RUSTWATCH

WHEAT RUST EARLY WARNING

Trap Nursery Data Management System (TNDMS)

26 February, Jens G.Hansen & Valerie Cadot

Wheat Rust Toolbox

Home | Wheat Rust survey | Wheat Rust samples | Trap nurseries | Country overview | Partners | Developer

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Trial input

Observations

Year ○ 2019 ◉ 2018

Trial 2018_Skælskør, TystofteFonden, DK

Replicates 1

Observation date New date Delete date

Save Samples Comments

Disease severity in differentials

Cultivar	Color	Disease	24. Jun, Rep. 1	Sample
Ambition		Yellow Rust	1%	☐
Spalding Prolific		Yellow Rust	0.5%	☐
Compair		Yellow Rust	0%	☐
Moro		Yellow Rust	0%	☐
Mariboss		Yellow Rust	0%	☐
Rendezvous		Yellow Rust	0%	☐
Nemo		Yellow Rust	0.1%	☑

Disease severity in local cultivars

Local cultivar	Color	Disease	24. Jun, Rep. 1	Sample
Substance		Yellow Rust	10%	☐
Ambition		Yellow Rust	1%	☐
Florida		Yellow Rust	5%	☐
MS-Brunrust		Leaf Rust	0.1%	☑
MS-Sortrust		Stem Rust	0%	☐

New local cultivar Delete local cultivar

Objectives

1. Improve the VCU test of wheat cultivars regarding assessment for wheat yellow rust, - by phenotyping new virulences, identifying genotypes and races of yellow rust sampled from six selected differentials at appr. 70 VCU trial sites in Europe
2. Contribute to a Europe mapping tool indicating the disease pressure from yellow rust, leaf rust and stem rust, - by scoring of rust disease 2-3 times per season in local susceptible cultivars at VCU trial sites

Output

1. A Trap Nursery Data Management and display system in the Wheat rust toolbox, managed by the VCU network in collaboration with RustWatch and GRRC.

Outcome

1. VCU contribute to the European early warning system for wheat rusts
2. The evaluation of the VCU trials on wheat will be improved, because knowledge on local wheat rust genotypes and race phenotypes can be included in the evaluation of results
3. Using a common database system will strengthen collaboration, stimulate harmonisation of methods and make results more robust.

User guide – getting started

- Score disease severity 2-3 times according to RustWatch Scale in:
  - 6 RustWatch differentials
  - 1 local YR susceptible cultivar,
  - 1 local LT susceptible cultivar
  - 1 local SR susceptible cultivar
- Trap nursery partners upload data via webform (login to the Wheat Rust Toolbox (WRT)). After test of this approach in 2019 we develop a a corresponding smartphone for 2020 if this is requested by VCU.
- In the Toolbox, data will be stored as original scored and transferred also to the BGRI categories for disease level.
- Valerie Cadot will manage the list of Trap Nursery partners in the VCU network
- Local Trap Nursery partners will manage own data upload and quality control in the WRT. They can download own data and see all results from the VCU network.
- The link between the VCU trial and results of race phenotyping and /or genotyping will be the sample ID affiliated with a sample sent for race phenotyping at GRRC or another recognised lab.

Disease severity (in %)	Breeder's scale 1-9
0	1
0,1 (trace)	2
0,5	3
1	4
5	5
10	6
25	7
50	8
>75	9

BGRI:

1. 0
2. 0-20
3. 20-40
4. >40

Table 1 : scale of visual scoring

Disease severity : % leaf or spike area infected
0
1
5
10
20
30
40
50
60
70
80
90
100

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User management

Init	Firstname	Lastname	Institution	Department	Country	Active	
GDE	Gerhard	Deneken	Tystofte Foundation		Denmark	☑	
GJA	Guillaume	Jacquemin	CRA		Belgium	☑	
FMA	Fabio	Mascher	Agroscope		Switzerland	☑	
MOB	Michael	Oberforster	AGES		Austria	☑	

