

# The EU-monitoring project

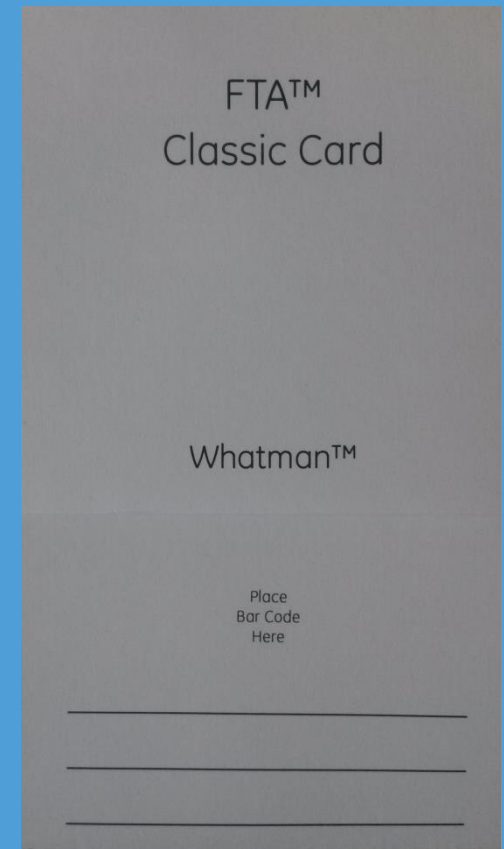
A view behind the scenes

Marieke Förch, David Cooke, Jens G. Hansen, Poul Lassen  
& Geert Kessel



# The EU-monitoring project

- 2 years
- Collaboration between:
  - The James Hutton Institute
  - Aarhus University
  - Wageningen UR
  - 27 Participants



# The EU-monitoring project

## ■ 2013

- 1590 FTA cards sent out
- 585 FTA cards returned
- ~ 750 samples analysed incl. UK

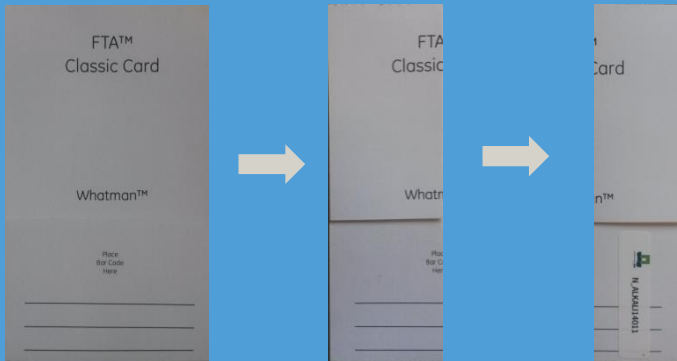
## ■ 2014

- 1551 FTA cards sent out
- 790 FTA cards returned
- ~ 1450 samples analysed incl. UK



# Sending out FTA-cards

## 1. Cut and label many, many cards



## 3. Many Agreements

### AGREEMENT

The undersigned,

1. the foundation **Stichting Dienst Landbouwkundig Onderzoek**, research institute **Praktijkonderzoek Plant & Omgeving**/Plant Research International, established in Wageningen, whose registered office is at Droevendaalsesteeg 1 (6708 PB) Wageningen, The Netherlands, hereinafter also referred to as: "DLO", lawfully represented by its Managing Director, *dr. ir. J.E. van den Ende*;

Contact person: **Dr Geert J.T. Kessel**  
Telephone number: **+31 (0)317 480814**  
E-mail address: **Geert.Kessel@WUR.NL**  
Business Unit: **BioInteractions and Plant Health**

For the purpose of this agreement also acting on behalf of

- 1a. **The James Hutton Institute (Hutton)**, whose business address is at **(Invergowrie, Dundee, DD2 5DA, UK**, hereinafter also referred to as 'Participant', lawfully represented by Beth Corcoran, Director of Finance and Company Secretary;

