



JKI

Julius Kühn-Institut

Bundesforschungsinstitut für Kulturpflanzen
Federal Research Centre for Cultivated Plants

C&E data in the European *Avena* Database and the International Database for *Beta*

Christoph U. Germeier

www.jki.bund.de

Basic concepts

E+C data presentation in the EADB and IDBB

E+C data acquisition in the AVEQ project

Used technology for AVEQ

Basic Concepts: Philosophy

- Store all data as original as available.
- Measurement data in SI units are generally preferred.
(Algorithms to generate easy to read scores from measurement data can be made available more or less easily while reconstruction of original measurement results from scores is not possible).
- Give all background information as considered necessary for scientific publication in atomised (= searchable, sort able, filterable) form: methodological, experimental, geographic.
- Offer the user an easy to read ranking (1-9) for first orientation, but give him the possibility also to go into original data.

Structure of the Observation Table



Identifiers (Foreign Keys)			Text Data
<i>GENOTYPE / ACCESSION</i>			
HolderCode	Char 15		OriginalScore Char 8
AccessionNumber	Char 15		Homogeneity Char 15
<i>GenotypeID</i>	<i>Integer</i>		Remark Char 70
<i>Accession/StandardName</i>	<i>Char 50</i>		DataAvailable Char 2
<i>METHODOLOGY</i>			
DescriptorID	Integer		
MethodID	Integer		
<i>EXPERIMENTAL</i>			
ExperimentID	Integer		
TreatmentCode	Char 15		
<i>ORIGINAL PLOT</i>			
<i>OriginalPlot</i>	<i>Char 15</i>		
Numeric Data			
		ScoringDate	Date
		ScoringStage	Integer
		Replications	Integer
		PlantsTested	Integer
		AbsoluteValue	Float
		Percentage	Float
		NumericScore	Float
		Frequency	Float
<i>STATISTICS</i>			
		StandardDeviation	Float
		StandardError	Float
		VariationCoefficient	Float
		Minimum	Float
		Maximum	Float
		Skewedness	Float
		Kurtosis	Float
<i>STANDARDISED DATA</i>			
		UniversalScore	Float

Data presentation: query generator



Adresse <http://eadb.bafz.de/eadb/index.html> Wechseln zu Links

Adresse <http://eadb.bafz.de/eadb/index.html> Wechseln zu Links

EADB
European Avena
Database

[Introduction](#)
[Online SEARCH](#)
[GENRES SEARCH](#)
(password protected)
[EADB Help](#)

[Your Feedback](#)

[GENRES](#)
[BAZ Genebank](#)
[Project GENRES 99-106](#)
[Home](#)



EADB

European Avena Database

Display results


<input type="button" value="Cross table"/>	for selected characterisation and evaluation descriptors	aggregated <input checked="" type="checkbox"/>
<input type="button" value="Observations"/>	for selected characterisation and evaluation descriptors	<input checked="" type="checkbox"/>
<input type="button" value="Standard observations"/>	listed for selected characterisation and evaluation descriptors	<input checked="" type="checkbox"/>
<input type="button" value="Observation methodology"/>	used for the selected characterisation and evaluation descriptors	
<input type="button" value="Experimental details"/>	for the selected characterisation and evaluation observations	
		include duplicates
<input type="button" value="Passport data"/>	for the selected accessions as available	<input checked="" type="checkbox"/>
<input type="button" value="Genebanks"/>	holding the selected accessions	<input checked="" type="checkbox"/>
<input type="button" value="Pictures"/>	for the selected accessions as available	
<input type="button" value="Alleles"/>	found for the selected traits and accessions	<input type="button" value="Genotype wise"/>

EPGRIS 3 Meeting: Characterisation and Evaluation Data

Data presentation: Observation – Cross Table

ObservationControl -> reportCrosstable(...)