New user

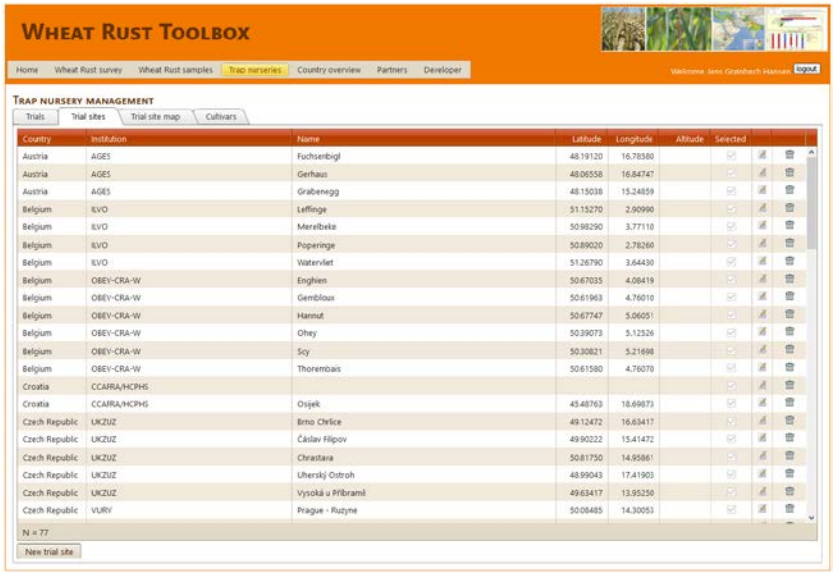
User Management

Valerie can create all users

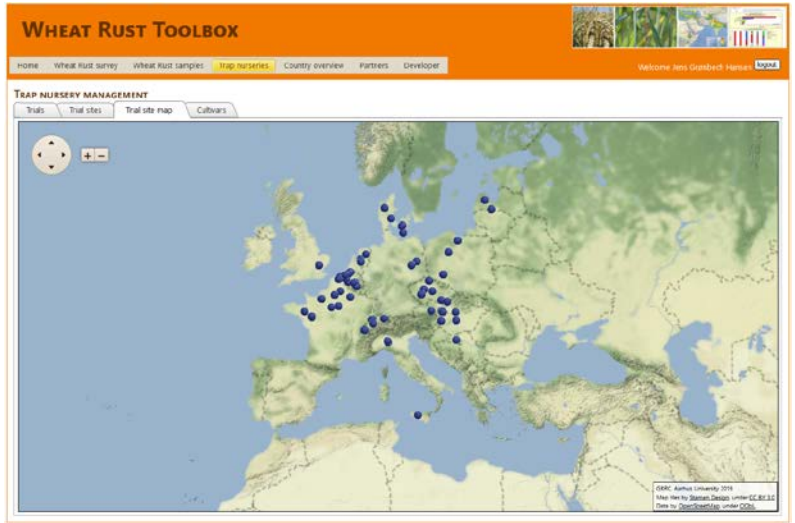
Users can login and

- Upload data
- Analyse VCU data
- Download data
- See results of disease scorings, and race and genotyping before public

