

# Integration of C&E data into EURISCO (including IDBB data)

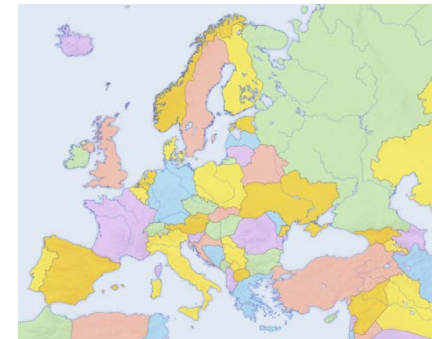
BETANET Meeting, 19–20 June 2018, Venice, Italy

Stephan Weise



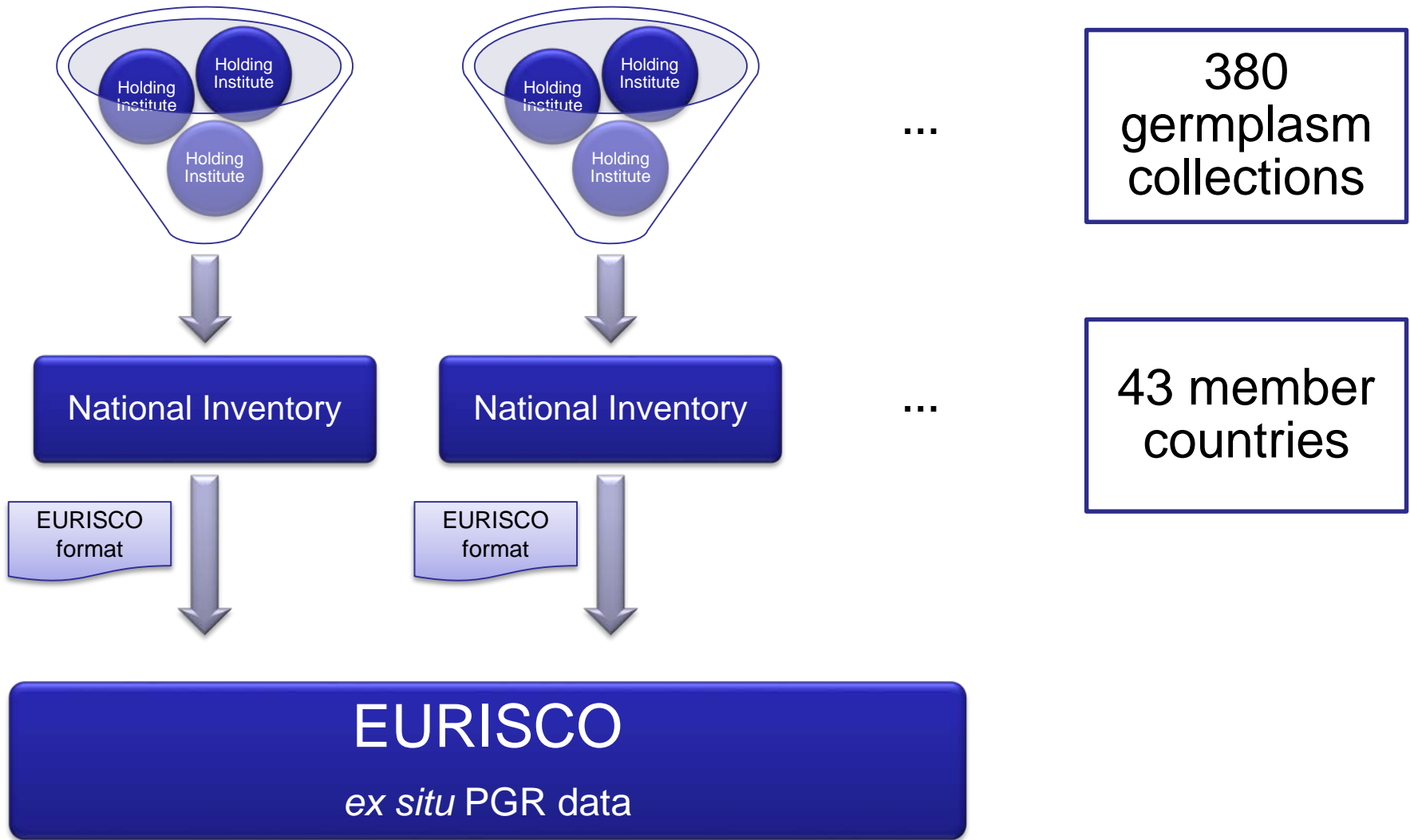
# Background

- What is EURISCO?
  - European information system for plant genetic resources
  - Search catalogue for *ex situ* collections
  - Accession-level information system
- Purpose
  - Provides passport data and phenotypic data about plant germplasm accessions maintained in Europe
  - Assists in meeting national obligations
    - Food and Agriculture Organization of the United Nations (FAO)
    - Convention on Biological Diversity (CBD)
    - International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)