Display results

 Cr

Obs

Standard observ



Observation method

Experimental



Pass

Ge

Adresse <http://eadb.bafz.de/eadb/rptResult.php> Wechseln zu Links

Cross table for the selected accessions

Bundesministerium
für Verbraucherschutz, Ernährung
und Landwirtschaft

download Crosstable

TAXON_CULTIVAR	HOLDERFAOCODE	ACCESSIONNUMBER	PROTEIN_IN_CARYOPSIS	SEED_WEIGHT	SHAPE_OF_PANICLE
Avena sativa var. brunnea Koern. [Milton]	DEU001	16758	7	5	1,8
Avena sativa [Noire Champenoise A Grappes]	FRA040	19286	8	2,5	1,3
Avena sativa ssp. sativa convar. sativa var. aurea Koern. [Madrid]	DEU001	16792	9	7,4	1,8
Avena sativa ssp. sativa convar. orientalis var. flava Koern. [Local]	RUS001	8479	7	2,3	1
Avena sativa var. aristato-nigra [Joanette (Avoine De Chenailles)]	FRA040	19371	7	1	1
Avena sativa ssp. sativa convar. sativa var. mutica ALEF. [Storm King]	GBR005	01256	1,5	8,8	1,3

BAZ Gene Bank Braunschweig, Germany
Powered by: German Centre for Documentation and Information in Agriculture (ZADI)

Data presentation: Observation – Listing


ObservationControl -> reportListing(...)



Adresse <http://eadb.bafz.de/eadb/rptResult.php> Wechseln zu Links



Observation details for the selected accessions



TAXON_CULTIVAR	HOLDERFAOCODE	ACCESSIONNUMBER	DESCRIPTOR	UNIT	EXPERIMENTS	UNIVERSALSCORE	ABSOLUTEVALUE	PERCENTAGE	NUMERICSCORE	MINIMUM	MAXIMUM
Avena sativa var. brunnea Koern. [Milton]	DEU001	16758	Seed weight	g	5	5	26,3			22	32
Avena sativa var. brunnea Koern. [Milton]	DEU001	16758	Shape of panicle	Score	6	2			2,2	1	4

Adresse http://eadb.bafz.de/CCDB_PHP/main/Download.php Wechseln zu Links >>

A2 = TAXON_CULTIVAR

	A	B	C	D	E	F	G	H	I	J	K	L
	TAXON_CUL	HOLDERFAC	ACCESSION	DESCRIPTOR	UNIT	EXPERIMENT	UNIVERSALS	ABSOLUTEVE	PERCENTAG	NUMERICSC	MINIMUM	MAXIMUM
3	Avena sativa	DEU001	16758	Seed weight	g	5	5	26,3			22	32
4	Avena sativa	DEU001	16758	Shape of pan	Score	6	2			2,2	1	4
5	Avena sativa	DEU001	16758	Protein in car	%	1	7		14		14	14
6	Avena sativa	FRA040	19286	Seed weight	g	4	3	23			21	25
7	Avena sativa	FRA040	19286	Shape of pan	Score	4	1			1,3	1	2
8	Avena sativa	FRA040	19286	Protein in car	%	1	8		16		16	16
9	Avena sativa	DEU001	16792	Seed weight	g	5	7	31,4			27	35
10	Avena sativa	DEU001	16792	Shape of pan	Score	5	2			2,7	1	6
11	Avena sativa	DEU001	16792	Protein in car	%	1	9		15		15	15
12	Avena sativa	RUS001	8479	Seed weight	g	4	2	24,4			21	29
13	Avena sativa	RUS001	8479	Shape of pan	Score	4	1			1	1	1

Download

Data presentation: Methodology





MethodologyControl -> reportMethodology(...)

Adresse <http://eadb.bafz.de/eadb/rptResult.php> Wechseln zu Linkss



Panicle	IBPGR 4.2.1 Shape of panicle	Stage 65-75									
	IBPGR 4.2.1 Panicle shape rating	Score									
		<table border="1"> <thead> <tr> <th>ORIGINAL</th> <th>HARMONIZED</th> <th>KEYDESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>Unilateral</td> </tr> <tr> <td>2</td> <td>3</td> <td>Equilateral</td> </tr> </tbody> </table>	ORIGINAL	HARMONIZED	KEYDESCRIPTION	1	1	Unilateral	2	3	Equilateral
ORIGINAL	HARMONIZED	KEYDESCRIPTION									
1	1	Unilateral									
2	3	Equilateral									

BAZ Gene Bank Braunschweig, Germany
 Powered by: German Centre for Documentation and Information in Agriculture (ZADI)

