Data submission in FutMon: new forms for quality information

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QA/QC Forms: From the laboratory into the database!

Objectives:

• Development of special QA/QC-Forms, which allow the storage of Ring test results and laboratory quality indicators.

    - Structure of the QA-Forms has been discussed at the FutMon Workshop in January 2009 in Hamburg.

• Each measuring value for each parameter could directly <u>linked</u> to the respective Laboratory quality indicator/Ringtest-result.

• Provides information about the <u>quality</u> and the <u>uncertainties</u> of the data.

• Data submission should be made <u>survey</u> by survey and <u>year</u> by year.

• To each <u>data</u> file the respecting <u>QA/QC-file</u> should be transferred!
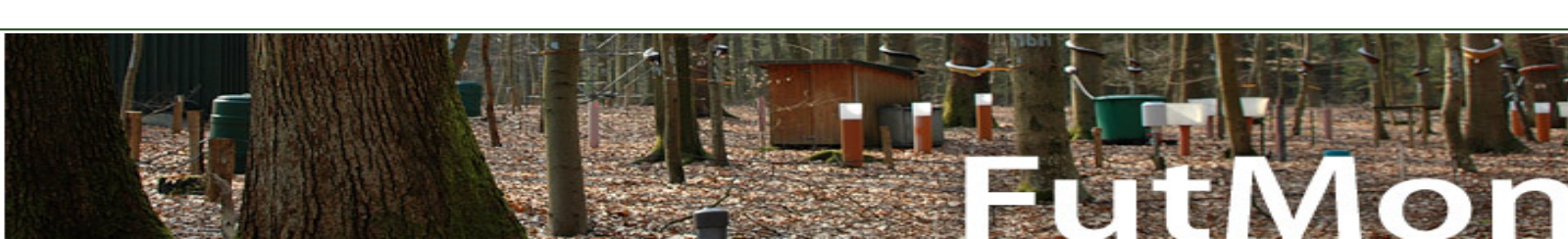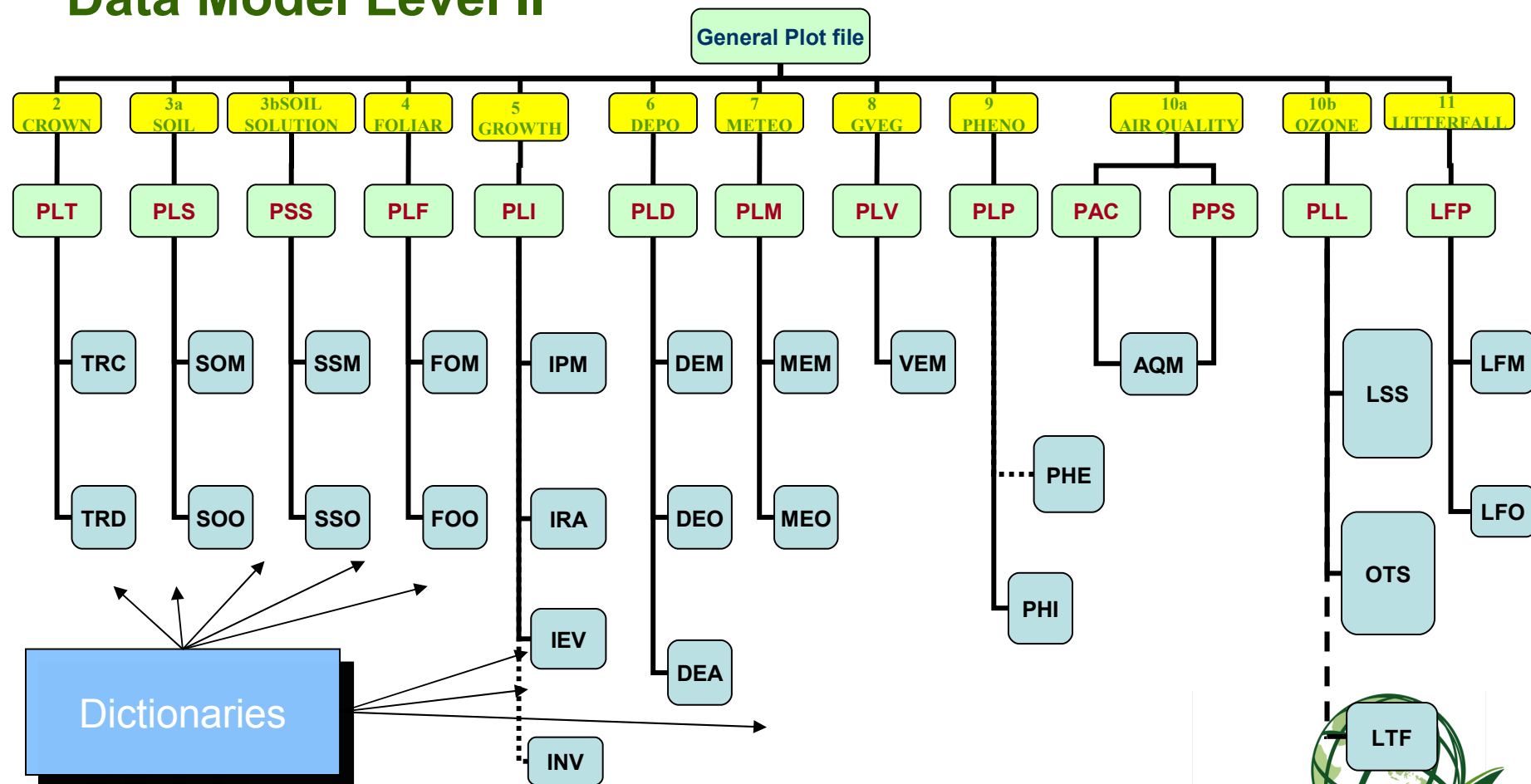
Data Model Level II