Basic system setup

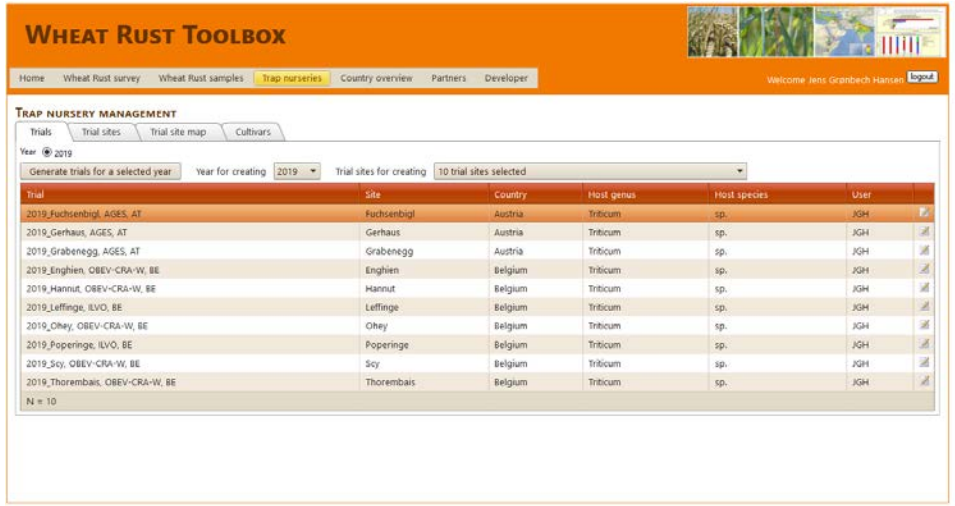


Define Trial sites

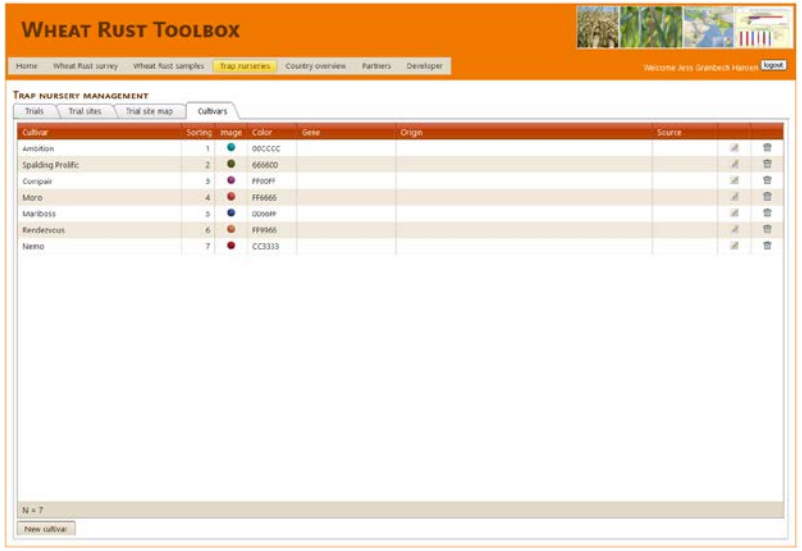


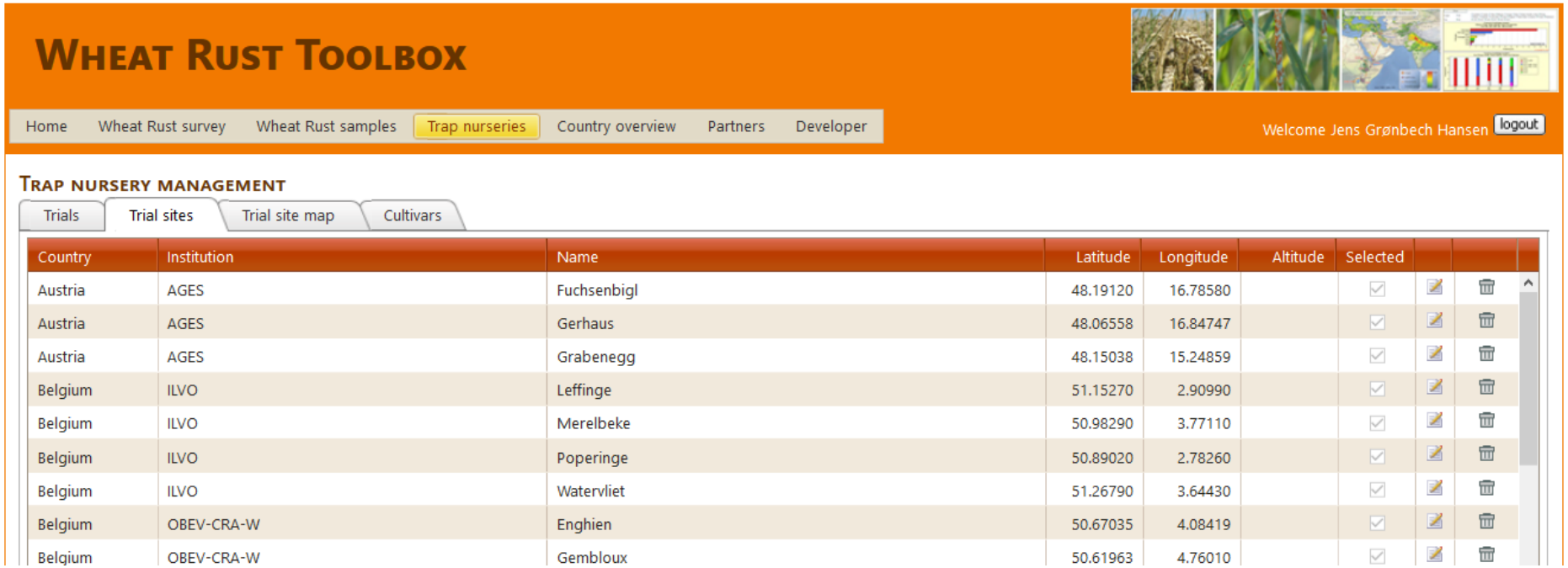
Show Trial sites on a map

Define Trials based on Trial site names



Define Differential set(s)