ECP/GR

Methodology used in selected observations

Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft

Panicle	IBPGR 4.2.1 Shape of panicle	Stage 65-75												
	BSA 8 Orientation of lateral branches	Score												
	In a drill plot (3,9 m2, row distance 20cm, 6 rows, 1000 plants) rating when first spikelet visible in 50% of panicle	<table border="1"> <thead> <tr> <th>ORIGINAL</th> <th>HARMONIZED</th> <th>KEYDESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>Unilateral</td> </tr> <tr> <td>2</td> <td>2</td> <td>Subunilateral</td> </tr> <tr> <td>3</td> <td>3</td> <td>Equilateral</td> </tr> </tbody> </table>	ORIGINAL	HARMONIZED	KEYDESCRIPTION	1	1	Unilateral	2	2	Subunilateral	3	3	Equilateral
ORIGINAL	HARMONIZED	KEYDESCRIPTION												
1	1	Unilateral												
2	2	Subunilateral												
3	3	Equilateral												

and Evaluation Data

Data presentation: Experiment



ExperimentControl -> reportExperiments(...)





Display result

- Standards
- Observations
- Experiments**

Adresse <http://eadb.bafz.de/eadb/rptResult.php> Wechseln zu Links

Settings for the selected Experiments

Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft

2001AVEN04:

EU funded GENRES106
 Evaluation and enhancement of Avena landrace collections for extensification of the genetic basis of Avena for quality and resistance breeding

2001

AccessionMeans
AccessionScores
StandardMeans
StandardScores

Institution	Site	Description
<p>Federal Centre for Breeding Research on Cultivated Plants - Genebank <i>Bundesanstalt für Züchtungsforschung - Genbank</i></p> <p>Bundesallee 50 D-38116 Braunschweig DEU: GERMANY</p>	<p>ENVIRONMENT Experimental Field COUNTRY DEU: GERMANY STATE Niedersachsen DISTRICT Braunschweig LOCATION Volkenrode FARM FAL - Versuchsstation SITE Hauptfeld 4</p>	<p>Evaluation: 308 landrace / traditional cultivar accessions + 4 blocks of 10 project standards from five European project partners (2 standards from each partner)</p>

Treatments

TREATMENT	SOWING	ROW_CM	SEEDS_PER_QM	PLOT_QM	IRRIGATION	INFESTATION	TILLAGE	FERTILIZER
Extensive Low input	20010409	25	120	x	Both/alternate		traditional: plow < 30cm	None

Data presentation: Pictures



PictureControl -> reportPictures(...)

Adresse <http://eadb.bafz.de/eadb/rptResult.php> Wechseln zu Links

Pictures for the selected accessions and their duplicate groups

<i>Avena sativa</i> L. [Ladiz. biol. species] - <i>Avena sativa</i> var. <i>nigra</i> Krause - <i>Avena sativa</i> ssp. <i>sativa</i> convar. <i>orientalis</i> var. <i>tristis</i> Alef. ['Rodionova et al. 1994' System(s)]		Haig Sir Douglas (Earl)	GBR: UNITED KINGDOM	1926-1991
Origin		Collecting Site		
SAMPLESTATUS	Advanced cultivar			
COLLECTINGDATE	1926			
Picture Data		Agronomic Data		
HOLDER DEU146 ACCESSION AVE 643 PROJECT GENRES106 EXPERIMENT 2003AVEN14 DATE 2003-07-11				GRAIN YIELD [76-]189.5[-303] g/m ²
				Seed weight [31-]36.9[-41] g
				Test weight 45.4 kg/hl
				Biomass yield 578.2 g/plot
				Days to heading [45-]67[-92] Days
				Height of plant [99-]116.1[-149] cm
				Protein in caryopsis [16-]16[-17] %
				Lodging at mature stage [0-]2.9[-6] Score
				Erysiphe graminis avenae 9 Score
				Puccinia coronata avenae 9 Score

Geographic visualisation of C+E Data (IDBB)

Map selected accessions and traits

On click display for selected accession:

- Passport
- Evaluation
- Pictures

Trait:

Descriptor:

Operator:

Compare:

Score:

BAZ Gene Bank Braunschweig, Germany
Powered by: German Centre for Documentation and Information in Agriculture (ZADI)

1 of 1

Data acquisition in AVEQ:

Vision of the web application



Facilitate inclusion of project data into a central database by:

- > promoting standardized ways of data generation.
- > take over routine calculations.
- > promote standardization of concepts and identifiers (ontologies).
- > create a repository of web solutions (tool set) for managing cooperative multisite genetic resources work.

