

Worldwide No.1
WINTERSTEIGER
in field research equipment.

Easy Breed

**The flexible software solution for
the entire breeding process**

Modern Breeding

- Successful breeding needs data from different sources
 - e.g. field and lab data.
 - phenotypic, genotypic and metabolite data.
 - weather and soil data.
 - meta data (e.g. pedigrees, time, locations, protocols).
 - ...
- Successful breeding needs modern techniques
 - e.g. digital phenotyping.
 - genomic selection, association mapping.
 - self-learning systems.
 - ...



Modern Breeding

- Successful breeding needs a community
 - to identify, to develop and to evaluate new methods and techniques.
 - to transfer new research methods to practice and to maintain, adapt and support these methods.
 - to develop and maintain public data sources.
 - to develop standards for e.g. data exchange.
 - ...



A vision

- Easy and seamless integration of all data needed for breeding decisions.
- Easy integration of promising new methods (plug and play).
- A reliable and sustainable data management and analysis platform which is maintained and further developed to a fair price.
- Reliable support.
- ...



Easy Breed

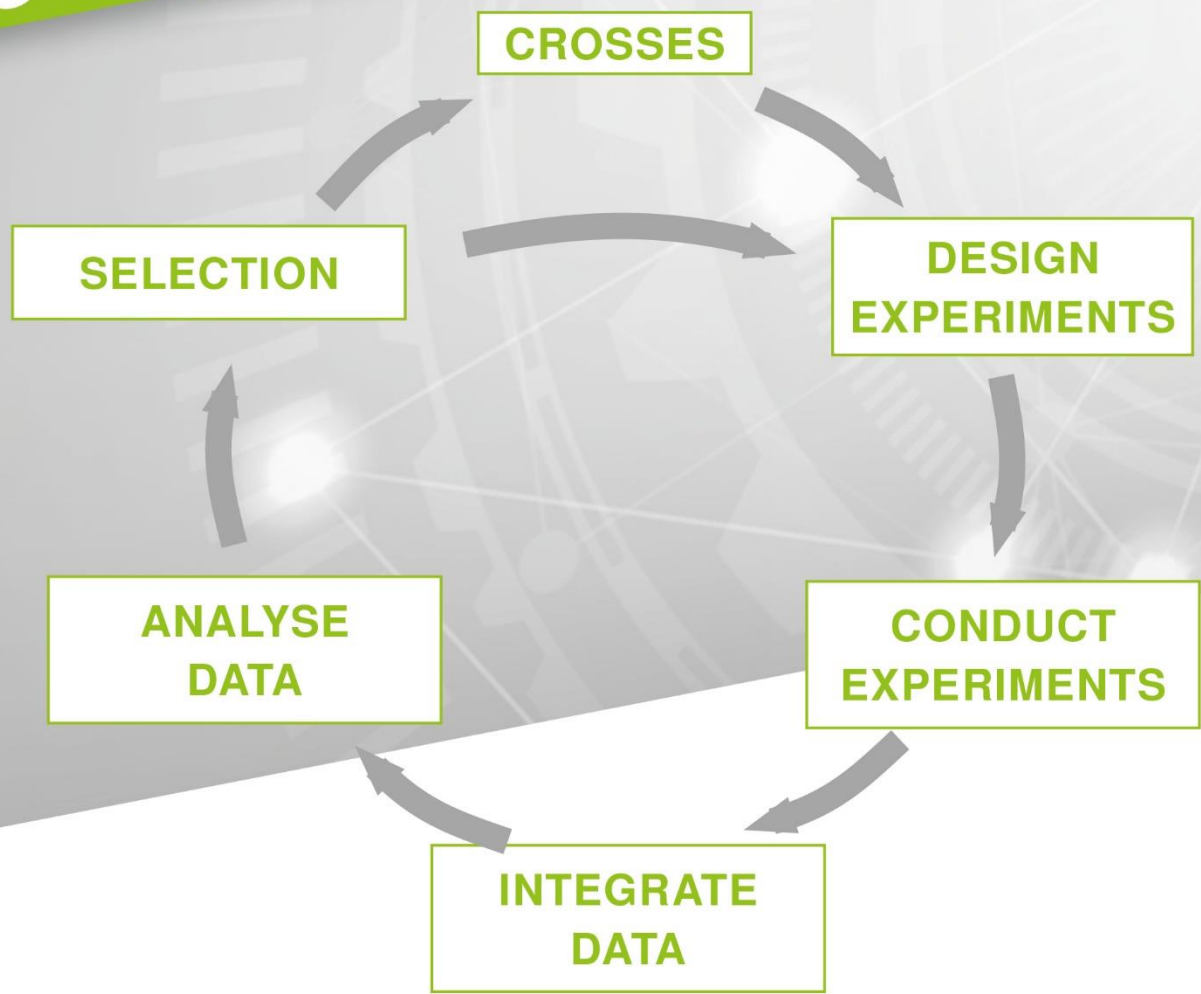
Easy Breed - at a glance

- Easy Breed is well prepared for this vision, because
 - the entire breeding process is supported.
 - a comprehensive set of functionalities is included.
 - it is individually expendable and scalable.
 - it includes interfaces to your hardware.
 - it is a cost efficient solution.
 - it needs minimal time for implementation and introduction.



Easy Breed

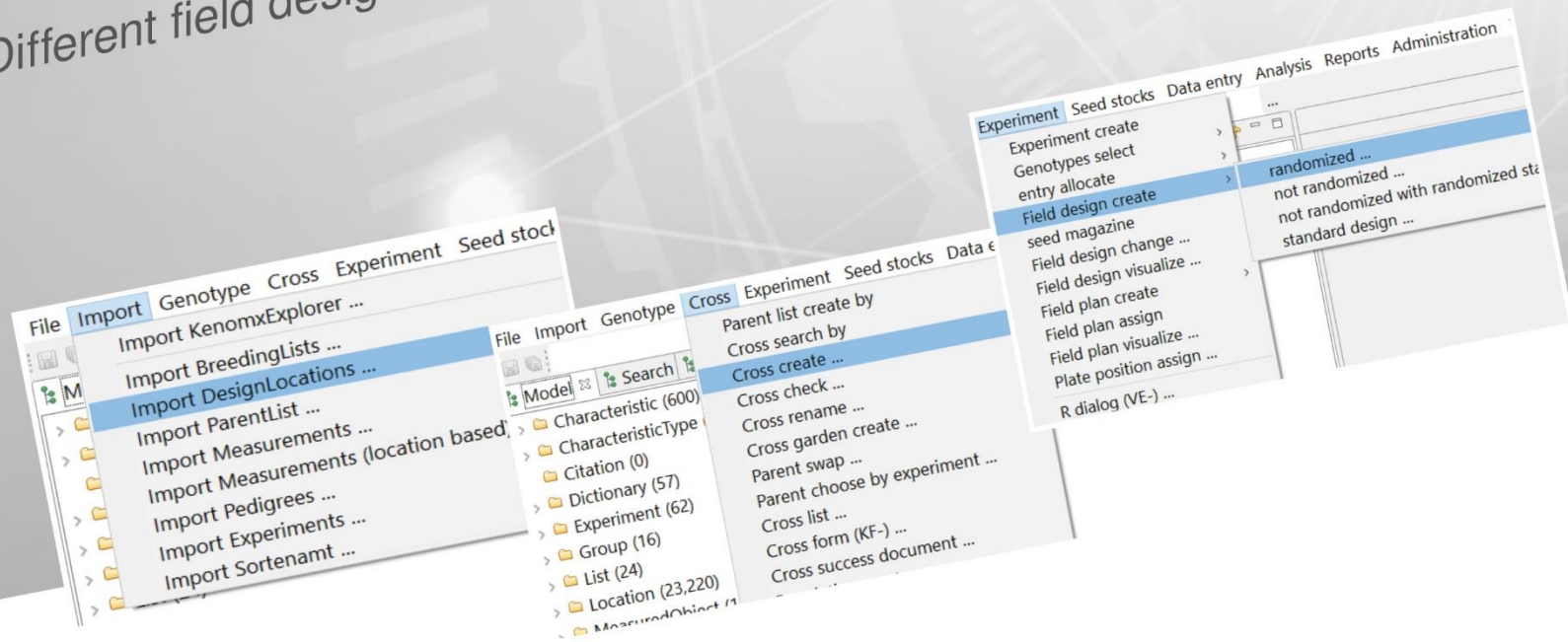
Easy Breed - for the entire breeding process



