...	1	...
	fall	...	15	8**	...	8**	6(6)	3(3)** 3***	1	1**
	av.	...	12	...	...	...	4(5)	...	1	...
1990	spring	...	5	...	...	...	4(4)	...	1	...
	fall	...	29	7**	...	6**	8(8)	2(2)** 1***	1	1**
	av.	...	17	...	...	...	6(6)	...	1	...
1991	spring	...	10	...	...	...	8(9)	...	2	...
	fall	...	22	10**	...	9**	9(9)	4(3)** 2***	2	1**
	av.	...	16	...	...	...	8(9)	...	2	...
1992	spring	...	3	...	...	...	3(3)	...	1	...
	fall	...	11	4**	...	3**	3(3)	2(2)** 2***	1	1**
	av.	90´000	7	...	...	...	3(3)	...	1	...
1993	spring	...	2	...	...	...	1(1)	...	1	...
	fall	...	6	3**	...	3**	5(5)	2(2)** 2***	1	1**
	av.	...	4	...	...	...	3(3)	...	1	...

Sampling points included: see table 4

*** Not included in above figures are the samples from the Park of Reykjavík (12), Zone 3.**

**** Figure based on all samples.**

***** Figure based on the previous sampling points only.**

(..) see table 1

LEAVES AND NEEDLES

Table 3/4

ppm F in dry matter, spring and fall samples.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1		Zone 2		Zone 3		Zone 4	
			Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old
1994	spring	...	2	...	...	...	2(2)	...	1	...
	fall	...	9	3**	...	2**	5(5)	2(2)** 2***	1	1**
	av.	...	6	...	...	...	3(4)	...	1	...
1995	spring	...	1	...	...	...	2(2)	...	1	
	fall	...	17	4**	...	1**	5(6)	2(3)	1	1**
	av.	...	9	...	...	...	4(4)	...	1	...
1996	spring	...	2	...	...	...	2(2)	...	1	...
	fall	...	5	3***	...	2**	3(2)	1(1)**	1	1**
	av.	...	3	...	...	...	2(2)	1***	1	...
1997	spring	120´000	2		...	...	2 (2)	...	1	...
	fall	...	19	6**	...	2**	7 (6)	2(1)**	1	1**
	av.	...	10				4 (4)	...	1	…
1998	spring	160´000	4		...	...	5 (5)	...	1	...
	fall	...	7	2**	...	2**	5 (5)	1(1)**	1	1**
	av.	...	6				5 (5)	...	1	...
1999	spring	160´000	5		...	...	3 (3)	...	1	...
	fall	...	14	5**	...	2**	6 (6)	1(1)**	1	1**
	av.	...	10				4 (4)	,,, ...	1	...
2000	spring	168´000	3	...	...	...	1 (2)	...	1	...
	fall	...	7	3	...	2**	4 (4)	2(2)**	1	1**
	av.	...	5	...	...		3 (3)	...	1	...
2001	spring	...	1	...	...	...	2	...	1	...
	fall	...	8	4	...	4	3	2	2	1
	av.	...	5	...	...	...	3	...	1	...
2002	spring	...	3	...	...	...	4	...	1	...
	fall	...	5	1	...	2	2	1	1	1
	av.	...	4	...	...	...	3	...	1	...
2003	spring	...	3	...	...	...	3	...	1	...
	fall	...	8	3	...	2	4	1	2	1
	av.	...	6	...	...	...	4	...	2	...

Sampling points included: see table 4

*** Not included in above figures are the samples from the Park of Reykjavík (12), Zone 3.**

**** Figure based on all samples.**

***** Figure based on the previous sampling points only.**

(..) see table 1

From 2001 values of sampling point 41 are included in the averages.

LEAVES AND NEEDLES

Table 3/5

ppm F in dry matter, spring and fall samples.
Zone averages.

