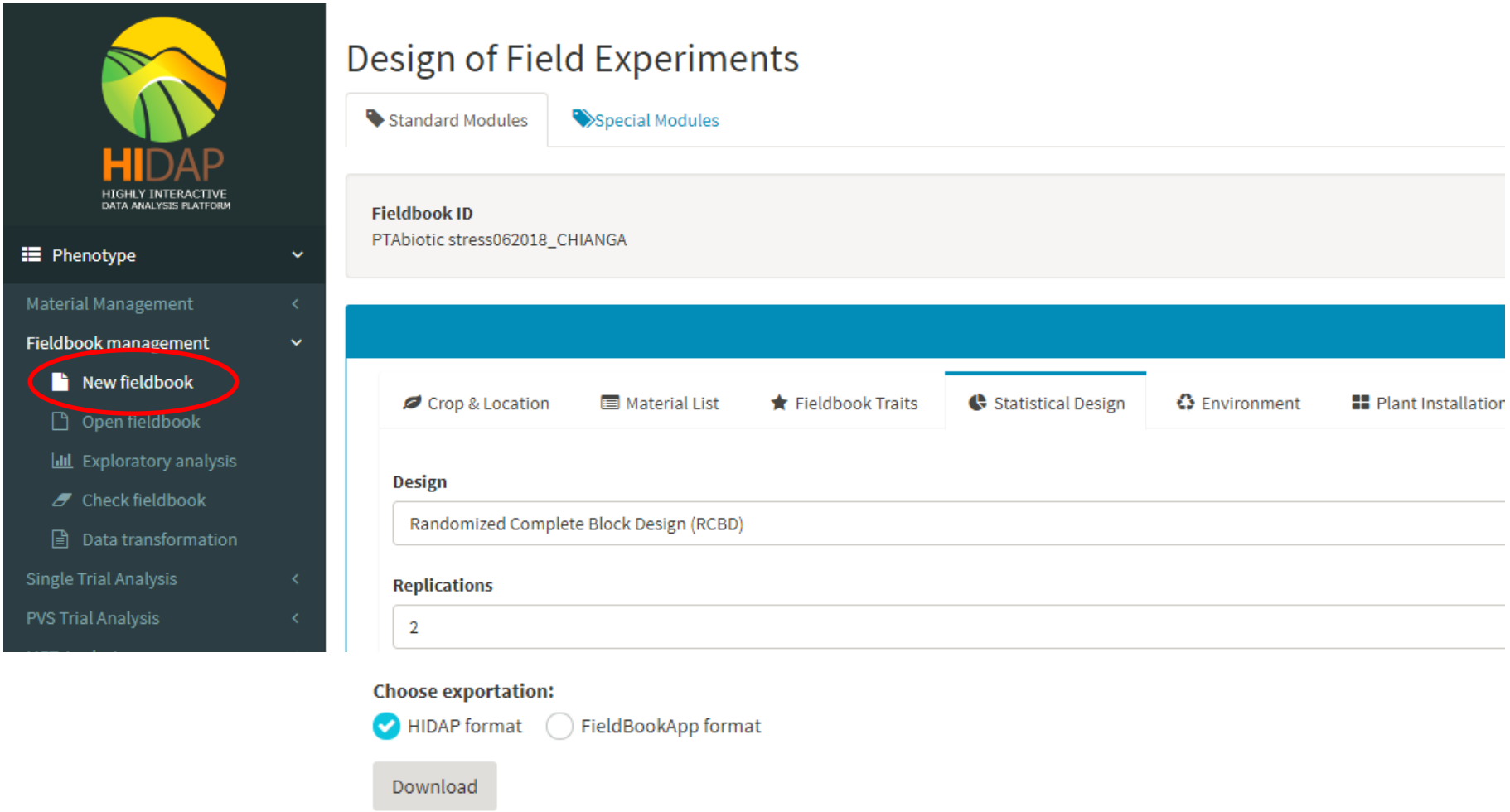
CIP
INTERNATIONAL POTATO CENTER
A CGIAR RESEARCH CENTER

HIDAP training: Fieldbook creation, data quality of field data and statistical analysis.