Easy Breed

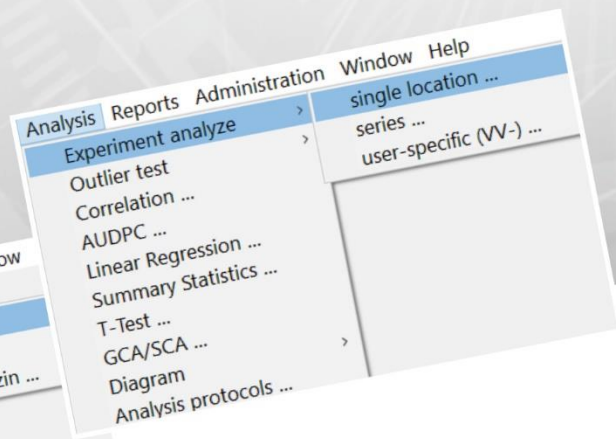
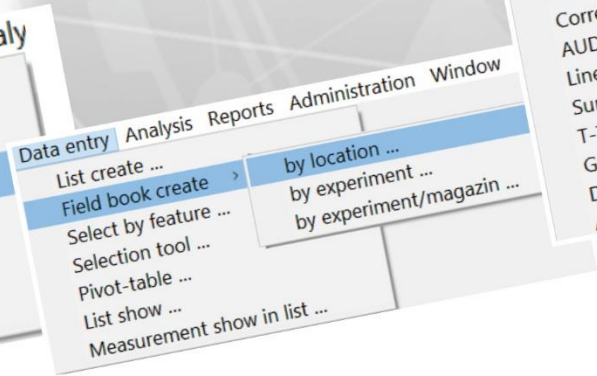
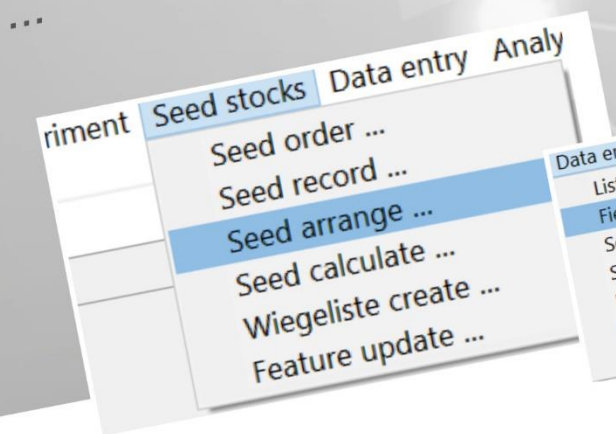
Easy Breed - comprehensive set of functionalities

- Different import formats to integrate data.
- Management of crosses and progenies.
- Different field designs and generation of field maps.

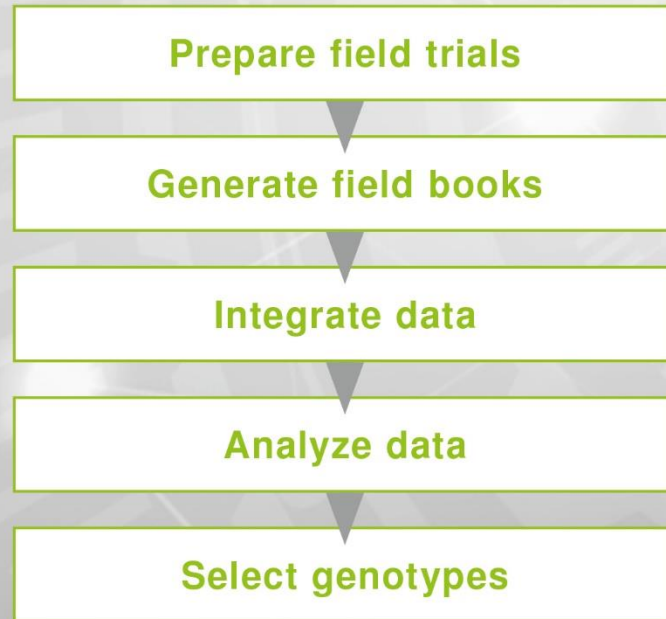


Easy Breed – comprehensive set of functionalities

- Management of seed stocks.
- Flexible generation of field books and other working lists.
- Diverse analysis and visualization functionalities.
- Data integrity is ensured and all data is findable.



Easy Breed – comprehensive set of functionalities



Easy Breed Demo

The screenshot displays the Easy Breed software interface. The main window is titled "Breed@KE - UseCases_BKE_RCPTT_07(Test)". The menu bar includes "File", "Import", "Genotype", "Cross", "Experiment", "Seed stocks", "Data entry", "Analysis", "Reports", "Administration", "Window", and "Help". The "Experiment" menu is open, showing options such as "Experiment create", "entry allocate", "Field design create", "seed magazine", "Field design change...", "Field design visualize...", "Field plan create", "Field plan assign", "Field plan visualize...", "Plate position assign...", and "R dialog (VE-) ...".