Contact person: **David Cooke**  
Telephone number: **+44 1382 568831**  
E-mail address: **david.cooke@hutton.ac.uk**

and

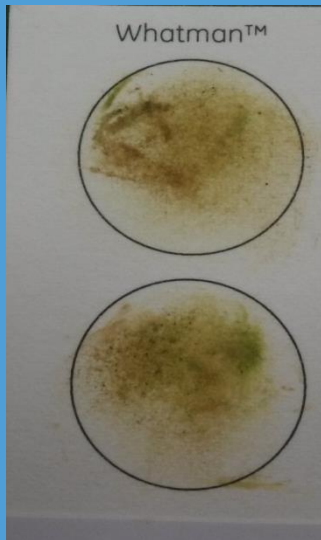
- 1b **Aarhus University (AU)**, Department of **Agroecology**, whose business address is at **(Nordre Ringgade 1, DK-8000 Aarhus C, Denmark)**, hereinafter also referred to as 'Participant', lawfully represented by Head of Department **Enik Steen Kristensen**

Contact person: **Dr Jens Grønbech Hansen**

## 2. Send to Participants

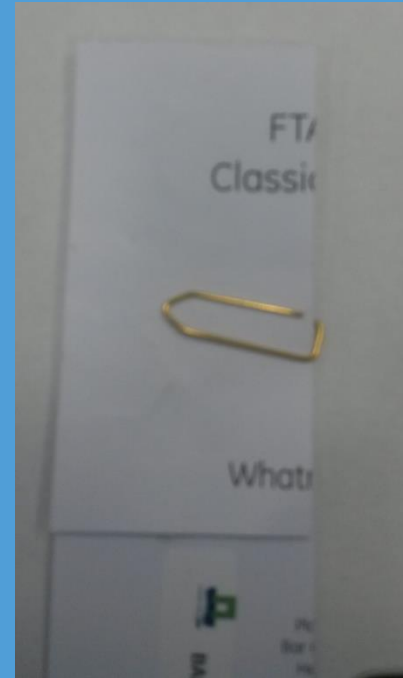
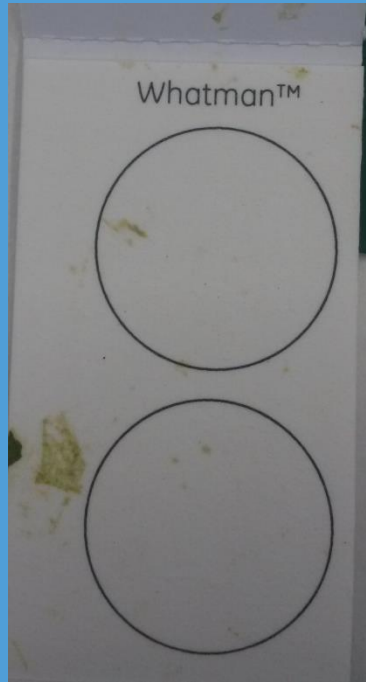
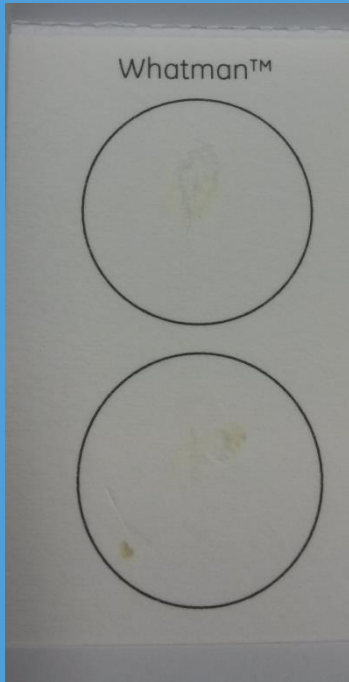


# Sample processing





# Challenging samples



# Processing the FTA-cards

- After sampling the FTA-cards are returned to us.
- Cards and data forms are checked
- Some problems:
  - cards and sample data do not match
  - Cards sent in without the preferred excel file
  - Handwriting is “difficult to read”
  - The use of different GPS systems
  - Missing data
  - Cards sent in very late (December, January, ..)