JUN 05, 2018

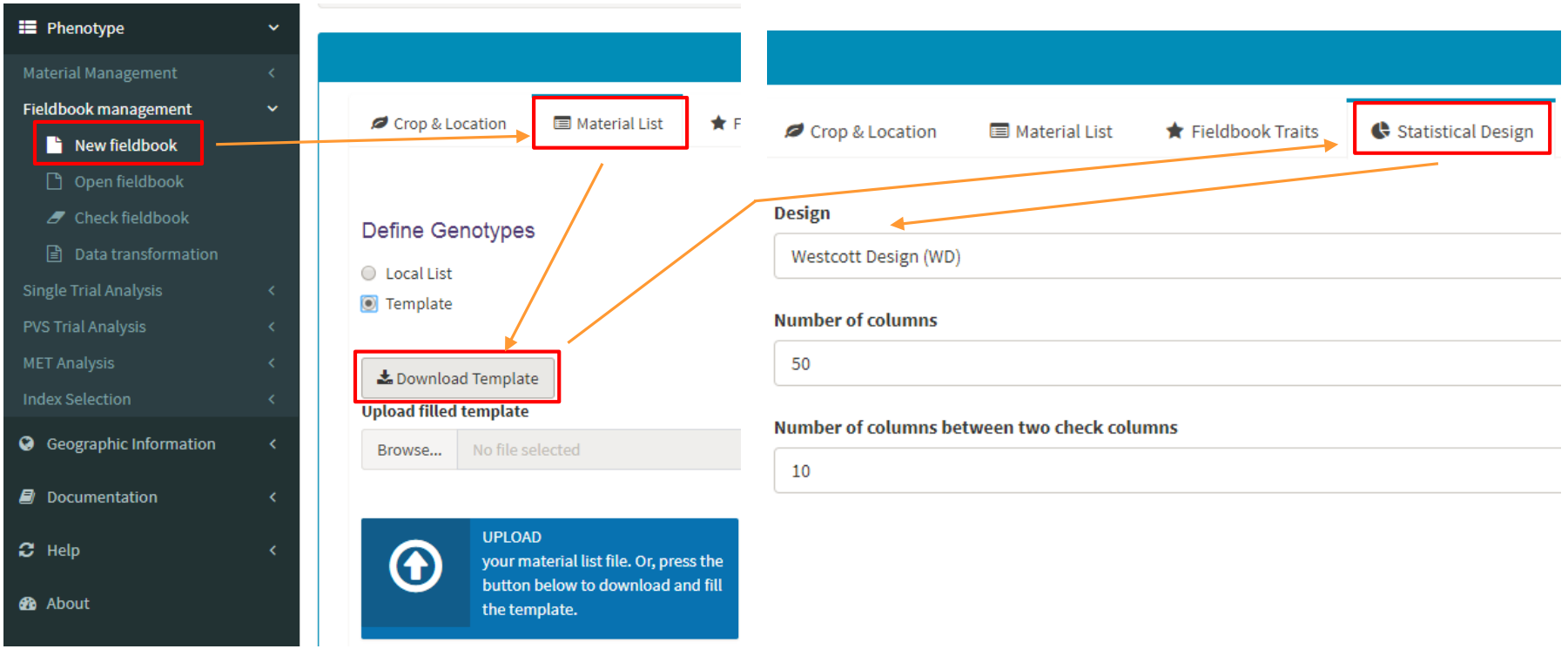
Fieldbooks in HIDAP

You can create fieldbooks for several designs in HIDAP.