Data Model Level II

new QA-Lab-Forms!
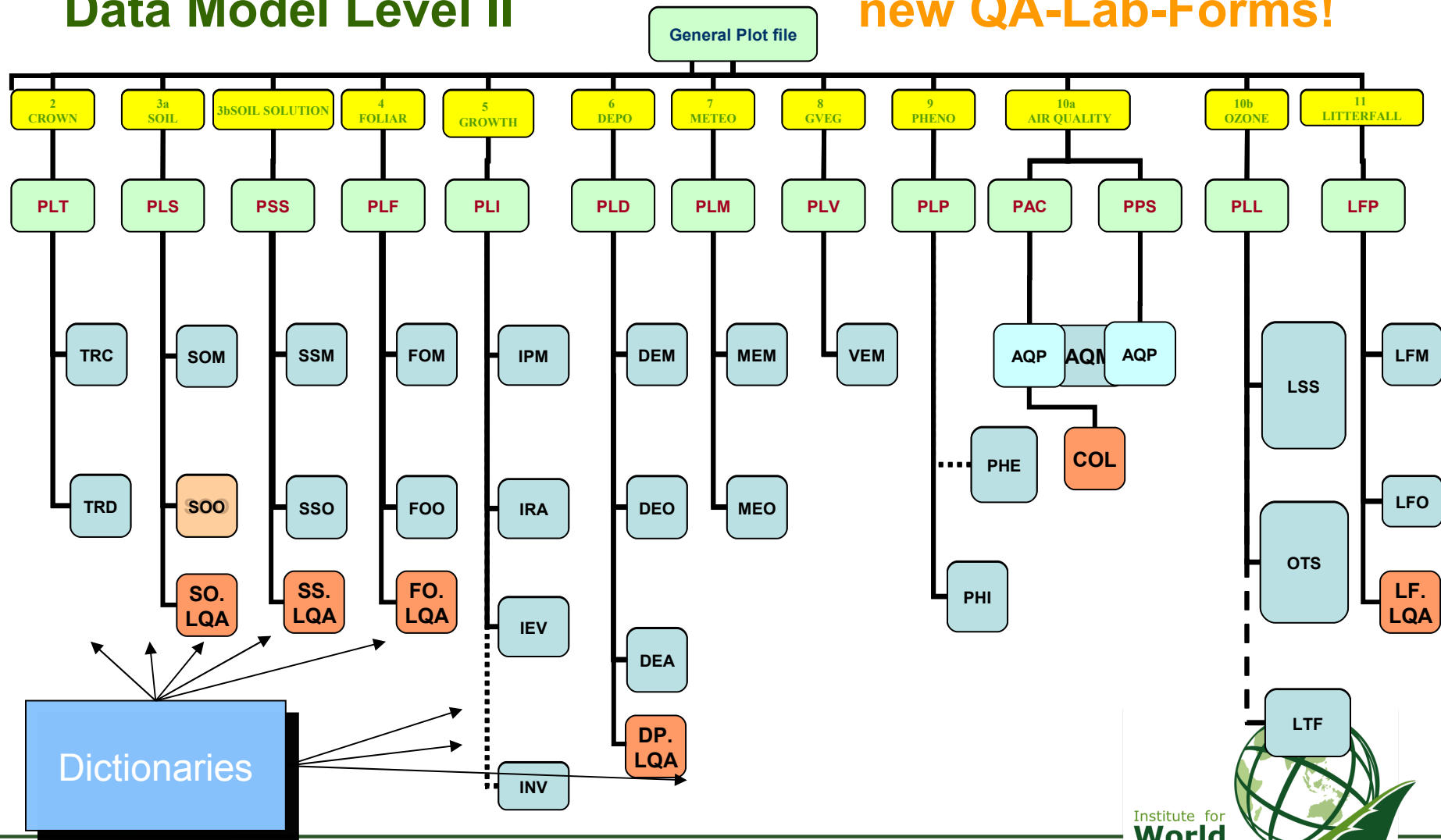
Data submission forms and explanatory items:

• Changes which are made in comparison with the latest adopted version of the respective ICP Forests forms are highlighted by using bold font and blue colour.
• All amendments and changes are summarized in an "Amendment index".
• The respective explanatory item is directly linked in the document.

Example: FutMon_ICPForestsForms2009_V5_1a.doc

• Available on the FutMon website
          http://www.futmon.org/submission.htm

Parameter

Parameter Code (, , ….)

Digestion/Extraction method (pretreatment)	
code removal compounds (Soil)	**analytical method information**
Sieving/milling method	
Determination method (see reference list)	
Quantification limit	**quantification limit**
Mean of control chart	**control chart information**
Standard deviation [% of mean] => coefficient of variation	
Participated at ring Test (yes = 1, no = 0)	**ring test and qualification information**
ICP Forests Ring Test Number	
ID of laboratory (e.g. H45, B78, etc.)	
Percentage [%] of the results of the ring test within tolerable limits	
Requalification information (y/n)	
Percentage [%] of the results of the ring tests within tolerable limits for each ring test in requalification	

Other observations (freetext):
[additional information like "no adequate instrument existing"; "old instrument")
[Slide from Nils König 2009]

Control chart data

Parameter: K

Mean control chart: 2,56

CV (%): 1,6

Nordwestdeutsche
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Göttingen, Germany

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Ring test information

			example	
74	Participated at ring Test (yes = 1, no = 0)	I 1	**1**	(109)
76 – 78	ICP Forests Ring Test Number	C 3	**3**	(109)
80 – 82	ID of laboratory (e.g. H45, B78, etc.)	C 3	**F12**	(109)
84 – 86	Percentage [%] of the results of the ring tests within tolerable limits for each ring test	I 3	**20**	(109)
88	Requalification information (yes = 1, no = 0)	I 1	**1**	(109)
90 – 92	Percentage [%] of the results of the ring tests within tolerable limits for each ring test in requalification	I 3	**80**	(109)