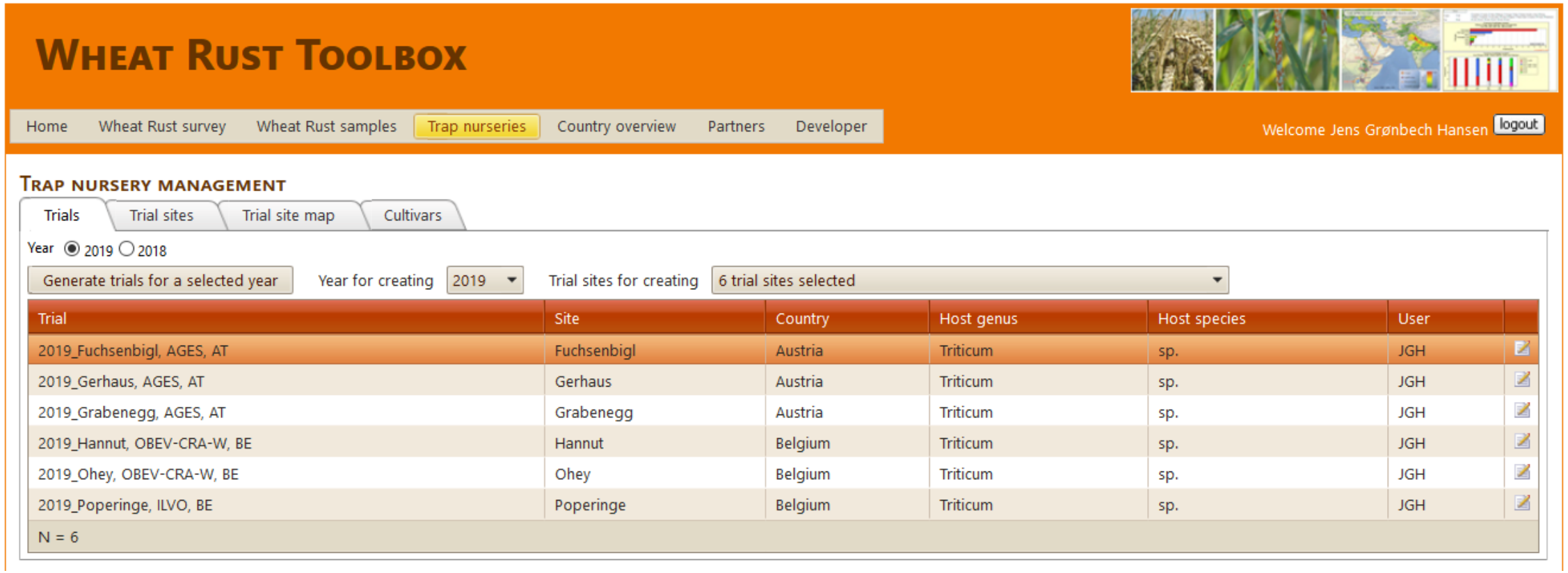


Country	Institution	Name	Latitude	Longitude	Altitude	Selected
Austria	AGES	Fuchsenbigl	48.19120	16.78580		✓
Austria	AGES	Gerhaus	48.06558	16.84747		✓
Austria	AGES	Grabenegg	48.15038	15.24859		✓
Belgium	ILVO	Leffinge	51.15270	2.90990		✓