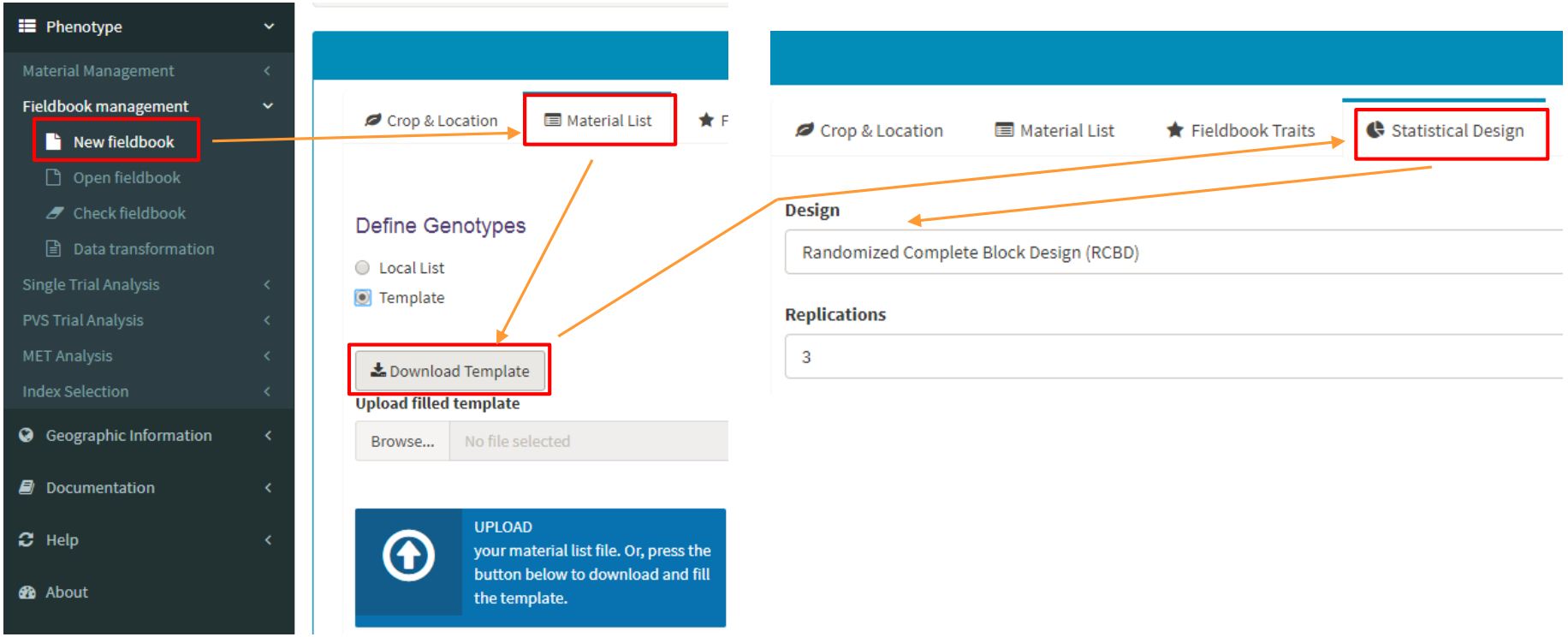
Fieldbooks in HIDAP – Exercise 1: Westcott

Create a fieldbook for 200 genotypes, one replication, following the Westcott method with checks Dagga and Cemsa, three plants per plot. Consider a field with room for 50 columns and 10 columns between checks.



Fieldbooks in HIDAP – Exercise 2: RCBD

Create a fieldbook for 20 genotypes, three replications, following a RCBD, 3 rows per plot, 10 plants per row.



Fieldbooks in HIDAP – FieldBookApp file format

Choose exportation:

HIDAP format FieldBookApp format

Enter abbreviation user

Download FieldBookApp file

	A	B	C	D	E
1	plot_name	abbre_user	plot	rep	germoplasm_name
2	17PPTS24SCTT_1016_1_NCP06-0020_G3				
3	17PPTS24SCTT_1015_1_NCP14-0099				
4	17PPTS24SCTT_1015_1_NCP14-0099				
5	17PPTS24SCTT_1015_1_NCP14-0099				
6	17PPTS24SCTT_1015_1_NCP14-0099				
7	17PPTS24SCTT_1015_1_NCP14-0099				