# GPS

## ■ Different formats:

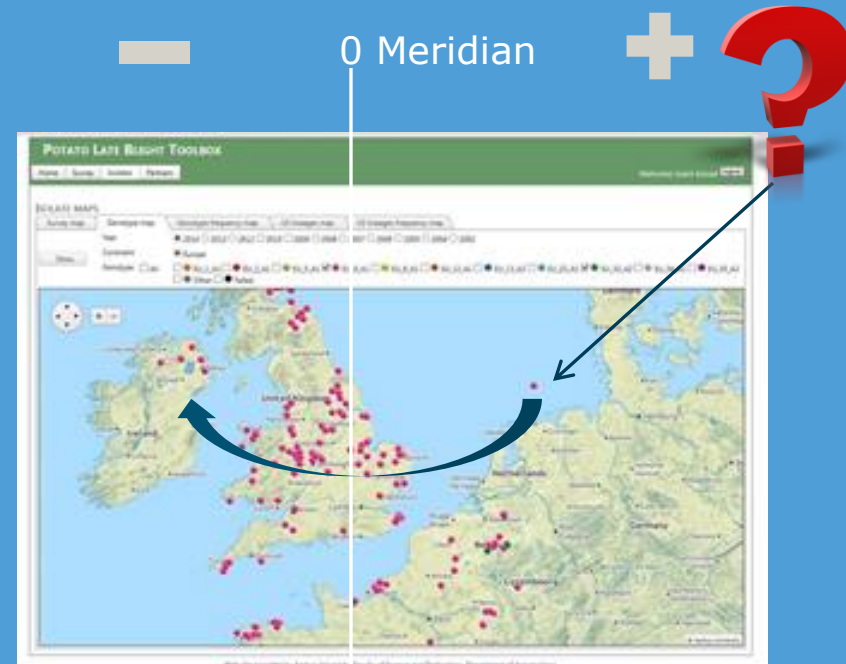
- N 51.85242°      E004.50777°
- N51°51.145'      E 004°30.466'
- N 51°51'08.7"      E004°30'28.0"

same place

## ■ Swiss grid

## ■ Longitude notation:

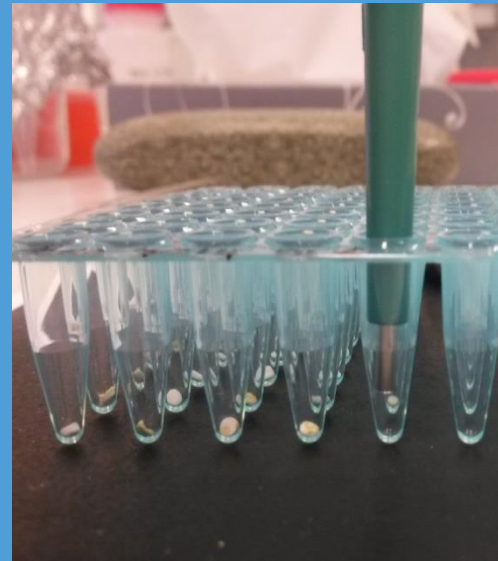
- 53.85242N      6.508W
- 53.85242°      - 6.508





# Processing the cards

- All FTA cards are divided between the JHI and PRI.
- We try to divided the cards from 1 participants equally between both institutes.



# Procedure (from cards to peaks)

- DNA extraction (FTA procedure)
- PCR reaction with the 12 multiplex SSR primers
- Dilution PCR product 500x
- Gene scan on ABI 3700 sequencer
- FSA files analysed in Genemapper™