Year	Sampling time	Start of new production and new capacity (t. p. a.)	Zone 1		Zone 2		Zone 3		Zone 4	
			Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old	Leaves	Needles one year old
2004	spring	...	3	...	...	...	4	...	2	...
	fall	...	4	5	...	4	7	2	3	1
	av.	...	4	...	...	...	5	...	2	...
2005	spring	...	7	...	...	...	6	...	1	...
	fall	...	7	3	...	1	4	1	3	<1
	av.	...	7	...	...	...	5	...	2	...
2006	spring	...	4	...	...	...	5	...	3	...
	fall	...	7	3	...	2	5	2	4	1
	av.	...	5	...	...	...	5	...	3	...
2007	spring	178´000	4	...	6	...	5	...	3	...
	fall	...	5	2	5	2	3	1	2	<1
	av.	...	4	...	5	...	4	...	2	...
2008	spring	...	4	...	4	...	3	...	1	...
	fall	...	6	3	5	3	6	3	3	<1
	av.	...	5	...	4	...	4	...	2	...
2009	spring	...	7	...	7	...	7	...	6	...
	fall	...	7	3	8	3	7	1	5	<1
	av.	...	7	...	8	...	7	...	5	...
2010	spring	...	7	...	7	...	7	...	3	...
	fall	...	6	3	3	1	5	1	4	1
	av.	...	7	...	5	...	6	...	3	...
2011	spring	...	5	...	4	...	4	...	3	...
	fall	...	9	10	9	2	8	3	7	4
	av.	...	7	...	6	...	6	...	5	...

Sampling points included: see table 4

From 2001 values of sampling point 41 are included in the averages.

In 2007 the sampling points for leaves, 11, 12 and 13 were deleted and sampling points 34 and 37 were added.

In 2007 the sampling points for needles, 11, 12, 13, 33, 35 and 36 were deleted.

