



The BonaRes infrastructure for open soil and agricultural research data: Use-case “Long-term Field Experiment data”

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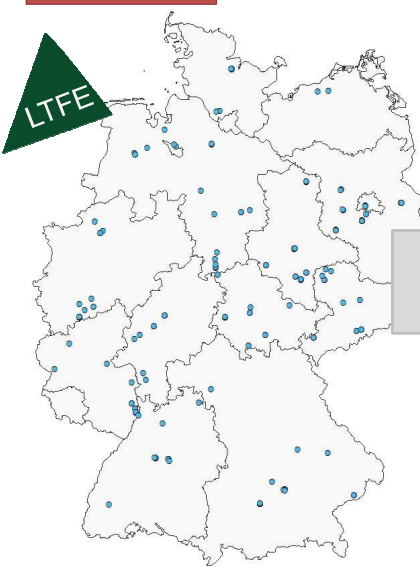
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Background

In the frame of the German funding initiative BonaRes (“Soil as a sustainable resource for the bioeconomy”) a data infrastructure was set-up to upload, manage, store, archive, and provide soil- and agricultural research data, data from long-term field experiments (LTFE) and associated metadata.

- LTFE are **heritages** for agricultural science
- In Germany **more than 200 LTFE** with running times of >20 years were identified
- LTFE data are highly divers, decentralized, difficult to access and to compare and inconsistently described by metadata
- An uniform **BonaRes LTFE data base schema** (including agricultural activities, methods, units, and results) would facilitate data **re-usability**

Recent situation

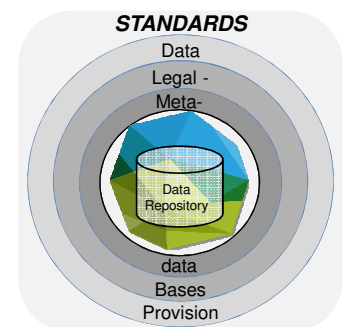


Data & Formats

- Crop culture
- Varieties
- Seeding date
- Fertilization
- Yield
- Plant data
- Soil data
- Plant protection
- Irrigation
- Harvesting machines
- Experimental setup
- Plot size
- Replication
- Coordinates
- Climate data
- Units
- Operator
- Comments
- Rights and liability
- Metadata
- ...



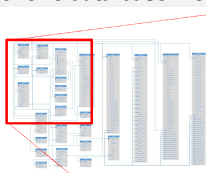
Goal



- Find & discover
- Standardized data
- Access & provision
- Interoperability



Generic data base model



- Foreign & primary keys
- Mandatory & optional fields
- Internal & external codes
- Controlled vocabularies & thesauri
- Integration to ICASA Version 2 Standard
- Interoperability Global Long-Term Experiments Network (GLTEN)

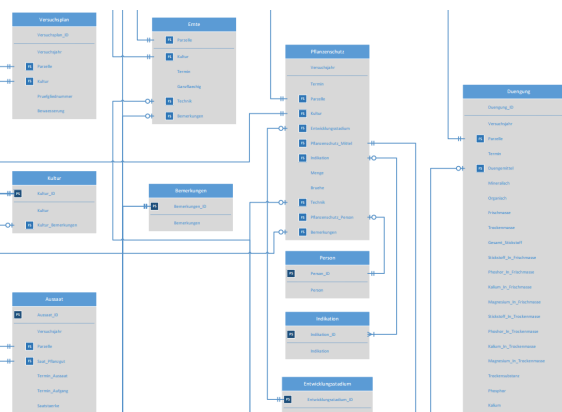


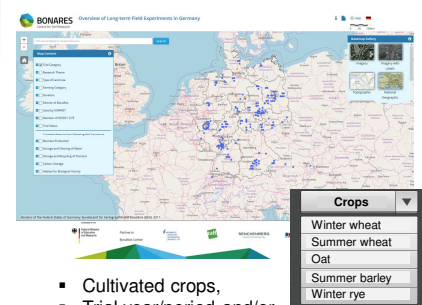
Figure: Entity-Relation diagram (outout) of the generic data base schema for LTFE data

User-friendly template for data upload

A					B					C					D					E					F					G				
Kultur_ID		Kultur	Kultur_englisch	Icc_Code	Bemerkungen_ID	Sorte_ID	Sorte	Bia_Code	Kultur_ID	Bemerkung	A		B		C		D		E		A		B		C		D		E		F		G	
1	1	Kultur	Kultur_englisch	Icc_Code	Bemerkungen_ID	1	Sorte_ID	Sorte	Bia_Code	Kultur_ID	Bemerkung	1	103	102	1012	2012	2012-03-21-3-4	Tiefe	Technik_ID	Parzelle_ID	Bodenbearbeitung_Massr													
2	1	Kultur	Oats	17		1	1 Scorpion	HA 1550		1	103	102	1012	2012	2012-03-21-3-4	1	6	1																
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4	3	Raps	Rapeseed	435		3	3 Violey	RAW 2551		3	105	102	1012	2012	2012-03-21-3-4	1	8	1																
5	4	Ramkilaust	Rapeseed	435		4	4 unbekannt			4	106	105	1012	2012	2012-03-21-3-4	1	9	1																
6	5	zweischuttschichtn	Cover crop mixture (15 kg/ha + 50% buckwheat, 30 % sunflower, 10% Phac			5	5 unbekannt			5	107	106	1012	2012	2012-03-21-3-4	1	10	1																
7	6	Winterweizen	Winter wheat	11		6	6 Matrix	WW 3941		6	108	107	1012	2012	2012-03-21-3-4	1	11	1																
8	7	Ackerbohnen	Field bean	72		7	7 Rumor	WW 4423		7	108	108	1012	2012	2012-03-21-3-4	1	12	1																
9	8	Wintergerste	Winter barley	15		8	8 Sherpa	RAW 3068		8	110	109	1012	2012	2012-03-21-3-4	1	13	1																
10	9	Winterroggen	Winter rye	16		9				9	111	110	1012	2012	2012-03-21-3-4	1	14	1																
11	10	Körnererbse	Field pea	77		10				10	112	111	1012	2012	2012-03-21-3-4	1	15	1																
12	11	Silomais	Silage	12		11				11	112	112	1012	2012	2012-03-21-3-4	1	16	1																
13	12	Sommergerste	Spring barley	13		12				12	114	113	1012	2012	2012-03-22	1	1	3																
14	13	Erbsen	Field pea	77		13				13	115	114	1012	2012	2012-03-22	2	2	3																
15	14	Erbsen	Field pea	77		14				14	116	114	1012	2012	2012-03-22	2	3	3																
16	15	Erbsen	Field pea	77		15				15	116	114	1012	2012	2012-03-22	2	3	3																
Vignette		Densität	Trocken	Samenmenge	Ertragskriterium	Sorten	Indikator	Bodenbearbeitung	Messungsbm	Bodenbearbeitung	Ertragskriterium	Mittel	Ertragskriterium	Kultur	Sorten	Ertragskriterium	Sorten	Ertragskriterium	Sorten	Vignette	Ertragskriterium													

Data queries (planned)

Drop down menus in Data Portal



- Cultivated crops,
- Trial year/period and/or
- Location/region



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