FieldBookApp file format

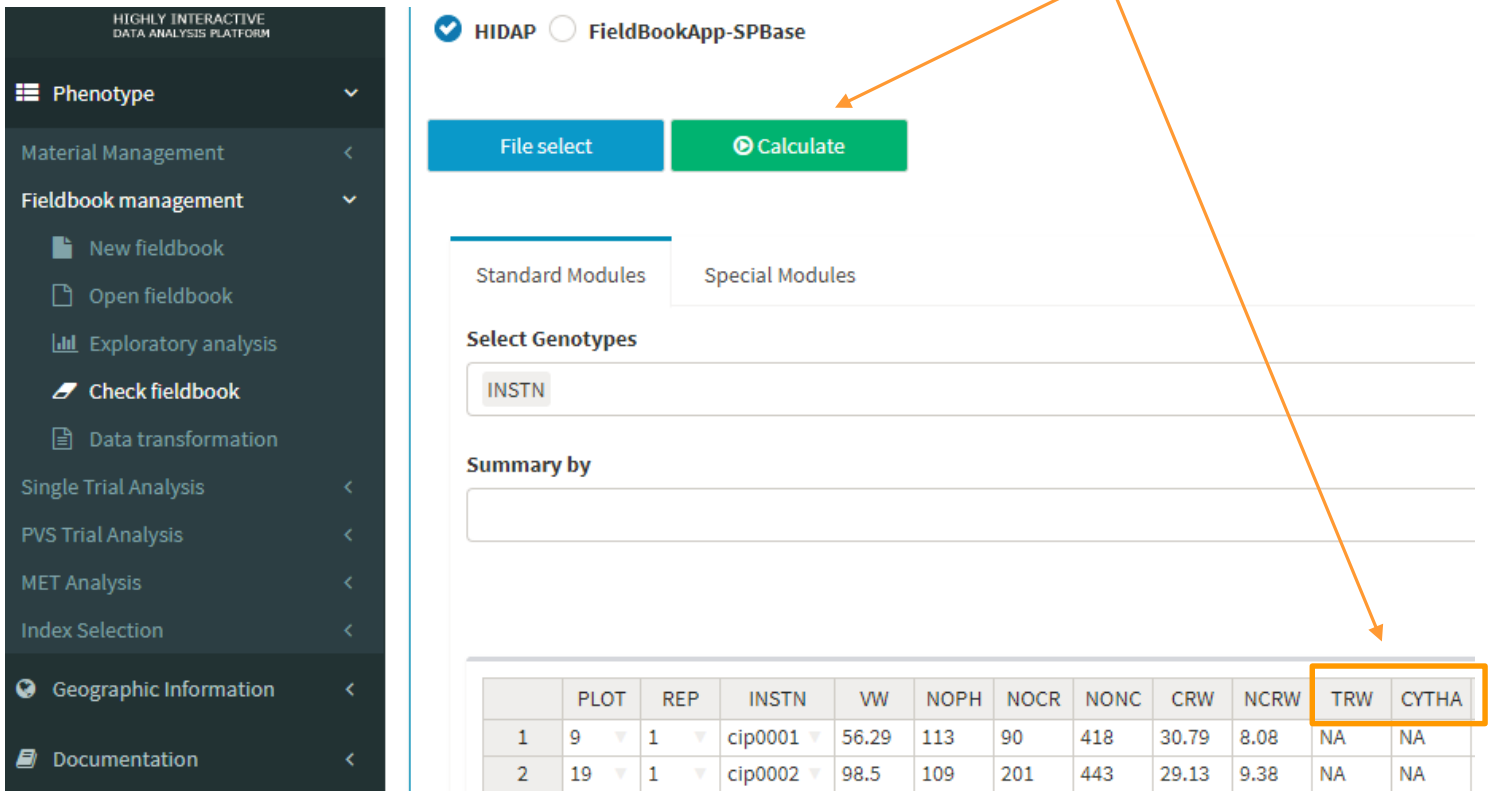
FieldBookApp

Check fieldbooks and compute derived traits

There are two kinds of checks:

- Yellow cells: Outliers (detected using interquartile range).
- Red cells: Out of range values.

All derived traits are computed (for instance TRW from CRW and NCRW) as long as they are in the fieldbook.



Check fieldbooks and compute derived traits - Exercise

Open the fieldbook ***SPAgronomic042017_ICA_exp1***.

Click on ***Calculate*** to get derived traits.

Check the fieldbook for outliers.

Observed traits

Calculated traits

	PLOT	REP	INSTN	VW	NOPH	NOCR	NONC	CRW	NCRW	TRW	CYTHA	RYTHA	CI	HI	BIOM	FYTHA
1	9	1	cip0001	56.29	113	90	418	30.79	8.08	38.87	9.5031	11.9969	17.7165	40.847	29.3704	17.3735
2	19	1	cip0002	98.5	109	201	443	29.13	9.38	38.51	8.9907	11.8858	31.2112	28.1074	42.287	30.4012
3	4	1	cip0003	56.24	103	25	124	12.93	2.37	15.3	3.9907	4.7222	16.7785	21.3866	22.0802	17.358
4	12	1	cip0004	64.51	107	78	373	26.77	6.74	33.51	8.2623	10.3426	17.2949	34.1869	30.2531	19.9105
5	8	1	cip0005	145.95	114	91	170	11.45	1.61	13.06	3.534	4.0309	34.8659	8.2133	49.0772	45.0463
6	18	1	cip0006	15.71	64	19	207	21.52	2.96	24.48	6.642	7.5556	8.4071	60.9107	12.4043	4.8488