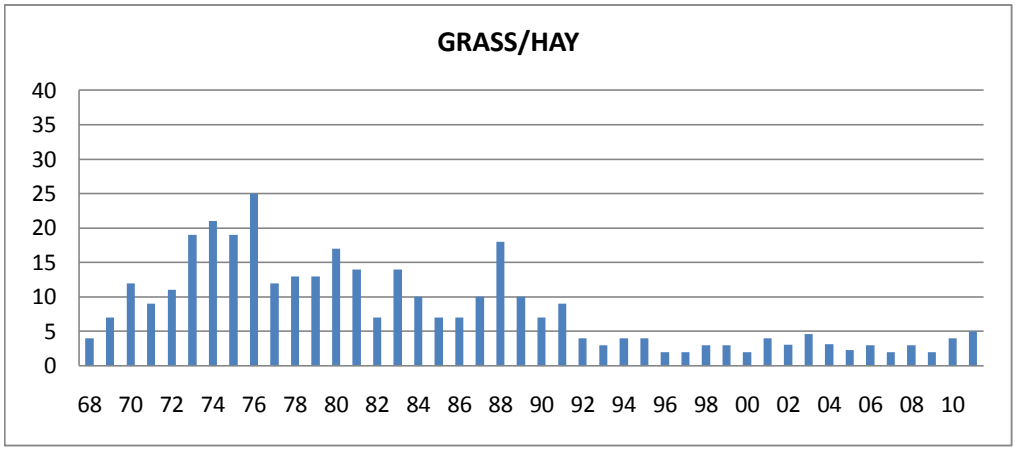
CLASSIFICATION OF SAMPLING POINTS IN ZONES

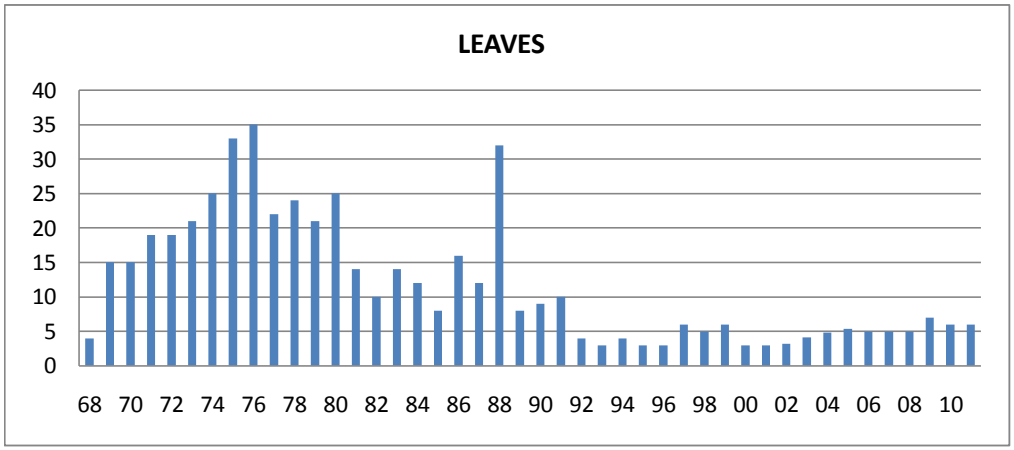
Table 4

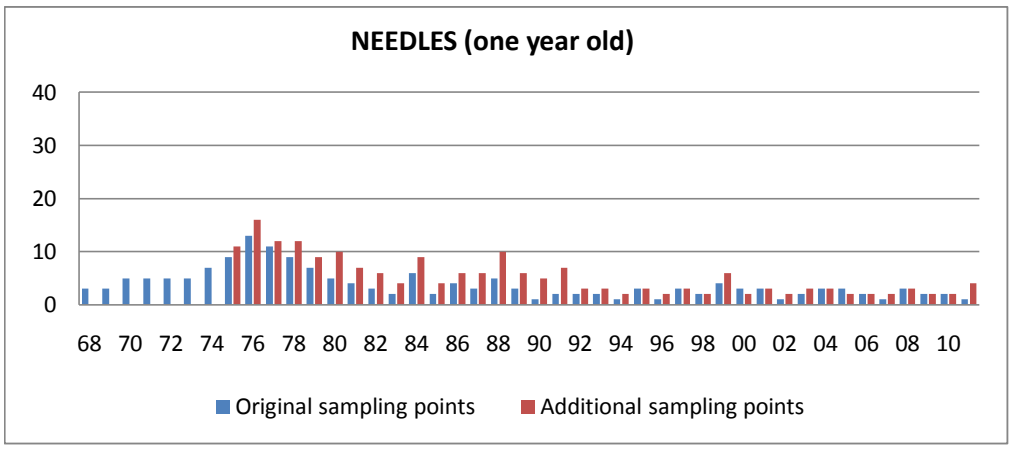
Zone	Sampl. point		Distance from plant	Direction from plant	Grass fertilized	Grass not fertilized	Hay till 2000	Leaves birch	Leaves laburnum till 1985	Leaves mount. ash	Needles spruce	Needles pine	Soil till 1974	Bones till 1992	Air till 1974	Water cold	Water hot	Water Spec. till 1974	Rainwater till 1983
0	1	Straumur	1,3	WSW		X													
0	15	Borhole Straumsvík	0,5	SE															
0	31	Gerði	1,0	SSW							X								
1	2	Straumsel (abandoned ´86)	3,9	SSE															
1	6	Park Hafnafj.	4,3	NE		X		X		X	X								
1	9	Dysjar	4,1	NNE		X													
1	23	District Sheriffs Off. Hafn.	3,9	ENE															
1	28	Hvaleyrarholt (offical since ´86)	2,3	NE															
1	32	Straumsgirðing (prev. Hrauntunga)	3,7	SE							X	X							
1	33	Hrauntunga (prev. Straumsgirðing)	4,2	SE															
1	36	Plantation Garðars Þorsteinss.	4,1	ENE															
2	5	Setberg	5,2	ENE															
2	8	Sviðsholt	6,1	NNE	X	X													
2	27	Hvassahraun (official since ´86)	6,3	SW		X													
2	34	Hvaleyrarvatn	5,0	ESE		X		X		X	X	X							