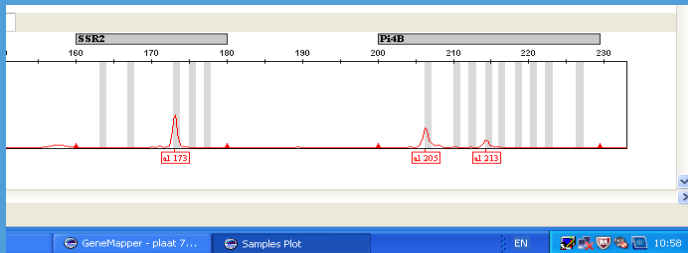
# Results



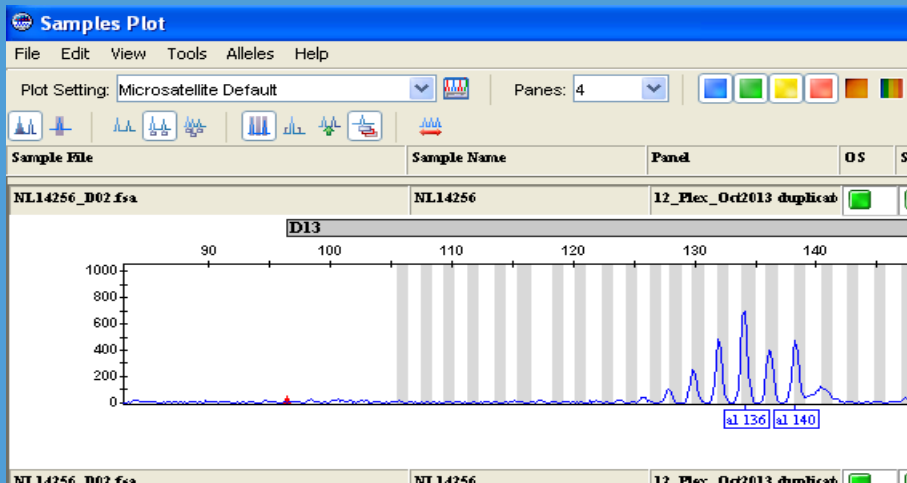
All results (peaks) are checked manually and adjusted when necessary.



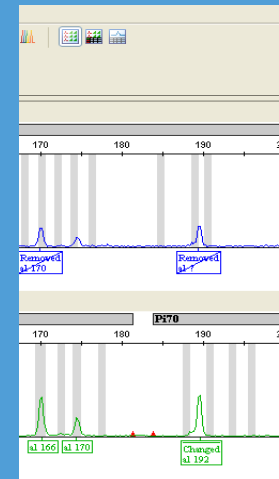
# Examples of "peaks" & problems



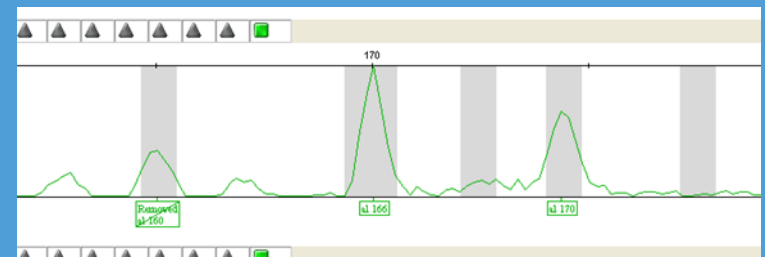
Homozygote and Heterozygote example



Stutters and peaks



Overload



FTA artefact

# Results

The screenshot displays a Microsoft Excel spreadsheet with a complex data table. The table has columns labeled with various parameters, including 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', and 'Acrobat'. The data rows are organized into groups, with some rows highlighted in yellow and others in red. The spreadsheet interface includes the ribbon with tabs like 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', 'Review', 'View', and 'Acrobat'. The status bar at the bottom shows 'per allel ales per allel analysis 0-1 TABEL final sheet opnaak David (deurtes) results David with right G11'.

All PRI & JHI results are combined in 1 excel file and manually checked by David.

# Participant Result file

[illegible]



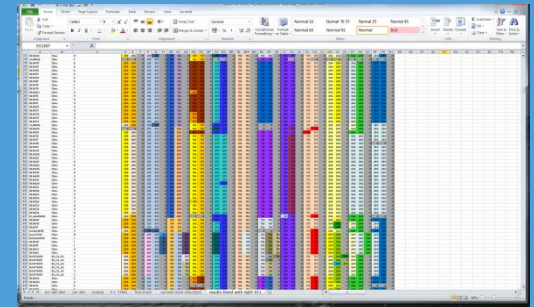
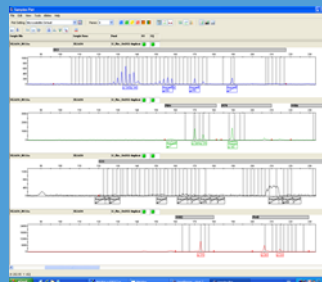
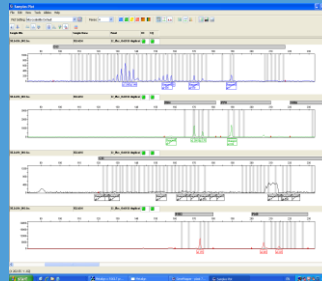