The left sidebar shows a hierarchical tree structure of data:

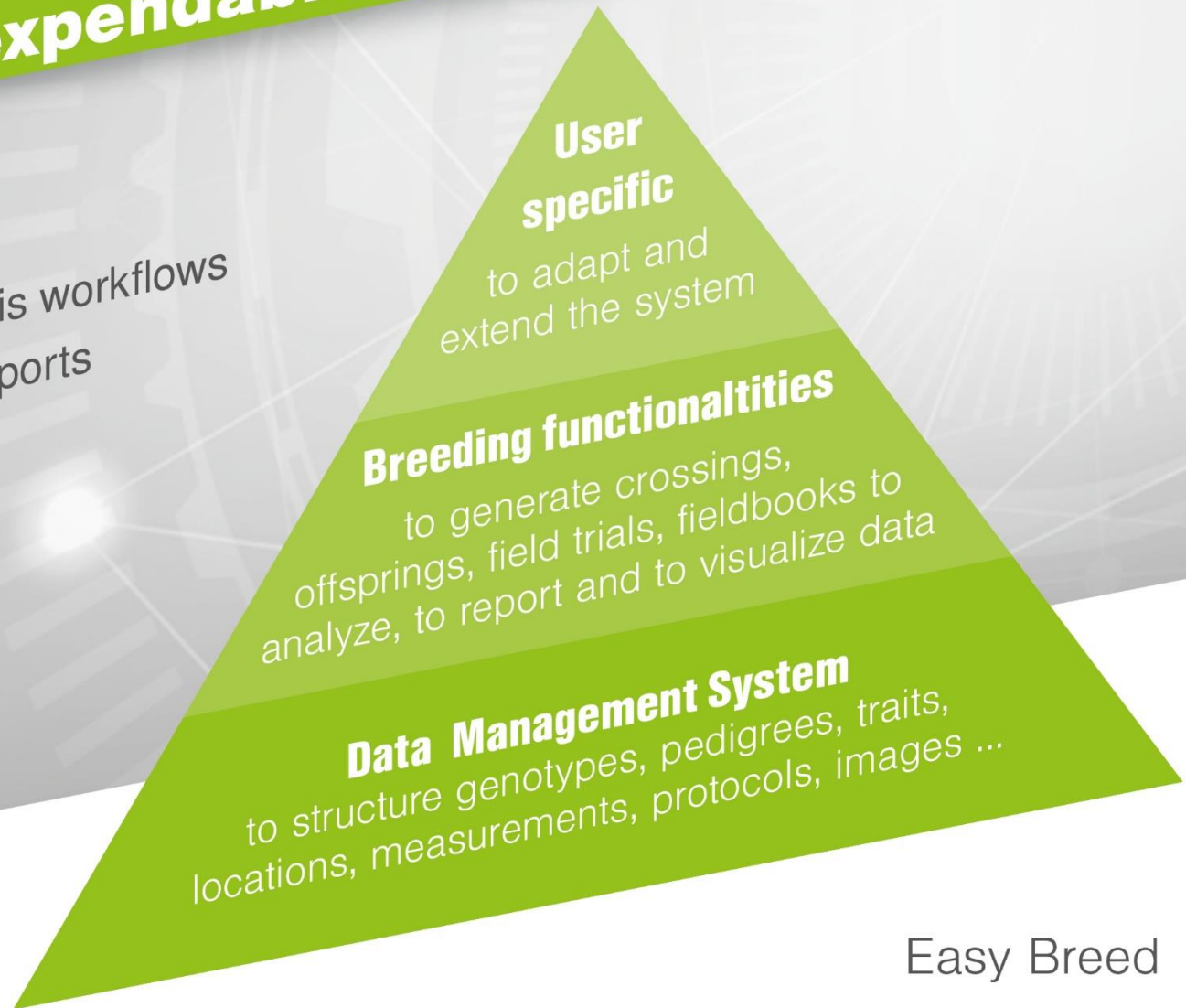
- Characteristic (1,505)
- CharacteristicType (39)
- Citation (0)
- Dictionary (61)
- Experiment (84)
 - DocumentCrosses
 - Listen-Beispiele
 - noExperiment
 - 2017 (1)
 - administration (2)
 - maize (6)
 - noSpecies (24)
 - potato (20)
 - spring barley (24)
 - winter barley (4)
- Group (19)
- List (37)
- Location (2,649)
- MeasuredObject (3,584)
- Measurement (0)
- Origin (328)
- ProcessStep (92)
- ReferenceSystem (167)
- Time (549)

The right sidebar contains an "Outline" window with the message "An outline is not available." The bottom of the interface features a "Console" window with "System.out" output.