2	37	Garðaholt	5,0	NNE		X		X			X	X							
3	3	Stóra Vatnsleysa	9,9	WSW															
3	4	Höskuldarvellir	11,3	SSW															
3	7	Vífilstaðahlíð	7,8	E		X		X				X							
3	10	Vífilstaðir	7,7	ENE		X		X											
3	11	Cemetery Fossvogur	10,4	NE															
3	12	Park Reykjavík	11,3	NNE															
3	13	Heiðmörk	12,3	ENE															
3	16	Kleifarvatn	11,5	S															
3	17	Elliðavatn	12,5	ENE															
3	18	Gvendarbrunnar	14,6	NNE															
3	19	Kaldársel	8,4	ESE												X			
3	20	Þvottalaugar (abandoned ´78)	13,0	EN															
3	22	Univers. Reykjavík	11,2	NNE															
3	24	Garðabær	6,9	NE															
3	25	Meterological Office, R. (abandoned '84)	11,0	NE															
3	35	Undirhlíðar	8,1	SE															
3	38	Sléttuhlíð	7,3	ESE							X								
3	41	Oskjuhlíð (official since ´86)	10,2	NNE				X			X	X							
3a	21	Reykir Pump station	21,6	NE															
4	14a	Hurðabak (abandoned ´84)	78,0	NNE															
4	14b	Gullberstaðir (abandoned ´84)	66,0	NNE															
4	26	Skorradalur	59,0	NNE	X	X		X		X	X								
		Tentative sampl. ponts:																	
3a	39	Baðsvellir (abandoned ´84)	27,4	SW															
3a	40	Grindavík (abandoned ´84)	31,0	SW															