PRI



Hutton

PRI



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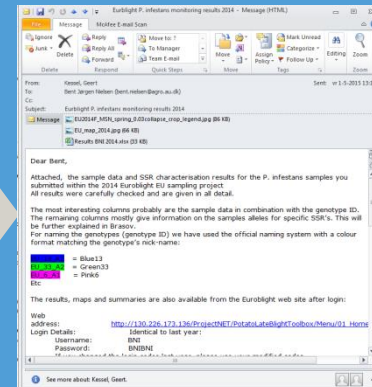
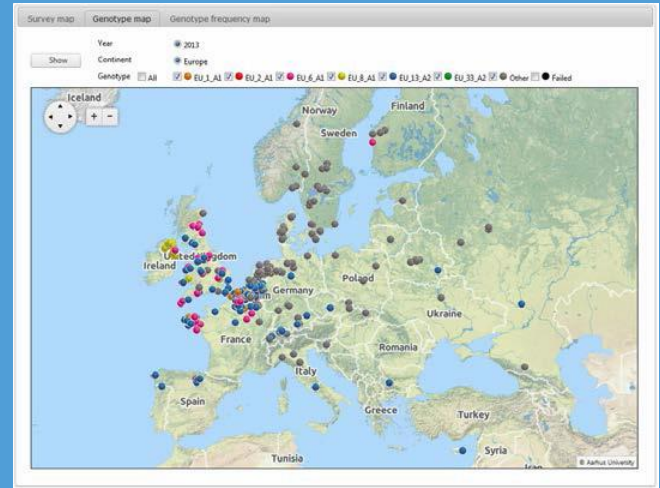
Sample data in Excel format



Database

IsolateID	IsolateCode	Host/CultureName	LocationName	CollectionDate	LaboratoryID	SampleFile	GenotypeID	Genotype	Locus P102	Locus P103	Locus P104
32225	AUI4029	Kartal	9130 Vodka	9-9-2014	19	5	3	EU_13_A1	266	268	-9
32226	AUI4036	Kuras	9382 Tyndup	9-9-2014	19	5	6	Other	266	268	-9
32237	AUI4027	Kuras	9370 Hais	15-9-2014	19	5	6	Other	266	268	-9
32238	AUI4028	Kuras	9330 Dronninglund	29-9-2014	19	5	6	Other	266	268	-9
32239	AUI4031	Kuras	9130 Vodka	12-9-2014	20	Run302_AUI4031_A08_032_hia	3	EU_13_A1	266	268	-9
32340	AUI4032	Kuras	9130 Dronninglund	16-9-2014	20	Run302_AUI4032_B08_033_hia	6	Other	266	268	-9
32341	AUI4035	Sigmund (gangrening)	9130 Vodka	17-9-2014	20	Run302_AUI4035_E08_036_hia	6	Other	266	268	-9
32342	AUI4033	Kuras	9883 Brakke	17-9-2014	20	Run302_AUI4033_C08_035_hia	6	Other	266	268	-9
32343	AUI4034	Kuras	9130 Vodka	19-9-2014	20	Run302_AUI4034_D08_030_hia	6	Other	266	268	-9
32344	AUI4030	Marika	9362 Gandrup	25-9-2014	20	Run302_AUI4030_F08_027_hia	6	Other	266	268	-9
32345	AUI4026	Kartal	Kivikla Jvøy 5	7330 Brande	19	5	6	Other	-9	-9	-9
32346	AUI4022	Kartal	Maknemlundvej 24	Faderholt	19	5	6	Other	266	268	-9
32347	AUI4024	Kartal	FAKSA Jvøy 19	Hedrup	19	5	6	Other	266	268	-9
32348	AUI4023	Kartal	Uthvoe 76	7470 Karup	19	5	6	Other	266	268	-9
32349	AUI4021	Kuras	Karupvej / Lindholmvej	7470 Karup	20	Run302_AUI4021_G08_026_hia	6	Other	266	268	-9
32350	AUI4025	Kuras	7440 Brande	20-9-2014	19	5	6	Other	266	268	-9
32351	AUI4026	Kuras	6360 Tinglev	19-9-2014	20	Run302_AUI4026_O07_029_hia	5	fail	-9	-9	-9
32352	AUI4037	Kuras	6460 Tinglev	12-9-2014	20	Run302_AUI4037_C08_028_hia	5	fail	-9	-9	-9
32353	AUI4008	Kuras	6360 Tinglev	16-9-2014	20	Run302_AUI4008_F08_027_hia	5	fail	-9	-9	-9
32354	AUI4010	Kuras	6460 Tinglev	15-9-2014	20	Run302_AUI4010_H07_025_hia	5	fail	-9	-9	-9
32355	AUI4009	Dianella	6360 Tinglev	16-9-2014	20	Run302_AUI4009_O07_026_hia	6	Other	266	268	-9
32356	AUI4036	A. Aarsenave B. Eurgardene	Vorfastvej 2	6860 Hovborg	19	5	6	Other	266	268	-9
32357	AUI4032	Kuras	BA Rundvej 28	7330 Brande	19	5	3	EU_13_A1	266	268	-9
32358	AUI4035	Salmu	Diagonvejvej 110	7330 Går, ringvej/Give	19	5	6	Other	266	268	-9
32359	AUI4040	Kuras	Tingevjen 426	7200 Gindsted	19	5	6	Other	266	268	-9
32360	AUI4046	Kuras	7330 Brande	17-9-2014	19	5	6	Other	266	268	-9
32361	AUI4041	Kuras	Maknem Klovvej 28 og 261 Brande	7440	19	5	6	Other	266	268	-9