The Windows taskbar at the bottom shows the time as 13:30 on 11.06.2019, along with system icons for network, volume, and power.

Easy Breed – individually expendable and scalable

- Open interfaces
- R interface
- Intergation of analysis workflows
- Data imports and exports
- Scalable

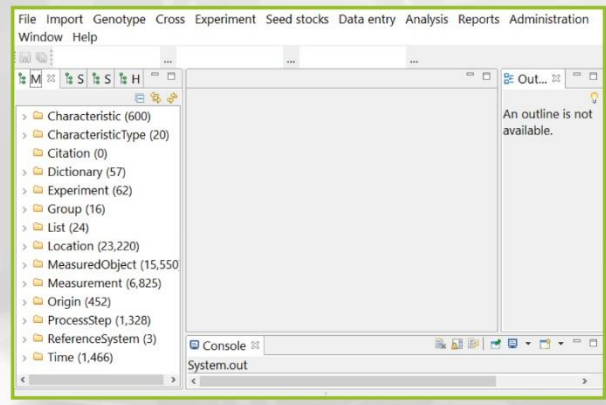


Easy Breed - Interfaces



Mobile devices

Service provider



Analysis tools

```
dens <- density(data, n = npts)
dx <- dens$x
dy <- dens$y
if(add == TRUE)
  plot(0, 0, main = "Density Plot", xlab = "x", ylab = "Density")
if(orientat == "x")
  dx2 <- (dx - min(dx)) / (max(dx) - min(dx))
  dy2 <- (dy - min(dy)) / (max(dy) - min(dy))
  seqbelow <- rep(y[1,], length(dx))
  if(Fill == T)
    confshade(dx2, seqbelow, dy2)
```

Material	number	Parameter-O	Parameter-O	Parameter-O	Parameter-O	Parameter-O	Parameter-O
AttributeLoc		20.01.2019	21.01.2019	22.01.2019	23.01.2019	24.01.2019	20.01.2019
VO-01	1	25	23	29	34	29	102
VO-02	2	23	25	27	32	36	136
VO-03	3	27	30	34	38	40	102
VO-04	4	24	27	30	31	36	102
VO-05	5	22	25	26	30	32	107
VO-06	6	29	30	32	34	37	105
VO-07	7	28	30	34	37	42	105
VO-08	8	30	34	37	42	47	133
VO-09	9	24	28	33	38	39	113
VO-10	10	20	22	27	31	32	130
VO-11	11	24	25	29	34	37	104
VO-12	12	26	27	30	34	35	126
VO-13	13	30	32	34	37	40	116
VO-14	14	29	31	36	39	42	115
VO-15	15	29	33	37	42	47	122
VO-16	16	26	31	36	39	41	129
VO-17	17	23	24	27	30	34	133
VO-18	18	30	32	34	38	38	133
VO-19	19	20	22	26	30	34	133

MS Excel



Hardware

Easy Breed

Easy Breed - cost efficient solution

- An in-house development of a breeding software might have advantages at first glance, but
 - Think about the costs for development.
 - Keep in mind the costs for maintenance.
 - Remember that a system, which is used by many people, is better tested, displays many different perspectives and is better prepared for the future.



Easy Breed

Easy Breed – minimal time for implementation

- Easy Breed can be installed quickly as a stand-alone or server-version.
- Existent data from breeding programs can be easily imported and supplemented by publicly available data.
- User-specific configurations, adaptations of workflows and complete user-specific extensions can be implemented in Easy Breed within a few hours or days.



Easy Breed

Easy Breed - open for future

- Sustainable: Ongoing development according to your requirements.
- Flexibility: To make sure that data of future technologies are covered.
- Open interfaces: To make sure that newly developed analysis workflows can be quickly integrated, assessed and used by our partners.
- Community: To make the exploitation of tools and methods and even data sets developed in scientific projects more efficient.



Easy Breed

Easy Breed – we need you!

- To discuss your software requirements and ideas.
- For know-how exchange.
- To join our „Seed Breeding Community“.
- To join our team:

**Sales Manager
Züchtungssoftware
(m/w/d)**

**Softwareentwickler
Züchtungssoftware
(m/w/d)**

Please, also contact us for financial support of bachelor or master thesis.

Easy Breed – contact

■ THANKS FOR YOUR ATTENTION

■ For more information, please visit us at the exhibition hall.

■ Contact

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Easy Breed