Vegetation Graph 1

F (ppm) in dry matter of spring and fall samples
Average result per combined zones 1+2+3

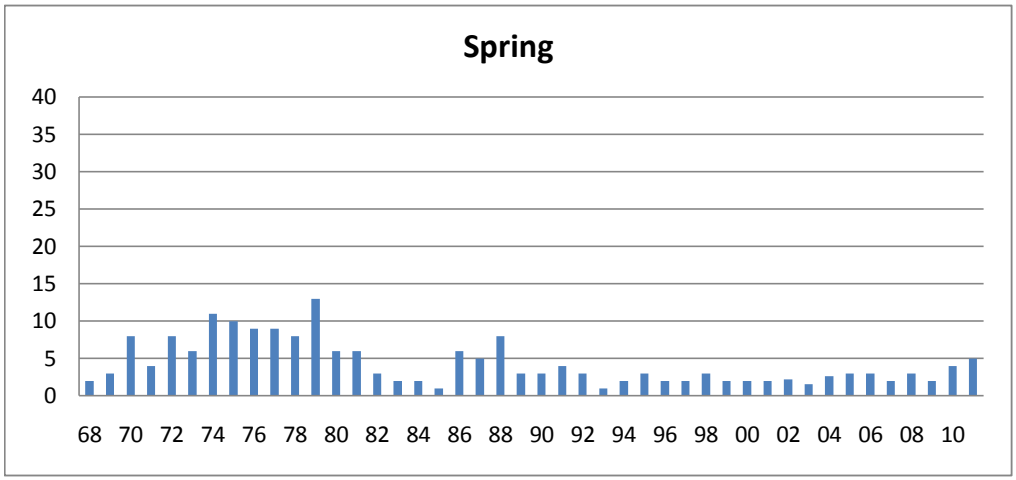


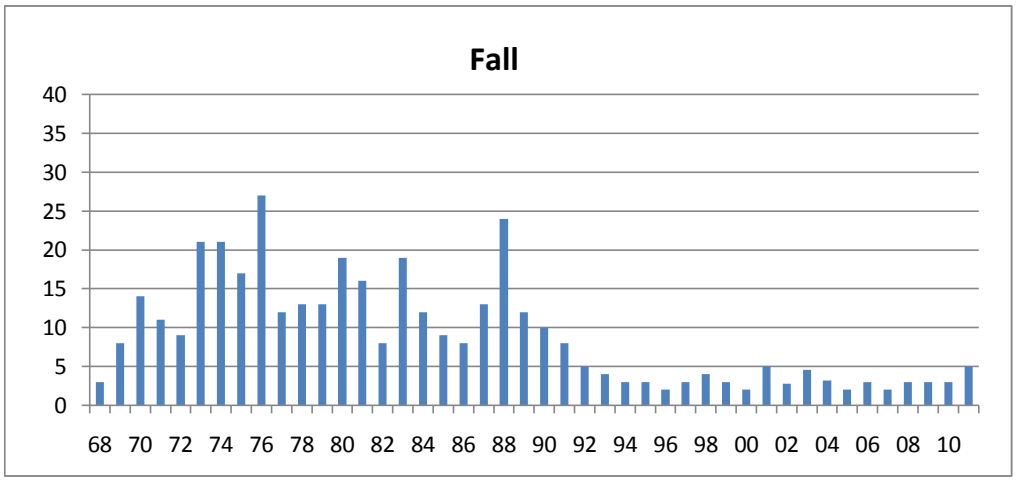




Grass Graph 2

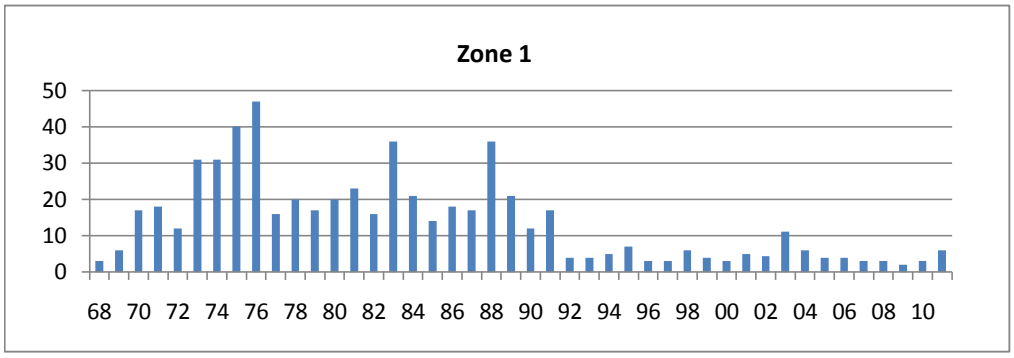
F (ppm) in dry matter of spring and fall samples
Average result per combined zones 1+2+3