[https://upload.wikimedia.org/wikipedia/commons/8/81/Europe\\_countries\\_map\\_2.png](https://upload.wikimedia.org/wikipedia/commons/8/81/Europe_countries_map_2.png)

# Data flow



# Contents of EURISCO

- 1,973,603 accessions
- 6,438 genera  
(including synonyms, spelling variants)
- 43,994 species names  
(unique combinations genus + species, including synonyms)
- 419,789 MLS accessions
- 34,364 AEGIS accessions
- 22,906 DOIs



as at 2018-06-06

Weise et al. (2017) *Nucleic Acids Research*, 45(D1):D1003-D1008.

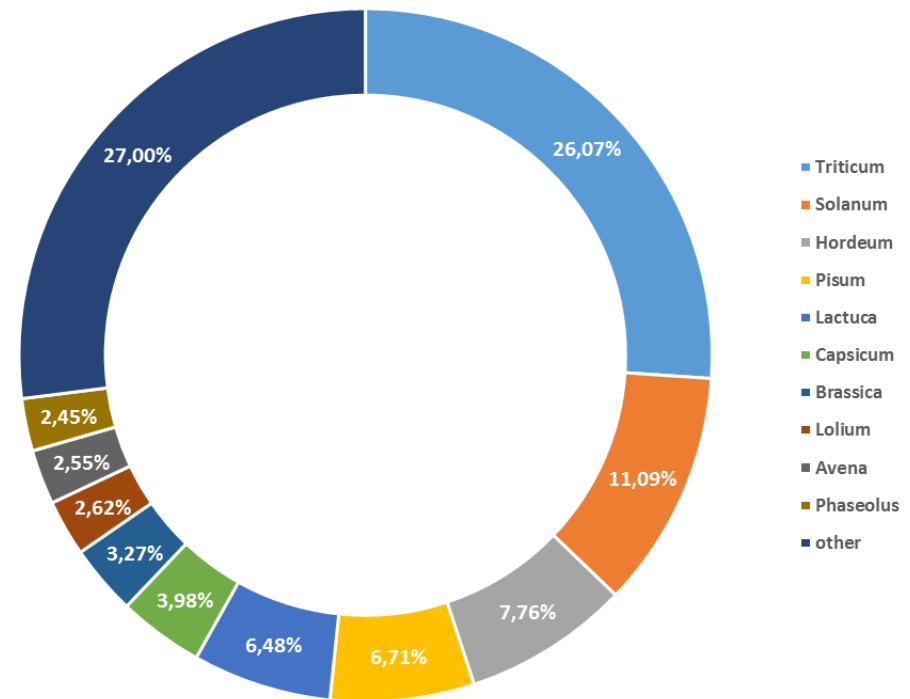
# Passport data in EURISCO

- Four standard searches:
  - Taxonomy
  - Accession
  - Biological status
  - Collecting site
- Advanced search
- Different user-specific export features