Nordwestdeutsche
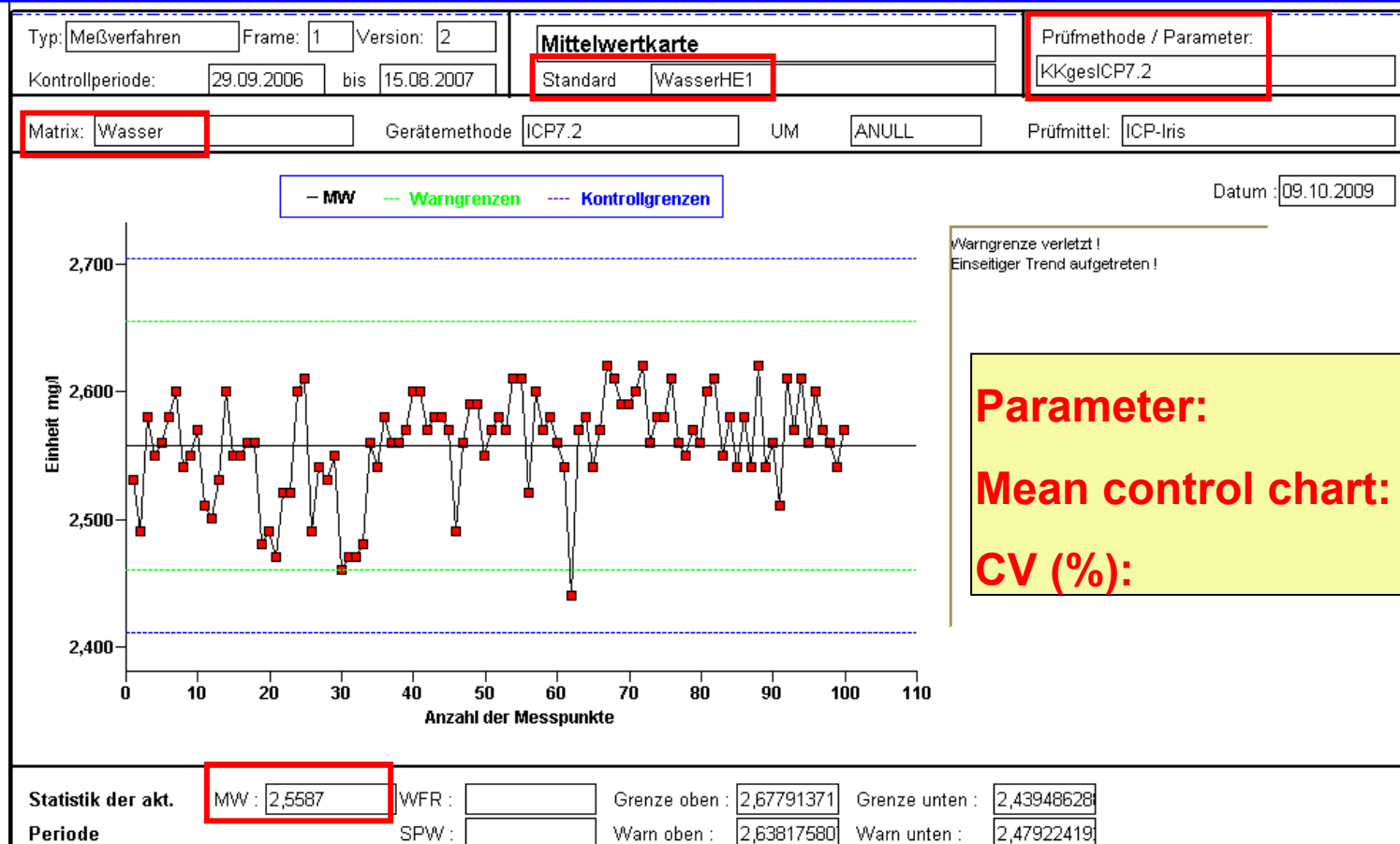Forstliche Versuchsanstalt
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QA/QC Forms: Example for Deposition!
XX2009DP.LQA:

Sequence 01--04	Country 06--07	Observation plot number 09--12	start_date (DDMMYY) 14--19	end_date (DDMMYY) 21--26	Parameter 28--34	Determination method 36--39	Quantification limit 41--46	Mean of control chart 48--53	Standard deviation [%] 55--57	Ring test 59	ICP Forests Ring test Number 61--63	Lab_ID 65--67	Percentage within tolerable limits 69--71	Requalification 73	Percentage within tolerable limits after requal. 75--77	Other Observations 79--118
1	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	p H	7 2 . 1		4 . 2	0 . 2	1		3 H 2 5	8 2			
2	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	C o n d	7 1 . 1	1 0	5 0	1 5	1		3 H 2 5	9 8			
3	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	K	2 1	0 . 0 0 0 1	0 . 3 6	7	1		3 H 2 5	5 7			
4	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Ca	2 1	0 . 0 0 0 5	1 . 7 9	1	1		3 H 2 5	7 4			
5	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Mg	2 1	0 . 0 0 0 5	0 . 4 1	2	1		3 H 2 5	9 5			
6	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Na	2 1	0 . 0 0 1 0	1 . 8 0	1 1	1		3 H 2 5	8 3			
7	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	N _ NH 4	6 0 . 1	0 . 0 0 1 0	1 . 2 2	1 0	1		3 H 2 5	6 9			
8	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Cl	6 1 . 2	0 . 0 0 1 0	3 . 5 0	2 5	1		3 H 2 5	4 8	1	9 1	
9	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	N _ NO 3	6 1 . 2	0 . 0 0 0 1	0 . 9 5	1 7	1		3 H 2 5	8 7			
1 0	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	S _ SO 4	6 1 . 2	0 . 0 0 0 1	1 . 8 3	3 9	1		3 H 2 5	8 8			
1 1	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Al kalin	8 2	0 . 0 0 0 1	1 1 3 . 7	2 0	1		3 H 2 5	7 7			
1 2	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	N _ total	1 2 . 2	0 . 0 0 0 1	2 . 7 3	8	1		3 H 2 5	9 5			
1 3	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	DOC	5 0	0 . 0 1 0 0	1 3 . 6	1 0	1		3 H 2 5	7 2			
1 4	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Al	3 2	0 . 0 0 0 1	6 8 . 5	6	1		3 H 2 5	8 1			
1 5	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Mn	3 2	0 . 0 0 0 1	1 1 9 . 1	3 3	1		3 H 2 5	9 8			
1 6	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Fe	3 2	0 . 0 0 0 1	8 4 . 2	2 2	1		3 H 2 5	7 1			
1 7	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	P _ PO 4	3 2	0 . 0 0 0 1	1 . 5 2	7	1		3 H 2 5	8 2			
1 8	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Cu	3 2	0 . 0 0 0 1	1 2 . 3 7	1 0	1		3 H 2 5	9 6			
1 9	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Zn	3 2	0 . 0 0 0 1	3 7 . 8 2	2 7	1		3 H 2 5	9 9			
2 0	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Hg	2 5	0 . 0 0 0 1	1 . 7 7	6	1		3 H 2 5	8 9			
2 1	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Pb	3 2	0 . 0 0 0 1	3 . 7 3	1 2	1		3 H 2 5	7 8			
2 2	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Co	3 2	0 . 0 0 0 1	0 . 2 6	8	1		3 H 2 5	8 5			
2 3	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Mo	3 2	0 . 0 0 0 1	0 . 5 9	1 1	1		3 H 2 5	9 0			
2 4	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Ni	3 2	0 . 0 0 0 1	0 . 8 5	3	1		3 H 2 5	8 2			
2 5	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	Cd	3 2	0 . 0 0 0 1	2 . 1 2	2 5	1		3 F 2 2	6 6			
2 6	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	S _ total	3 1	0 . 0 1 0 0	1 . 4 3	1 2	1		3 H 2 5	8 8			
2 7	5 3	0 0 0 1	0 2 0 1 0 9	2 3 1 2 0 9	C _ total	3 2	0 . 0 1 0 0	9 . 5 4	1 1	1		3 H 2 5	7 9			

QA/QC Forms: Comments to some Fields:

Why entering each plot and each parameter separately?