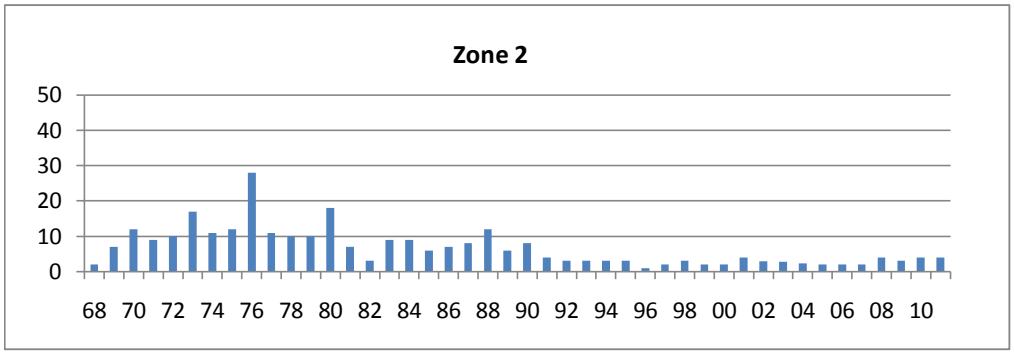


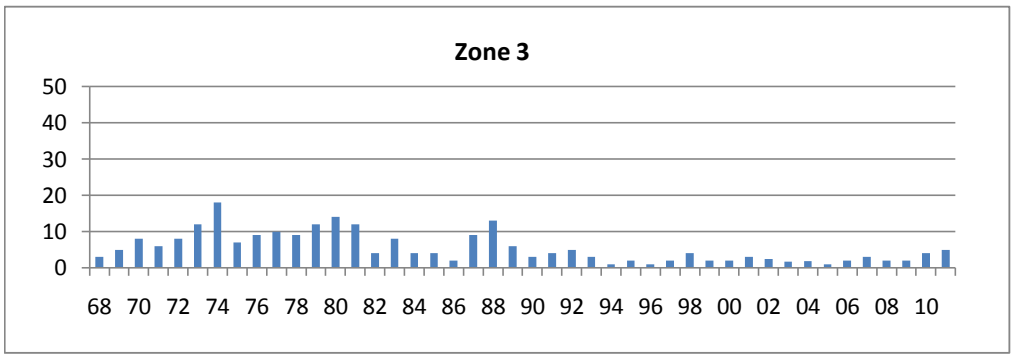


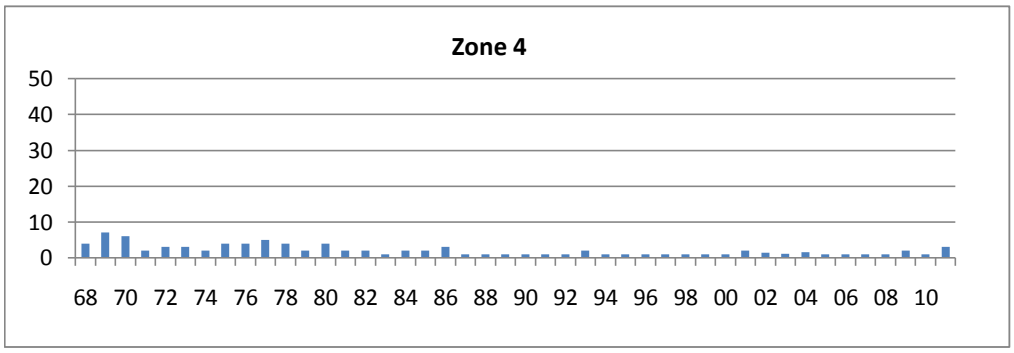
Grass Graph 3

F (ppm) in dry matter of spring and fall samples
Average result per zone



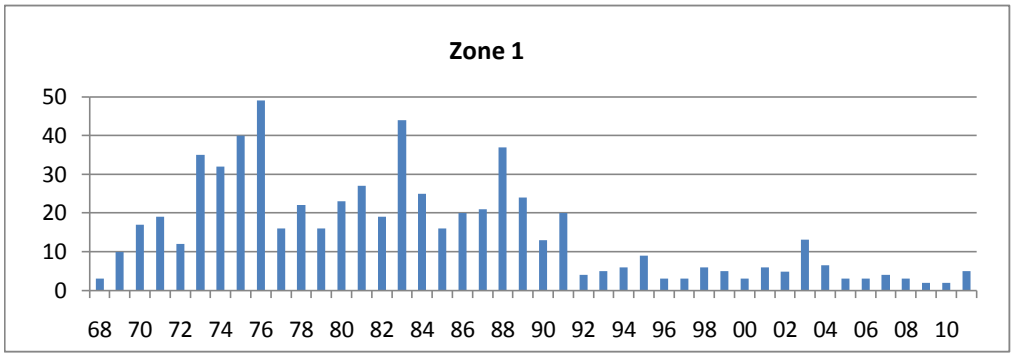


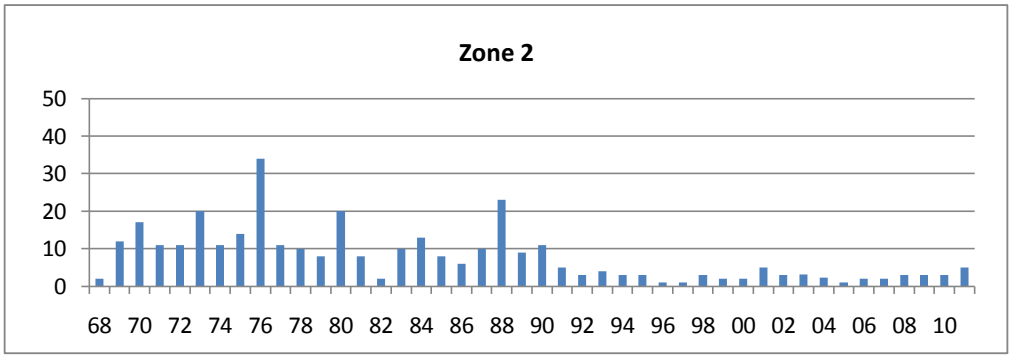