The screenshot displays the EURISCO website interface. At the top, the logo for EURISCO (Finding seeds for the future) is visible, along with navigation links like Home, About, Search, C&E data, Statistics and documents, and Imprint / Data Protection Policy. The main content area is titled 'Passport data' and includes a search bar and a navigation menu with options like National inventory, Holding institute, Accession, Taxonomy, Acquisition/storage, Collection, Donor, Breeder, and Other. The 'National inventory' section is expanded, showing details for a specimen from the Portuguese Bank of Plant Germplasm, Braga, Portugal. The specimen's taxonomy is listed as Genus Brassica, Species oleracea, and Subtaxa var. acephala. The 'Acquisition/storage' section is also expanded, showing collection details: Collecting Number 38/2014 A, Collecting Institute Code PRT001, Collecting Date 2014-03-25, Collecting Latitude 40.338611, Collecting Longitude -7.130556, Collecting Elevation 872, and Collecting Site Portugal, Guarda. A map of the region is shown below the collection details. The 'Donor', 'Breeder', and 'Other' sections are collapsed. The footer of the page indicates 'release 1.2.6'.

# C&E data in EURISCO

- Currently, 1,652,895 records of data from seven countries
  - Czech Republic
  - Germany
  - Latvia
  - The Netherlands
  - Poland
  - Romania
  - United Kingdom



- 68,821 accs. with C&E data

as at 2018-06-06

# Search for C&E data I

Filter C&E data by genus

Genera \*

- Brassica
- Capsicum
- Chondrilla
- Cicerbita
- Cucumis
- Eruca
- Ixeridium
- Linum
- Lupinus
- Mycelis

Apply Reset

Allium  
Hordeum  
Lactuca

Genus	Count
Lactuca	105,021
Solanum	77,663
Capsicum	50,736
Triticum	37,301
Hordeum	32,852
Brassica	27,355
Spinacia	17,913
Cucumis	17,460
Pisum	17,233
Linum	14,354
other	29,712

Wizard-based searches for

- Genus
- Species and trait
- Experiment
- Trait

Filter C&E data by species and traits

Genus \* Lactuca

Species \*

- Lactuca aculeata Boiss.
- Lactuca altaica Fish. & Mey.
- Lactuca biennis (Moench) Fern.
- Lactuca homblei De Wild.
- Lactuca raddeana Maxim
- Lactuca saligna L.
- Lactuca sativa L.
- Lactuca sativa x serriola
- Lactuca serriola L.
- Lactuca tatarica (L.) C. A. Mey.
- Lactuca canadensis L.
- Lactuca dregeana DC.
- Lactuca georgica L.
- Lactuca perennis L.
- Lactuca indica L.
- Lactuca quercina L.

Traits \*

- Leaf color intensity ((3=light, 5=medium, 7=dar[...]))
- Leaf margin undulation (At harvest maturity[...])
- Leaf shape ((1=narrow elliptic, 2=el., [...]))
- Leaf shape ((1=round, 2=ovate, 3=obov[...]))
- Leaf vein prickles ((1=not present, 9=present[...]))
- Leaf vein prickles (-[...])
- Leaf venation (At harvest maturity (1 = n[...]))
- Nasonovia ribisnigri (Resistance to Nasonovia r[...])
- Nitrate content (Mean nitrate content of t[...])
- Pemphigus hirsarius ((1=very resistant, 2=resil[...]))

Apply Reset

Filter C&E data by experiment

The report below lists all experiments, which contain characterisation & evaluation (C&E) data. Please use the search bar below to define filters.