Check fieldbooks – FieldBookApp / SPBase

FieldBookAPP

Data Quality and Processing

Radio buttons

HIDAP FieldBookApp-SPBase

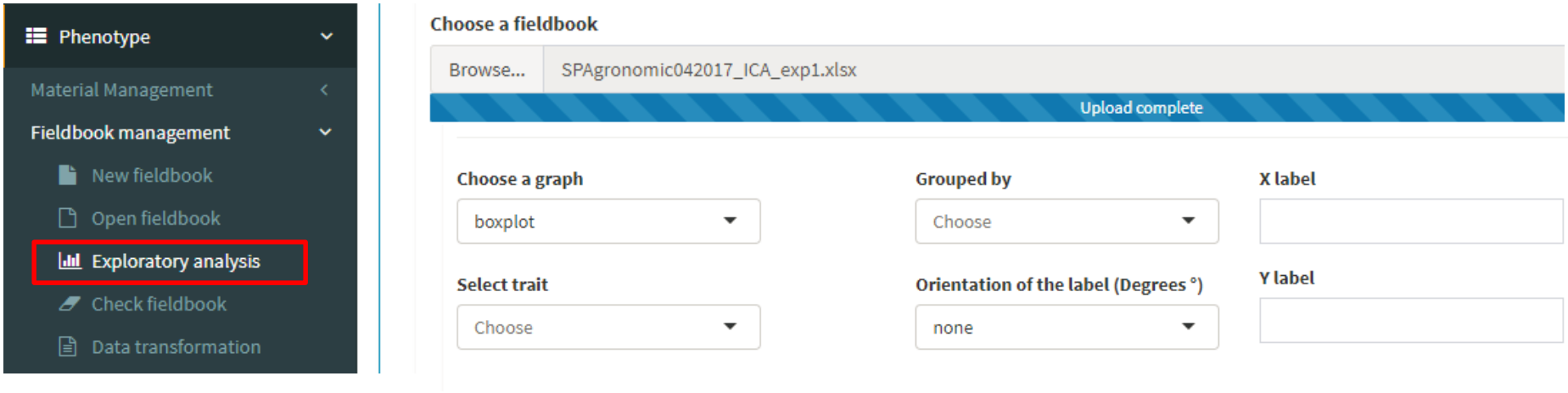
	A	B	C	D	E	F	G
1	plot_name	trait	value	timestamp	person	location	number
2	17PPTS24SCTT_1016_1_NCP06-0020_G3	SEASON|CO_331:0000794	15	02/11/2017 10:53			1
3	17PPTS24SCTT_1015_1_NCP14-0099	SEASON|CO_331:0000794	15	02/11/2017 11:00			1
4	17PPTS24SCTT_1015_1_NCP14-0099	RTFLESH1|CO_331:0000782	15	02/11/2017 11:00			1
5	17PPTS24SCTT_1015_1_NCP14-0099	RTFLESH2|CO_331:0000783	15	02/11/2017 11:00			1
6	17PPTS24SCTT_1015_1_NCP14-0099	RTSTALK|CO_331:0000777	15	02/11/2017 11:02			1
7	17PPTS24SCTT_1015_1_NCP14-0099	RTATTACH|CO_331:0000778	15	02/11/2017 11:02			1
8	17PPTS24SCTT_2013_1_NCP13-0030	SEASON|CO_331:0000794	15	02/11/2017 11:11			1
9	17PPTS24SCTT_2013_1_NCP13-0030	RTFLESH1|CO_331:0000782	15	02/11/2017 11:11			1
10	17PPTS24SCTT_2013_1_NCP13-0030	RTFLESH2|CO_331:0000783	15	02/11/2017 11:12			1
11	17PPTS24SCTT_2013_1_NCP13-0030	RTSTALK|CO_331:0000777	15	02/11/2017 11:12			1
12	17PPTS24SCTT_2013_1_NCP13-0030	RTATTACH|CO_331:0000778	15	02/11/2017 11:13			1
13	17PPTS24SCTT_2013_1_NCP13-0030	RTSHP1|CO_331:0000774	15	02/11/2017 11:13			1
14	17PPTS24SCTT_2013_1_NCP13-0030	RTSHP2|CO_331:0000775	15	02/11/2017 11:13			1
15	17PPTS24SCTT_2013_1_NCP13-0030	RTSHPU|CO_331:0000776	15	02/11/2017 11:14			1
16	17PPTS24SCTT_2013_1_NCP13-0030	LDR|CO_331:0000779	15	02/11/2017 11:14			1
17	17PPTS24SCTT_2013_1_NCP13-0030	SKINCOLOR|CO_331:0000780	15	02/11/2017 11:15			1
18	17PPTS24SCTT_2013_1_NCP13-0030	RTSKNTEX|CO_331:0000781	15	02/11/2017 11:16			1