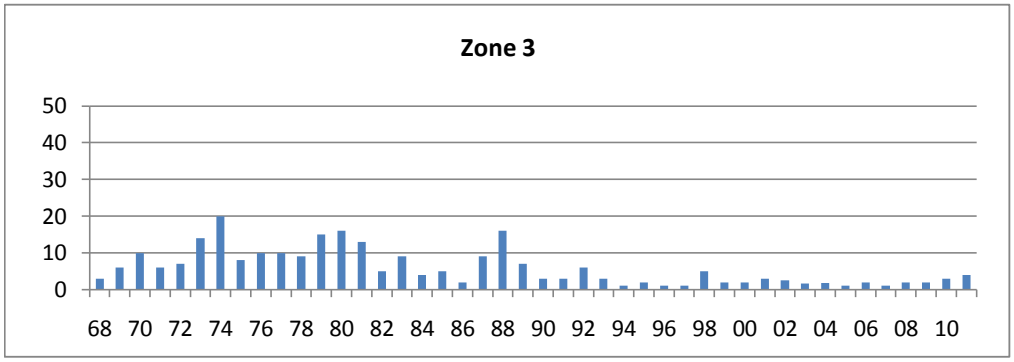


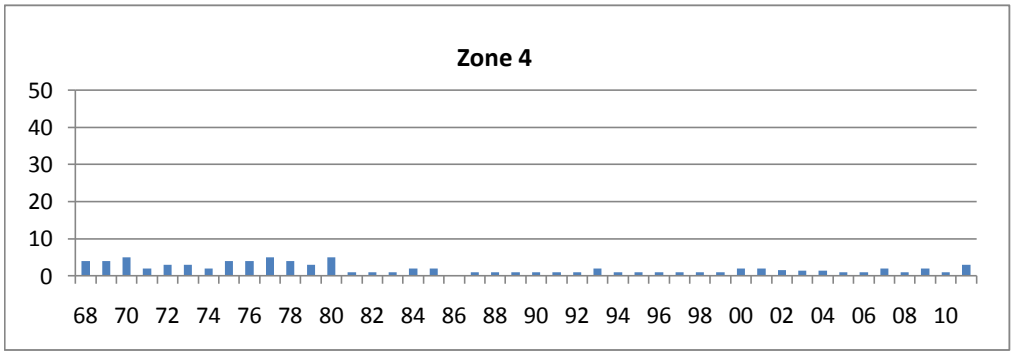
Grass Graph 4

F (ppm) in dry matter of fall samples
Average result per zone









Leaves and needles Graph 5

F (ppm) in dry matter of spring and fall samples respectively
Average result per combined zones 1+2+3