- Enables the coding of <u>different</u> analyzing laboratories on <u>plot level within a country.</u>

- Enables the coding of <u>different</u> analyzing laboratories on <u>parameter level within a plot.</u>

=> In cases, that one laboratory is responsible for all parameters on all plots within a country, it is a "copy-paste-exercise", only changing the respective plot number.

QA/QC Forms: Comments to some Fields:

start_date, end_date:

- Enables the coding of the <u>change</u> of the analyzing laboratory <u>during a year.</u>

- The start_date is the <u>first</u> (analysing) date from which the laboratory analysed the data from the respective plot, sampler and parameter.

- The end_date is the <u>last day</u> of the analyses of the respective plot sampler and parameter combination.

=> Only in case, that a laboratory has been changed during one monitoring year, it would be necessary to use an additional data row with the respecting time period in which the new laboratory has been analysed the data.
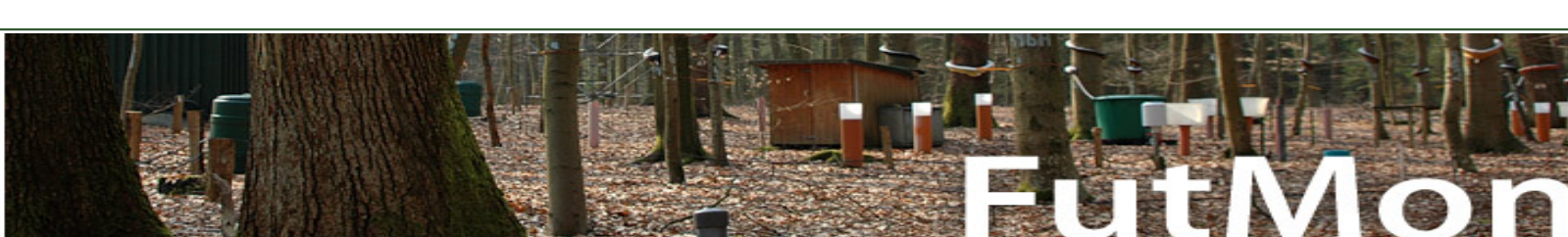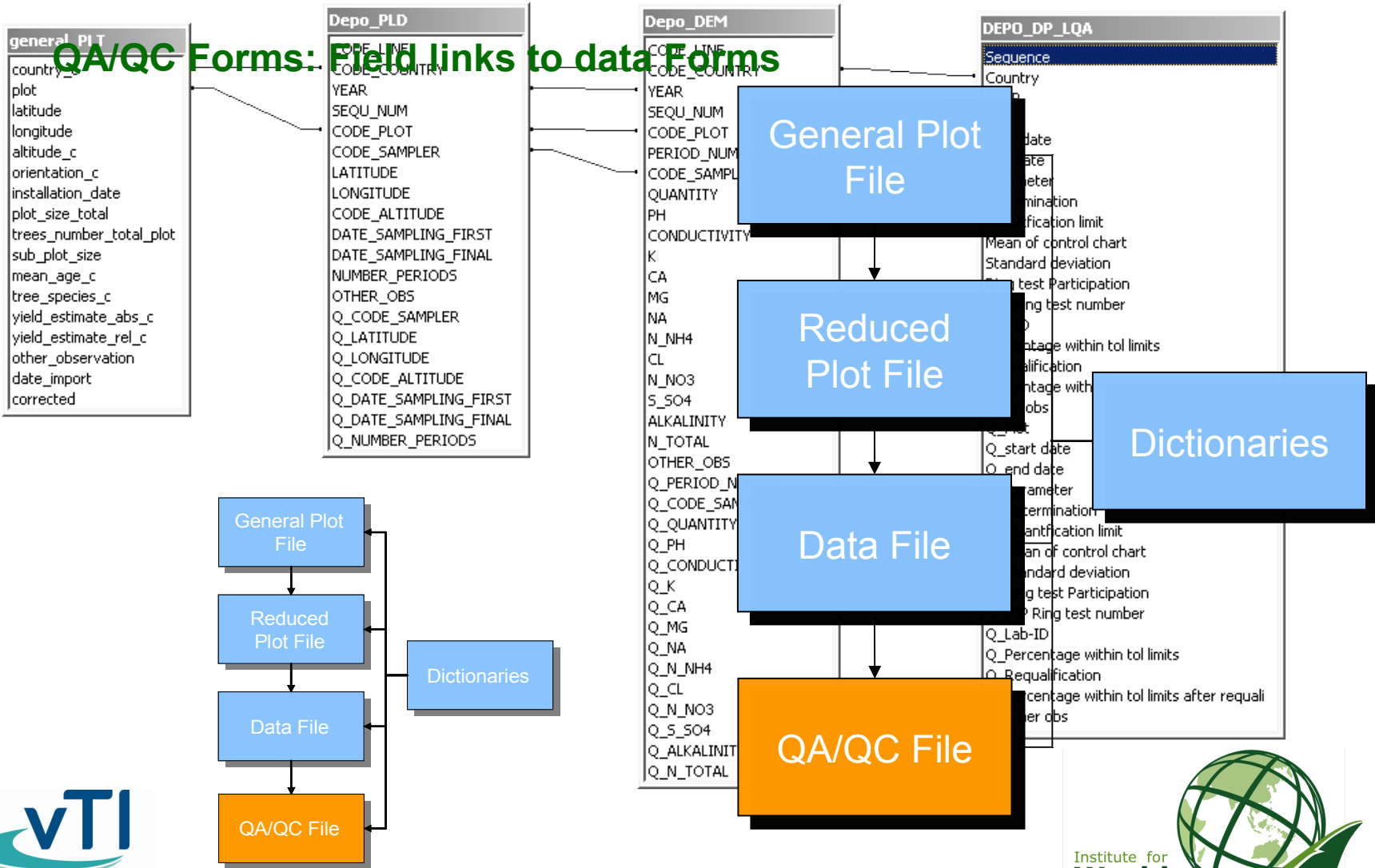
QA/QC Forms: Field links to data Forms