	PLOT	REP	INSTN	NTP	Plant_Vigor	SE	NPH	PPH	NMTP	MTWP	MTWPL	MTYNA	MTYA	Tuber_Apper	ATMW	A
1	1	1	CIP397006.18	10	7	7	10	100	36	4.7	0.47	17.4074	17.4074	5	130.5556	18
2	2	1	CIP397012.22	10	9	7	10	100	76	14.6	1.46	54.0741	54.0741	7	192.1053	20
3	3	1	CIP397030.31	10	9	5	10	100	110	8.4	0.84	31.1111	31.1111	5	76.3636	18
4	4	1	CIP397065.28	10	9	5	10	100	104	17.45	1.745	64.6296	64.6296	7	167.7885	21
5	5	1	CIP397079.26	10	9	2	10	100	66	130.45	13.045	483.1481	483.1481	7	1976.5152	21
6	6	1	CIP397100.9	10	5	7	10	100	56	7.45	0.745	27.5926	27.5926	5	133.0357	14
7	7	1	CIP397060.19	10	9	5	10	100	50	7.7	0.77	28.5185	28.5185	3	154	21
8	8	1	CIP397069.11	10	7	7	10	100	86	14.7	1.47	54.4444	54.4444	7	170.9302	19
9	9	1	CIP397099.6	10	9	5	10	100	90	19.2	1.92	71.1111	71.1111	9	213.3333	20
10	10	1	CIP397065.2	10	7	5	10	100	43	8.7	0.87	32.2222	32.2222	7	202.3256	21
11	11	1	CIP397073.7	10	9	5	10	100	81	12	1.2	44.4444	44.4444	7	148.1481	21
12	12	1	CIP397078.12	10	9	3	10	100	149	15.95	1.595	59.0741	59.0741	7	107.047	19
13	13	1	CIP397079.6	10	9	5	10	100	100	13.35	1.335	49.4444	49.4444	7	133.5	21
14	14	1	CIP397012.20	10	9	5	10	100	87	12.8	1.28	47.4074	47.4074	7	147.1264	19
15	15	1	CIP397077.16	10	7	7	10	100	50	7.5	0.75	27.7778	27.7778	7	150	20
16	16	1	CIP397073.15	10	9	5	10	100	79	9.1	0.91	33.7037	33.7037	5	115.1899	21
17	17	1	CIP397067.2	10	9	7	10	100	51	9.15	0.915	33.8889	33.8889	5	179.4118	23
18	18	1	CIP397035.26	10	9	5	10	100	63	11	1.1	40.7407	40.7407	7	174.6032	19
19	19	1	CIP397029.21	10	9	7	10	100	103	14.5	1.45	53.7037	53.7037	5	140.7767	18

Exploratory analysis

Exploratory graphs:

- Boxplot
- Scatterplot
- Histogram
- Density plot



Exploratory analysis - Exercise

Open the fieldbook ***SPAgronomic042017_ICA_exp1***. Make the following graphs:

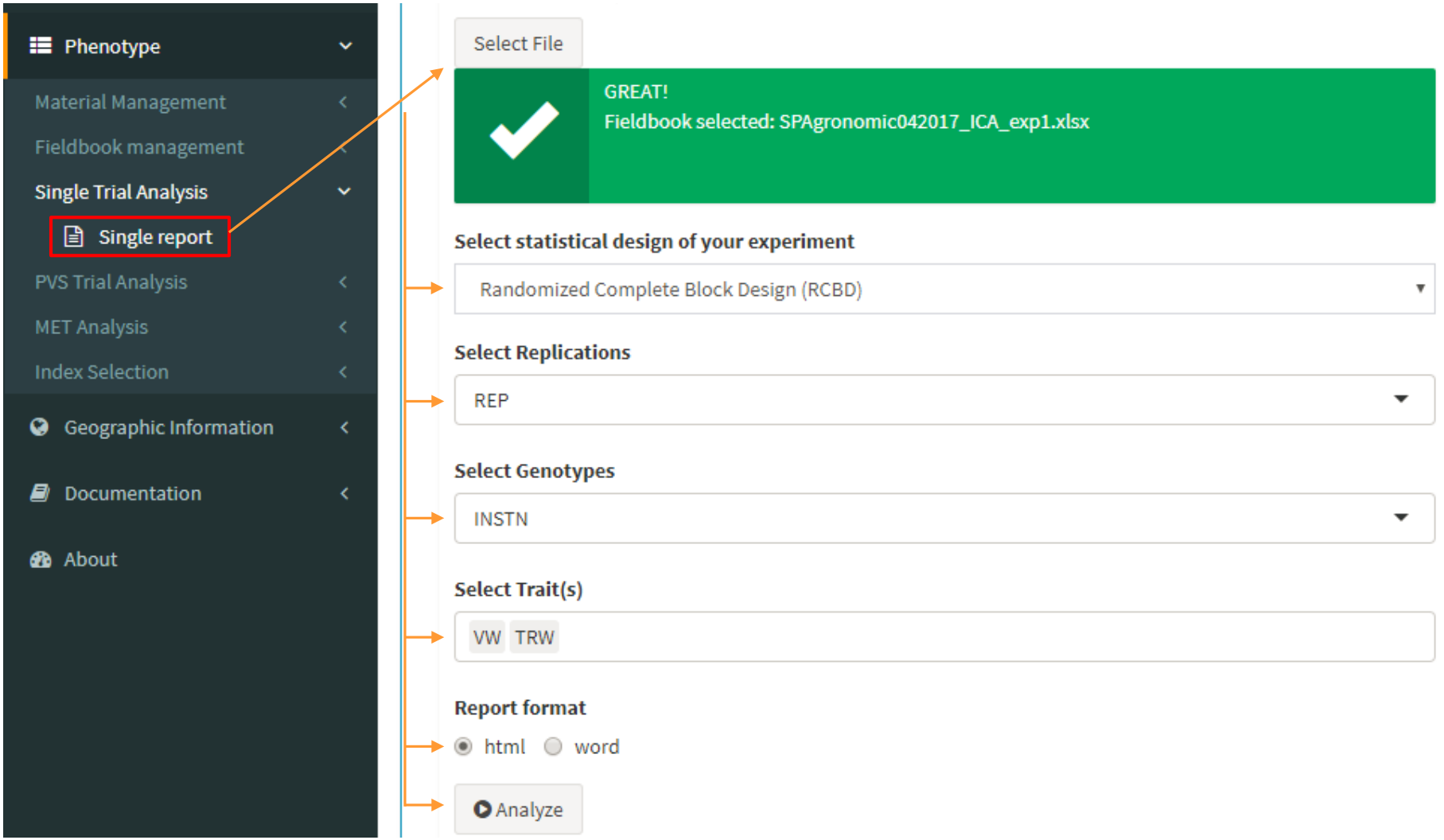
- Boxplot of CRW.
- Boxplot of CRW by replication.
- Scatterplot of NOCR and CRW.
- Histogram of VW.
- Density plot of VW.

Single trial report

1. Model specification and data description.
2. ANOVA and CV.
3. Plots to check assumptions.
4. Genotype means.
5. LSD and Tukey test (only if ANOVA turns out significant for genotypes).
6. Dotplot for genotypes (only if number of genotypes < 10).
7. Variance components estimation.