Completed Upload file



Results to participants

Empty Upload File

IsolateID	IsolateCode	Host/CultureName	LocationName	CollectionDate	LaboratoryID	SampleFile	GenotypeID
32225	AUI4029	Kartal	9130 Vodka	9-9-2014			
32226	AUI4036	Kuras	9382 Tyndup	9-9-2014			
32237	AUI4027	Kuras	9370 Hais	15-9-2014			
32238	AUI4028	Kuras	9330 Dronninglund	29-9-2014			
32239	AUI4031	Kuras	9130 Vodka	12-9-2014			
32340	AUI4032	Kuras	9130 Dronninglund	16-9-2014			
32341	AUI4035	Sigmund (gangrening)	9130 Vodka	17-9-2014			
32342	AUI4033	Kuras	9883 Brakke	17-9-2014			
32343	AUI4034	Kuras	9130 Vodka	19-9-2014			
32344	AUI4030	Marika	9362 Gandrup	25-9-2014			
32345	AUI4026	Kartal	Kivikla Jvøy 5	7330 Brande			
32346	AUI4022	Kartal	Maknemlundvej 24	Faderholt			
32347	AUI4024	Kartal	FAKSA Jvøy 19	Hedrup			
32348	AUI4023	Kartal	Uthvoe 76	7470 Karup			
32349	AUI4021	Kuras	Karupvej / Lindholmvej	7470 Karup			
32350	AUI4025	Kuras	7440 Brande	20-9-2014			
32351	AUI4026	Kuras	6360 Tinglev	19-9-2014			
32352	AUI4037	Kuras	6460 Tinglev	12-9-2014			
32353	AUI4008	Kuras	6360 Tinglev	16-9-2014			
32354	AUI4010	Kuras	6460 Tinglev	15-9-2014			
32355	AUI4009	Dianella	6360 Tinglev	16-9-2014			
32356	AUI4036	A. Aarsenave B. Eurgardene	Vorfastvej 2	6860 Hovborg			
32357	AUI4032	Kuras	BA Rundvej 28	7330 Brande			
32358	AUI4035	Salmu	Diagonvejvej 110	7330 Går, ringvej/Give			
32359	AUI4040	Kuras	Tingevjen 426	7200 Gindsted			
32360	AUI4046	Kuras	7330 Brande	17-9-2014			
32361	AUI4041	Kuras	Maknem Klovvej 28 og 261 Brande	7440			

Results in Excel format

Thank you for  
your attention



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