QA/QC Forms: Field links to data Forms

DEM:

Sequence	Country	Plot	Period	Start Date	End Date	pH	Conductivity	K	Ca	Mg	Na	N-NH4	....
1	53	5	1	210209	180409	5.2	73	5.5	3.9	0.7	0.8	2.3	…
2	53	5	2	180409	190509	4.3	28	0.5	1.5	0.1	0.3	0.8	…
..		..	..		..	..		..	..	..	..	…

Primary key fields

Link to year

Corresponding parameter

DP.LQA:

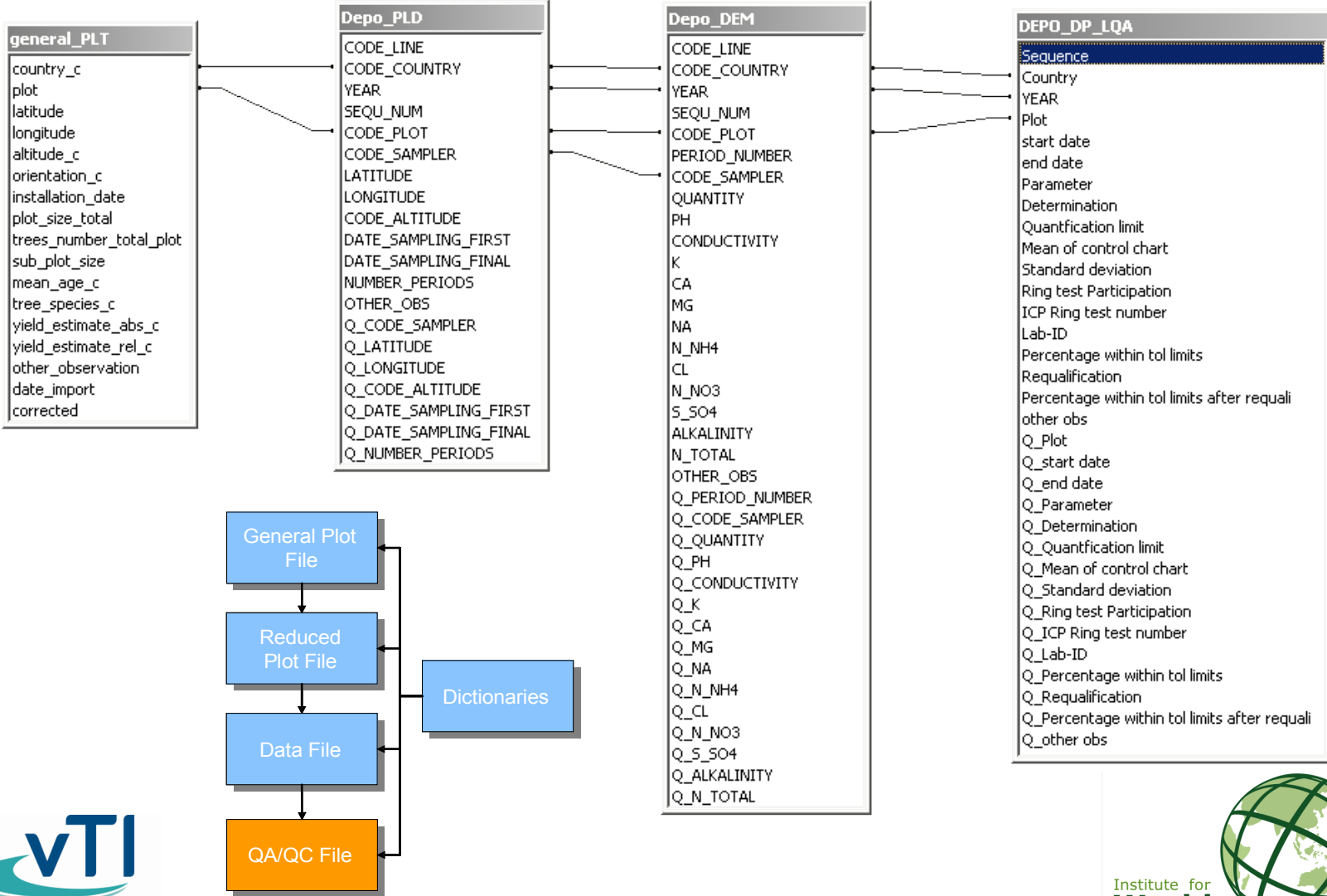| Sequence 01--04	Country 06--07	plot number 09--12	start_date (DDMMYY) 14--19	end_date (DDMMYY) 21--26	Parameter 28--34	Determination method 36--39	. . .
1	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	p H	7 2 . 1	. . .
2	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	C o n d	7 1 . 1	. . .
3	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	K	2 1	. . .
4	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	C a	2 1	. . .
5	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	M g	2 1	. . .
6	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	N a	2 1	. . .
7	5 3	0 0 0 5	0 2 0 1 0 9	2 3 1 2 0 9	N _ NH4	6 0 . 1	. . .
…	.	.	. . . . . .	. . . . . .	.	. . . .	. . .

Outlook:

- First Submission for QA/QC-Data: Monitoring year 2009.
  Data Submission period: 01/09/2010 - 30/11/2010
- Monitoring years 2007/2008 on voluntary basis.
  Data Submission period 2007: 15/12/2009 - 15/03/2010
- Development of validation routines for QA/QC-Forms.
⇒ We need the support by the Working Group on QA/QC in Laboratories and respective Expert Panels!

Thank you for your attention!

QA/QC Forms: Field links to data Forms