Single trial report - Exercise

Create a report for the ***SPAgronomic042017_ICA_exp1*** fieldbook.
This is under a RCBD

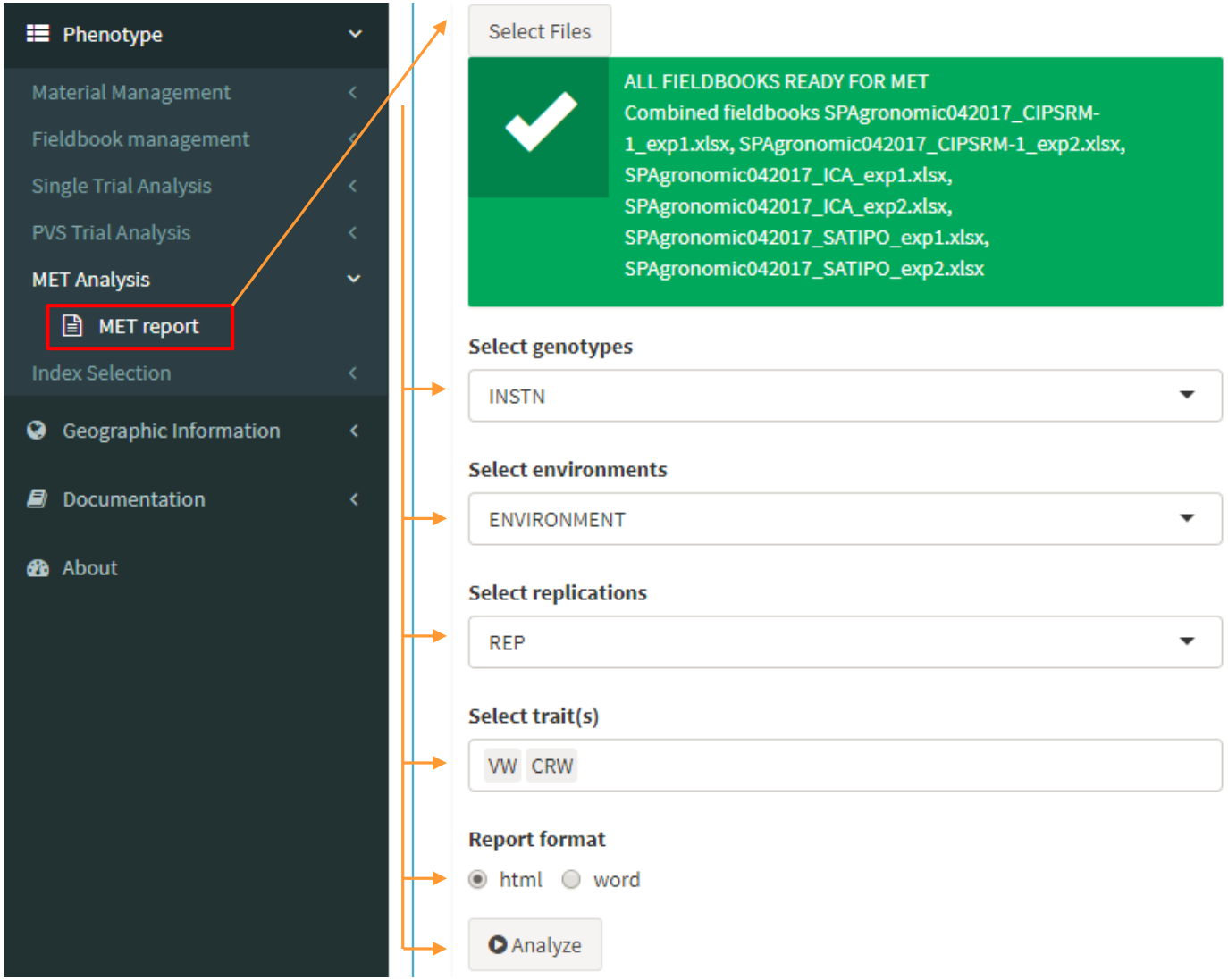


MET report

1. Model specification and data description.
2. Means by genotype, environment, and GxE interactions.
3. ANOVA and CV.
4. Plots to check assumptions.
5. LSD and Tukey test (only if ANOVA turns out significant for genotypes).
6. Variance components and broad sense heritability estimation.
7. Stability analysis (only if ANOVA turns out significant for interaction).

MET report - Exercise

Create a report for all the ***SPAgronomic042017*** fieldbooks (6 files).



Final Exercise

1. Create a list of 8 genotypes (give them any name) plus two checks (select the checks from the institutional list.
2. Create a RCBD with 2 blocks. Include the following traits: VW, CRW, NCRW, FYTHA, RYTHA, BIOM, HI.
3. Enter some data for VW, CRW and NCRW.
4. Check the fieldbook and compute the derived traits: FYTHA, RYTHA, BIOM, HI.
5. Get a report for these data.

Thanks!