Issues: Project methodology

Field plans

Scoring lists and Excel templates for data input

Input harvest results

Import Excel spreadsheets

Data acquisition in AVEQ: Used Technology



Java Enterprise Edition (JEE 5) Frameworks and Components:

- JBoss Application Server
- Hibernate: Database-Abstraction / Object Relational Mapping
- Seam / SeamGen
- Rich Faces (Implementation of Java Server Faces Standards)

All used frameworks and components including the application server are open source and available without costs.
The source code will be made available in CropForge.

Generate fieldplan



Generate fieldplan

Cancel Create fieldplan

Selected Accessions

Evaluation

evaluationId	addressCode	addressFaocode	par
2008AVEQQualityDEUSeeds			

Created experiment

Name testXXL

Replications 5

Plots per lane 32

Selected 11 standards

Selected 312 entries

Set marker at block boundaries?

Set marker for field orientation?


Field evaluation

- View fieldplan (evaluation)
- Generate fieldplan**
- Generate sowing list
- Generate rating list
- Edit experiment
- View experiments
- Upload pictures
- Import spreadsheet
- describeSpreadsheet

Generate fieldplan



Meistbesuchte Seiten Erste Schritte Aktuelle Nachrichten BAZ: Startseite Deutsch firefox http://www.google.d...

 Avena genetic resources for quality in human consum

Collection Seed transfer Viability test Seed multiplication Methodology Field evaluation Analytics

View Fieldplan

testXXL [Download pdf](#)

Fieldplan Fieldlist Sowinglist

Lanes>	1	2	3	4	5
Plots					
32	I FRA040 30038 CHIMENE A. sativa	I DEU146 AVE 1013 Cenad 88 A. sativa subsp.sativa var.mutica	II CZE074 Azur Azur A. sativa	II DEU146 AVE 2954 ovaz A. sativa subsp.sativa var.aurea	III EST001 00011 Miku A. sativa subsp.sativa var.aurea
31	I RUS001 200107022 LOCAL A. sativa subsp.sativa var.persica	I BGR001 A7BM0001 Mina A. sativa subsp.nudisativa	II DEU087 CPVO19990291 FREDDY A. sativa	II DEU060 DEU101-HA 1176 Flämingsprofi A. sativa	III DEU146 AVE 4794 Wirchenblatter A. sativa

Generate rating list



Collection Seed transfer Viability test Seed multiplication Methodology **Field evaluation** Analytics

Generate rating list

Generate PDF Generate XLS

Select methodology

	<u>First stage</u>	<u>Last stage</u>	<u>Name</u>	<u>Trait</u>	<u>Status</u>	<u>Method</u>	<u>Unit</u>	<u>Method code</u>	<u>Method description</u>														
<input checked="" type="checkbox"/>	09	11	Emergence	Agronomy	optional	Emergence count along rows	Number		Count the number of emerged plants along one meter in two neighbouring rows per plot														
<input type="checkbox"/>	25	29	Growth habit	Habit		Growth habit rating UPOV	Score	UPOV 1 / BSA 1	At juvenile stage, angle of the tillers from the vertical in a drill plot (3,9 m ² , row distance 20cm, 6 rows, 1000 plants) Show keys														
<input checked="" type="checkbox"/>	31	73	Barley yellow dwarf virus	Disease	on occurrence	BYDV Rating: Combined Method Plot Percentage and Score	Score		Estimate percentage of plants infected in the plot. Score most infected plant according to scale. <table border="1"> <thead> <tr> <th>Key</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>no symptoms</td> </tr> <tr> <td>3</td> <td>slight dwarfing</td> </tr> <tr> <td>5</td> <td>considerable dwarfing</td> </tr> <tr> <td>7</td> <td>considerable dwarfing and small panicles</td> </tr> <tr> <td>8</td> <td>no tillering</td> </tr> <tr> <td>9</td> <td>plant dead</td> </tr> </tbody> </table>	Key	Description	1	no symptoms	3	slight dwarfing	5	considerable dwarfing	7	considerable dwarfing and small panicles	8	no tillering	9	plant dead
Key	Description																						
1	no symptoms																						
3	slight dwarfing																						
5	considerable dwarfing																						
7	considerable dwarfing and small panicles																						
8	no tillering																						
9	plant dead																						