Go Rows 10 Actions

Experiment Start Year between 1967 and 2012

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Experiment Description	Dataset Remark	Experiment Start Year	Experiment End Year	Details
Sowing date = February 2, Planting date = April 17, IVT glasshouse XII, heated, soil culture, 2 stems, 4 plants per field, collection no. 567-659, experimelist H. Roelofsan and G. Pet, standard = Bruinsma Wonder	Test data CGN	1980	-	contained traits
Sowing date February 18, Planting date April 8, IVT glasshouse XII, heated, soil culture, 2 stems, 5 plants per field, collection no. 444-543, experimelist L. de Groot and G. Pet, standard = Bruinsma Wonder				
Sowing date = March 15, Planting date = April 26, IVT glasshouse XII, heated, soil culture, 2 stems, 5 plants per field, collection no. 660-762, experimelist L. de Groot and G. Pet, standard = Bruinsma Wonder				
Sowing date = February 28, Planting date = April 13, IVT glasshouse XII-IX, heated, soil culture, 2 stems, 5 plants per field, collection no. 763-869, experimelists L. de Groot and G. Pet, standard = Bruinsma Wonder				
Sowing date = February 24, Planting date = April 18, IVT glasshouse no. XII, heated, soil culture, 2 stems, 5 plants per field, collection no. 871-934, experimelists L. de Groot and G. Pet, standard = Bruinsma Wonder				
Sowing date = March 11, Planting date = April 26, IVT glasshouse XII, heated, soil culture, 2 stems, 5 plants per field, collection no. 935-981, experimelist L. de Groot and G. Pet, standard = Bruinsma Wonder				
Sowing date = March 13, Planting date = May 1, IVT glasshouse II-I, heated, soil culture, 2 stems, 5 plants per field, collection no. 982-1021, experimelist G. Pet, standard = Bruinsma Wonder				
Sowing date = March 20, Planting date = April 28, IVT glasshouse no. II-II, soil culture, 1 stem, 5 plants per field, collection no. 1476-1574, experimelist G. Pet, standard = Sonatine				
Sowing date = January 31, Planting date = March 31, IVT Glasshouse no. 12-7, heated, soil culture, 2 stems, 5 plants per field, collection no. 33-63, experimelist G. Pet, Standard = Claessee				
Sowing date = January 29, Planting date = March 28, IVT glasshouse no. 12-5, heated, soil culture, 2 stems, 5 plants per field, collection no. 1-111, experimelist G. Pet, standard = Claessee	Test data CGN	1979	-	contained traits

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0.03 s

Traits in selected experiment

Go Rows 10 Actions

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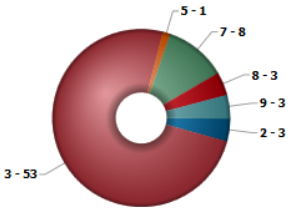
Trait Name	Trait Remark	Trait Method	Details
Fruit corrugation	-	(0=smooth, 3=slightly corrugated, 5=medium, 7=corrugated, 9=very corrugated)	SCORES
Fruit attitude	-	Bruinsma Wonder=7 (1=very drooping, 3=drooping, 5=horizontal, 7=semi-erect, 9=erect)	SCORES
Flower attitude	-	Bruinsma Wonders=7 (1=very drooping, 3=drooping, 5=horizontal, 7=semi-erect, 9=erect)	SCORES
Mature fruit color	-	(A=dark red, B=light r, C=orange, D=salmon, E=canary, F=sulphur, G=green, I=brown, J=light orange, K=white, a-b=both in one fruit)	SCORES
Tobacco mosaic virus	-	determined at natural infection (0=no symptoms, +=symptoms present)	SCORES
Stem anthocyanin content	-	Bruinsma Wonder=3 (0=absent, 1=very little, 3=little, 5=medium, 7=much, 9=very much)	SCORES
Fruit ribbing	-	(0=absent, 1=very little, ..., 9=very high)	SCORES
Flower color	-	(A=white, B=filly-white, C=light green, D=light purple, E=dark purple, F=yellow, G=white/anthocyanin)	SCORES
Fruit outerwall thickness	-	Measurement, 9=9mm or more.	SCORES
Fruit cracking tendency	-	(1=none, 3=slight, 5=medium, 7=medium to severe, 9=severe)	SCORES

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0.12 s

# Search for C&E data II

**Trait details**



**Descriptive statistics**

Trait Name	Minimum	Maximum	Average	Stddev	Variance	First Quartile	Median	Third Quartile
Fruit attitude	2	9	3.9	1.93	3.72	3	3	3

Experiment description: Sowing date = February 2, Planting date = April 17, IVT glasshouse XII, heated, soil culture, 2 stems, 4 plants per field, collection no. 567-659, experimentist H. Roelofsen and G. Pet, standard = Bruinsma Wonder

Trait name: Fruit attitude

**Additional filters**

Genus:

Origin Country:

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**Accession scores for selected trait**

Rows 10

1 - 10 of 71 >

NICODE	INSTCODE	GENUS	ACCENUMB	Score	Score Link	Origin Country	Biological Status	Details
NLD	NLD037	Capsicum	CGN16913	3	-	Germany	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16914	3	-	Netherlands	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16916	8	-	Israel	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16917	7	-	Israel	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16918	3	-	Hungary	Traditional cultivar/landrace	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16919	3	-	Hungary	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16920	7	-	-	-	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16904	9	-	-	-	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16905	3	-	-	Traditional cultivar/landrace	<a href="#">Accession details</a>
NLD	NLD037	Capsicum	CGN16906	3	-	-	Advanced or improved cultivar (conventional breeding methods)	<a href="#">Accession details</a>

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0.02 s



# Well known challenges

- Difficult to handle due to lots of “standards”:
  - Different descriptor names/synonyms
  - Different rating scales
    - Nominal, ordinal, metric scale
  - Different amounts of meta information
    - When, where, how, by whom?
    - Experiment set-up, treatment etc.

# Current EURISCO Approach

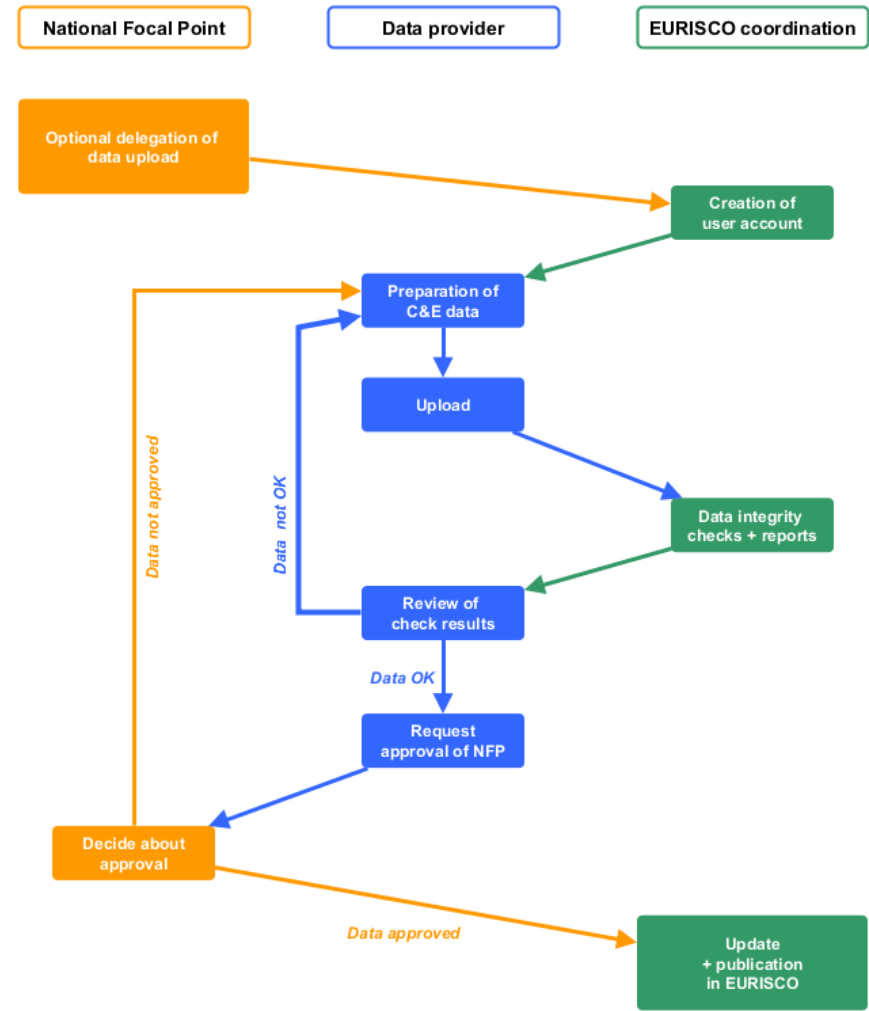
- Result of discussions of previous years
  - Suitable proposal compiled within the ECPGR Doc&Info working group
  - Pragmatic approach: Import of existing data as-is to reach critical mass
    - No standardisation of trait, scale or experimental design
    - Only standardisation of exchange format
      - As simple as possible
      - As few fields as possible
- “minimum consensus”