Belgium	ILVO	Merelbeke	50.98290	3.77110		✓
Belgium	ILVO	Poperinge	50.89020	2.78260		✓
Belgium	ILVO	Watervliet	51.26790	3.64430		✓
Belgium	OBEV-CRA-W	Enghien	50.67035	4.08419		✓
Belgium	OBEV-CRA-W	Gembloux	50.61963	4.76010		✓

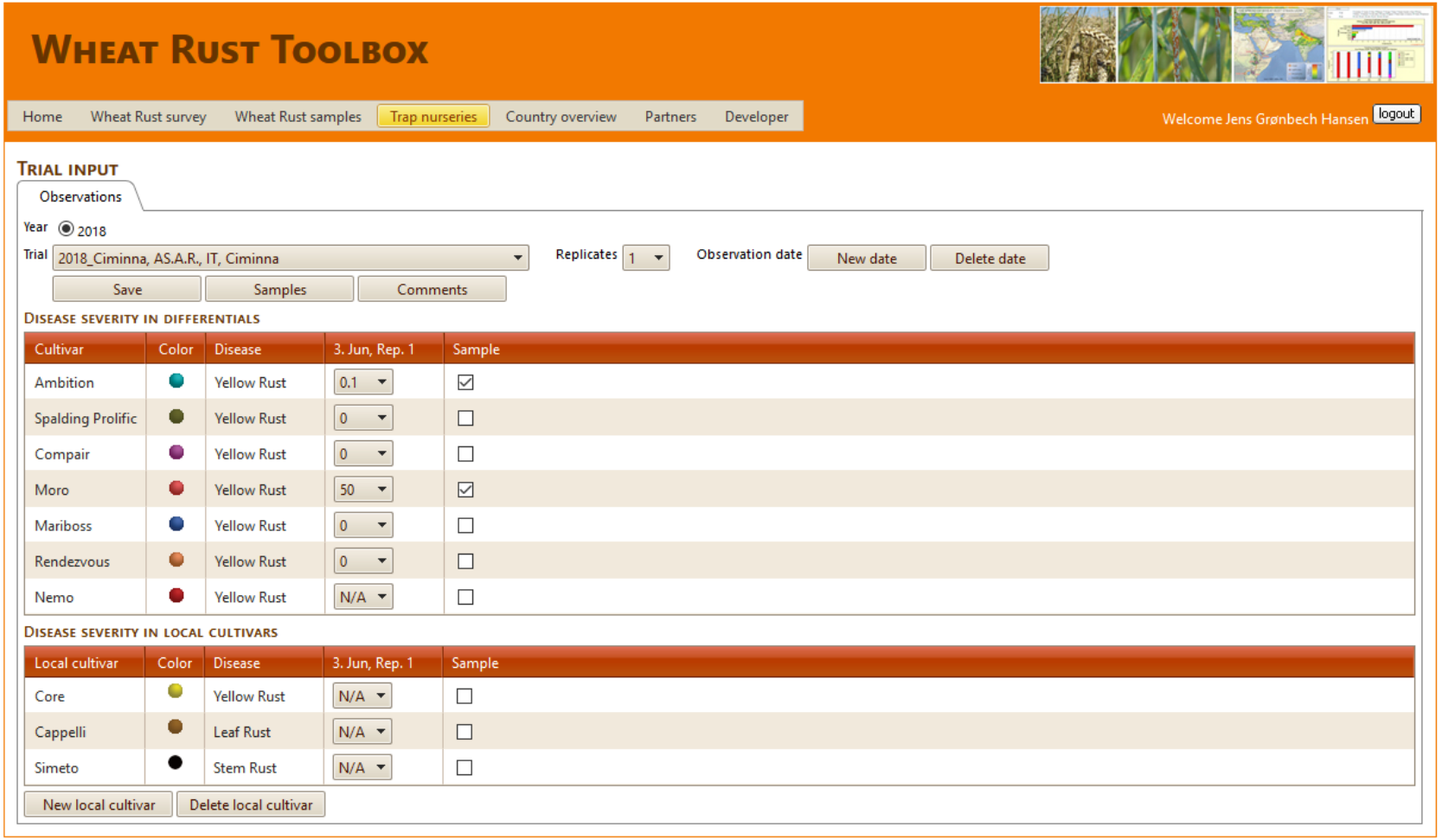
A trial site is identified with variables:

- Country,
- Responsible Institution
- Name (of the area or responsible experimental station / company)
- Geoposition (lat/long in decimal coordinates)
- Altitude

A trial site is a fixed unit. Even the exact location of the trials changes (up to 5 km) between years, then use the same Trial site name!!!!



- **Trial names** are generated based on a combination of year_Trial site name_responsible Institution_Country
- Therefore, it is important that all trial sites have these four variables defined
- To generate new trials for a new year the Manager can select any trial site names via a drop down list with checkmarks
- In the example above is generated 6 trials based on trial site information. If you have two trials related to a Trial site then call the Trial sites e.g. Arras_A and Arras_B to make two trials close to the location Arras.



When a user log into the toolbox, the system will know which trials are related to this user

First time:

- Select your trial
- Select New local cultivar and enter the name of one YR susceptible cultivar and select YR
- Same again but enter name of one LR susceptible cultivar
- Same again but enter name of one SR susceptible cultivar

Steps entering observations:

- Select Trial name in the drop down list with your trials
- Select number of replicates in your trial
- Click New date
- Select disease level from drop down
- If sample were taken for race anaysis then checkmark the cultivar that the sample was taken from
- Select the button samples and enter the sample IDS for all samples taken
- Select the comment button and enter information if any other diseases dominated in the Diff cultivars or any other relevant information

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Under construction

Trial output

Output 1

Aaaa | Bbbb | Cccc | Trial site map

Disease on Differentials single or in combinations (via checkmarks)
Interactive Europe map

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Trial output

Output 2

Aaaa | Bbbb | Cccc | Trial site map

Disease on local cultivars re YR, LR and SR (Interactive Europe map)

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Trial output

Output 3

Aaaa | Bbbb | Cccc | Trial site map

Races and genotypes sampled at VCU locations (Interactive Europe map)

Data will feed into WP2 and WP4 – development of a RustWatch Risk management Tool

Roadmap 2019

1. Generate login to the Wheat Rust Toolbox for all VCU partners that are resposible for data upload / Valerie and Jens. Deadline 8 March
2. List of trial sites and trials in 2019 including all background information e.g. GPS as decimal coordinates / Valerie + all VCU trial hosts. Deadline 8 March
3. Trial sites and trials implemented in the wheat Rust Toolbox / Jens and valerie. Deadline 8 march
4. Web training course for those interested / last week in March
5. Each partner decide on one YR susceptibe, one LR susceptible and one SR susceptible cultivar from the VCU set of cultivars. Add to a common Excel and add as local cultivars on the Toolbox under the menu Trap Nurseries / Trap Nursery input. Deadline 1 April
6. Output tools maps and charts available in the toolbox / Valerie, Poul and Jens / 15 April
7. Each partner score and sample YR in the Diff set and score three local cultivars for YR, LR and SR respectively – and upload data on the same date as scored / all (use a tablet/PC in the field or via paper in the field and then upload at the office)
8. Discussion of results, usefullness and evaluation of the system at VCU meeting.