Generate rating list



Experiment Code: AVEQInc12

Descriptor	Emergence										
Descriptor code											
Trait code	Agronomy										
Method	Emergence count along rows										
Unit	Number										
Method code											
Method description	Count the number of emerge										
Sample size	2										
Status	optional										
Keys											

Lane	Plot	Status	FAO code	Accession number	Date	Stage min	Stage mean	Stage max	Emergence (Number)	Emergence (Number)	Barley yellow dwarf virus (Score)
1	1	Marker									

Microsoft Excel - rating_listXLS.xls [Schreibgeschützt]

Frage hier eingeben

A1 Lane

A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Lane	Plot	Status	FAO cod	Accession number	Date	Stage min	Stage mean	Stage max	Emergence (Number) 1	Emergence (Number) 2	Barley yellow dwarf virus (Score) 1	Barley yellow dwarf virus (Score) 2
2	1	1	Marker										
3	1	2	Standard	DEU481	CPVO20022073								
4	1	3	Project	RUS001	200110506								
5	1	4	Project	FRA040	19631								
6	1	5	Project	POL003	PL51466								
7	1	6	Project	RUS001	200108062								
8	1	7	Project	DEU146	AVE 1626								
9	1	8	Project	RUS001	200110612								
10	1	9	Project	CZE047	03C0700043								
11	1	10	Standard	ROM007	ROM007-16701								
12	1	11	Project	SWE002	NGB8760								
13	1	12	Project	POL003	PL50403								

Input harvest results



Edit fieldlist for experiment 2x300

Save changes

Navigation: << < 1 2 3 4 5 6 7 8 > >>

Treatment	Lane	Plot	FAO code	Accession	Plot yield [g]	Plot yield [g dm]	TGW sample	TGW [g]	TGW [g dm]	Number of seeds	Moisture [%]	Testweight [kg/hl]
FullPlot	1	1			<input type="text"/>		<input type="button" value="Input TGW samples"/>				<input type="text"/>	<input type="text"/>
FullPlot	1	2	DEU146	AVE 4259	909.59		<input type="button" value="Input TGW samples"/>	27.4778		33103	6.6	41.7
FullPlot	1	3	HUN003	RCAT011413	<input type="text"/>		<input type="button" value="Input TGW samples"/>				<input type="text"/>	<input type="text"/>
FullPlot	1	4	BGR001	BGR 351	223.14						<input type="text"/>	<input type="text"/>
FullPlot	1	5	AUT001	BVAL-450001	673.66						10.2	55.3
FullPlot	1	6	SWE006	CPVO19960125	<input type="text"/>						<input type="text"/>	<input type="text"/>
FullPlot	1	7	CZE047	Saul	<input type="text"/>						<input type="text"/>	<input type="text"/>

enter TGW

Experiment 2x300	FAO code HUN003
Lane 1	Accession number RCAT011413
Plot 3	

Enter Values

Count	Weight	Date	TGW
<input type="text"/>	<input type="text"/>	20090301	g
<input type="text"/>	<input type="text"/>	20090301	g
<input type="text"/>	<input type="text"/>	20090301	g

Import Spreadsheet



Import spreadsheet

Cancel Save import protocol

Experiment code 1x150

Filename ratingListXLS-1X150Emerg.xls

Selected sheet Sheet1

Selected header row Lane Plot Status Holder FaoCode Accession Number Date Stage min

Emergence 2

Map columns of your spreadsheet to database items

column	columnHead	Item	Status	Trait	Descriptor	Method ID	Method code
0	Lane	Lane					
1	Plot	Plot					
2	Status	Status					
3	Holder FaoCode	HolderCode					
4	Accession Number	AccessionNumber					
5	Date	ScoringDate	DD.MM.YY				
6	Stage min	ScoringStageMin					
7	Stage mean	ScoringStage					
8	Stage max	ScoringStageMax					
9	Emergence 1	AbsoluteValue		Agronomy	Emergence	322	
10	Emergence 2	AbsoluteValue		Agronomy	Emergence	322	

field evaluation **Analytics**

View fieldplan (evaluation)

Generate fieldplan

Generate sowing list

Generate rating list

Edit experiment

View experiments

Upload pictures

Import spreadsheet

Experiment code

2x300

Import spread

Cancel

Select Excel

E:\projekte\

Select exper

clear

Show exper

Project Code Name

Sowing : Descripti Design



Thanks for your attention