# Data model for C&E data



# Proceeding for data upload

- Prerequisite:
  - Only non-confidential C&E data
  - Only data of accessions listed in EURISCO
- Impact
  - NFPs responsible for data upload (Data Sharing Agreements)
    - May nominate users for (sub) accounts for data uploads
    - NFPs must approve data before publication
- Data formatting
  - According to exchange format in MS Excel (.xlsx) files
- Upload via EURISCO intranet



# Data upload in three steps

File parsing and upload via Java tool

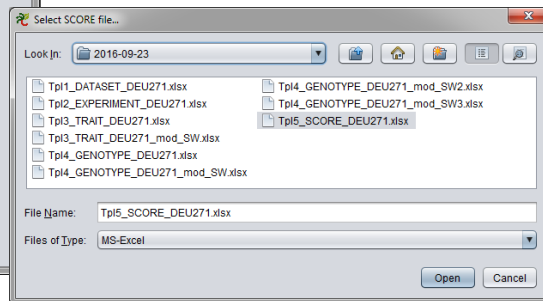
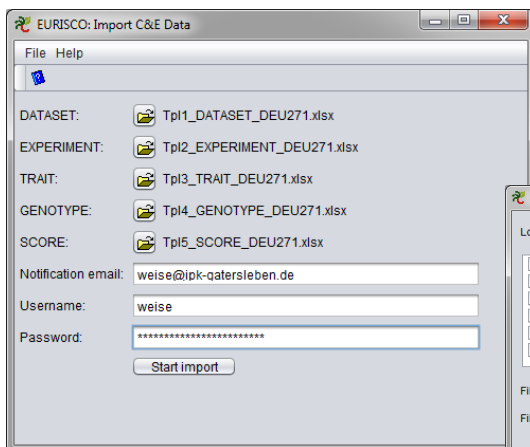
- data owner

Data integrity checks

- EURISCO management

Approval / withdrawal of data for publishing on the EURISCO website

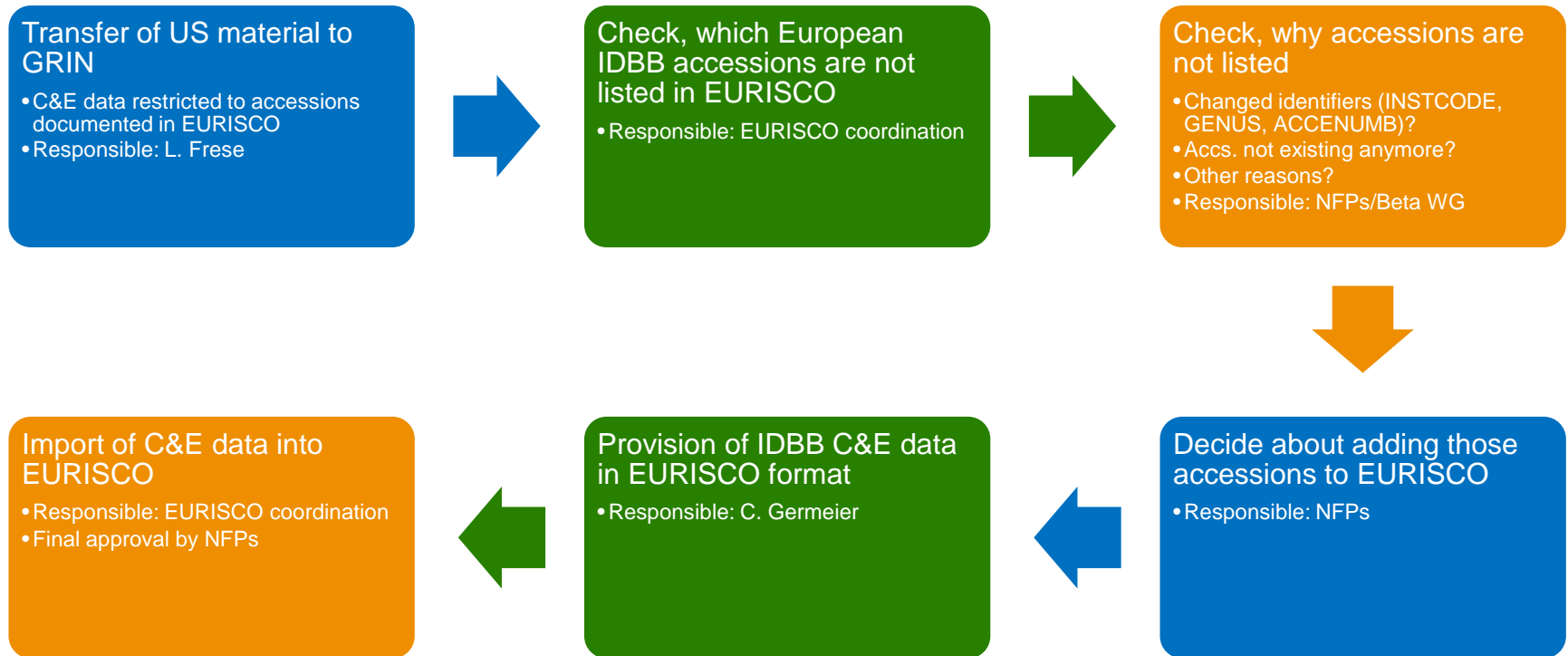
- *data owner/NFP*



# Overview IDBB

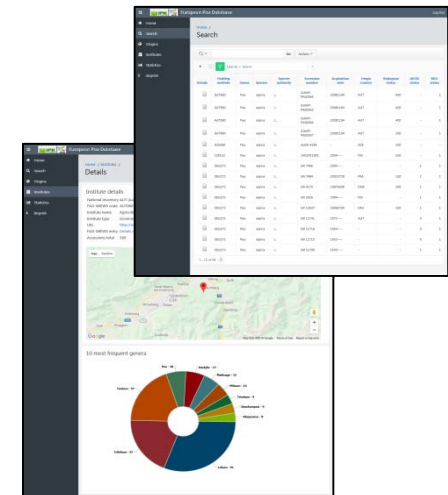
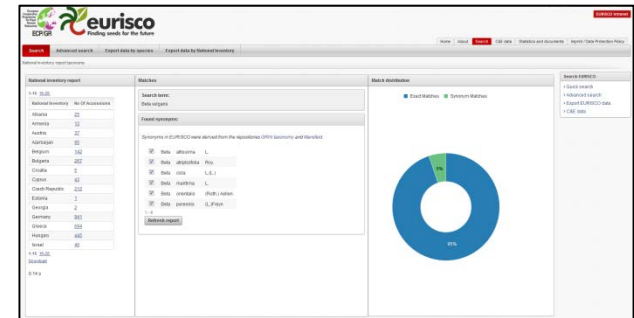
- International Data Base for Beet
- Maintained at JKI on behalf of ECPGR's Beta Working Group
- Content:
  - 10,528 accessions of different categories
  - 44,750 observations of varying quality of which about
  - 20,000 observations refer to the GENRES CT95-42 project
    - 689 evaluated accessions
    - 44 descriptors
    - 50 methods
    - 54 experiments
- Elaborated data models published in Beta WG reports (1999, 2002)

# Transfer of IDBB C&E data



# Future of IDBB

- To be decided by the Beta Working Group
- Possible alternatives:
  1. Only usage of search and filter possibilities of EURISCO
    - No additional work
    - Not crop-specific
  2. Beta portal based on EURISCO data
    - Both passport and C&E data provided by API
    - No need to compile Beta data separately
    - Always up-to-date
    - Beta WG can focus on crop-specific information
    - Example: European Poa Database





**THANK YOU FOR YOUR  
ATTENTION**