REPORT 2019

PLANT HEALTH AND QUALITY

24th June | 12th July

www.summerschools.univ-angers.fr
Content

RFI Objectif Végétal ................................................................................................................................. 1
List of participants ................................................................................................................................... 2
Profile of participants .............................................................................................................................. 5
List of speakers ........................................................................................................................................ 6
Program ................................................................................................................................................... 8
Scientific program feedback .................................................................................................................. 11
Social program feedback ....................................................................................................................... 28
General feedback .................................................................................................................................. 33
Partners ................................................................................................................................................. 38
The Plant Health and Quality Summer School is financially supported by the "RFI Végétal program" (Research - Education - Innovation program in Pays de la Loire), which is funded by the Région des Pays de la Loire, Angers Loire Métropole and the European Regional Development Fund.

Objectif Végétal, Research, Education & Innovation in Pays de la Loire is a regional program (2014-2019) established by the Pays de la Loire Regional Council and that involves the teaching and research institutions (Université d'Angers, leader of the program, Agrocampus Ouest, ESA, Inra, Université de Nantes) as well as the international French cluster Végépolys.

Objectif Végétal program mainly aims to reinforce the visibility and attractiveness of the regional centre for education and basic research, to boost collaborations with companies and reinforce the processes of economic valorization of research findings, and to develop international partnerships.
These are the participants of the Plant Health and Quality Summer School. Find their area and place of study plus a flag indicating their nationality:

- Ioana - Alexandra BALA
  Bucharest – ROMANIA
  Master in Applied Genetics and Biotechnology

- Julia BARRA
  Rio de Janeiro - BRAZIL
  Master in Agronomy and Soil Science

- Felipe BARRETO DA SILVA
  Botucatu - BRAZIL
  Master in Plant Protection

- Carolina CARDOSO
  Botucatu – BRAZIL
  Master in Agronomy

- Larissa CHAMMA
  Botucatu - BRAZIL
  Master in Agriculture

- Olivier DAYOU
  Nairobi – KENYA
  Master in Plant molecular biology and biotechnology
Elena GIULIANO
Turin – ITALY
Master in Environmental Biology

Shiqi GUO
Kunming – CHINA
Master in Botany

Illia KOSTIUK
Kyiv – UKRAINE
Bachelor in Biology

Saku MATTILA
Helsinki – FINLAND
Bachelor in Biology

Marielsie MONTES SANTANA
Medellin – COLOMBIA
Master in Agricultural Sciences

Manuel PANTOJA GUERRA
Medellin – COLOMBIA
PhD in Biotechnology

Umair RANA
Brisbane – AUSTRALIA
Master in Environmental Management in Conservation

Marcos Roberto RIBEIRO JR.
Botucatu – BRAZIL
Master in Agronomy

Sara Yumi SASSAMOTO KUROKAWA
Botucatu – BRAZIL
Bachelor in Agronomy and Plant Protection
Naomi TRITEAN  
Bucharest – ROMANIA  
Master in Biochemistry and Molecular Biology

Eduardo VICENTIN  
Botucatu – BRAZIL  
Master in Agronomy

Chaoqun WANG  
Beijing - CHINA  
Master in Bioengineering

Weiwen XUE  
Guangzhou - CHINA  
Master in Horticulture

Zhiyi YU  
Beijing- CHINA  
Master in Horticulture

Zhongpiao ZHOU  
Chongqing - CHINA  
Master in Plant protection

Qiunan ZHU  
Guangzhou – CHINA  
Master in Horticulture
Profile of participants

Origin (country of study):

- China; 6
- Romania; 2
- Australia; 1
- Ukraine; 1
- Italy; 1
- Kenya; 1
- Colombia; 2
- Finland; 1
- Brazil; 7
AHMAD Ali, IRHS-University of Angers (FR)
ANTON Sylvia, IGEPP-EGI-INRA – Angers (FR)
BARRET Matthieu, IRHS-INRA-Angers (FR)
BENEJAM Juliette, IRHS-University of Angers (FR)
BERRUYER Romain, IRHS-University of Angers (FR)
BOUTIGNY Anne-Laure, ANSES – Angers (FR)
BRISSET Marie-Noëlle, IRHS-INRA-Angers (FR)
BUITINK Julia, IRHS-INRA-Angers (FR)
CRESPEL Laurent, IRHS-Agrocampus Ouest – Angers (FR)
DEGRAVE Alexandre, IRHS-AgroCampus Ouest-Angers (FR)
DEMILLY Didier, GEVES – Angers (FR)
DESGRANGES Guillaume, CeLFE - Angers (FR)
FEGEANT Nicolas, Végépolys-Angers (FR)
FERRATON Pierre, Vilmorin (FR)
FISCHER-LE SAUX Marion, IRHS-INRA – Angers (FR)
GAUCHER Matthieu, IRHS-INRA – Angers (FR)
GENTIT Pascal, ANSES – Angers (FR)
HIBRAND SAINT OYANT Laurence, IRHS-INRA – Angers (FR)
HUCHE-THELIER Lydie, IRHS-INRA – Angers (FR)
JACQUES Marie-Agnès, IRHS-INRA-Angers (FR)
LAURENS François, IRHS-INRA – Angers (FR)
LE GALLO Méryl, ANSES-Angers (FR)
LEMOIGNE Marie-Anne, IRHS-University of Angers (FR)
LEPRINCE Olivier, IRHS-AgroCampus Ouest (FR)
LOPEZ ARIAS Diana, IRHS-INRA-Angers (FR)
LUQUET Martin, IGEPP-EGI-INRA – Angers (FR)
MAROLLEAU Brice, IRHS-INRA – Angers (FR)
MONTIEL Grégory, LBPV - University of Nantes (FR)
MOREL-CHEVILLET Philippe, IRHS-INRA – Angers (FR)
MOULIN Clarice, IGEPP-EGI-INRA – Angers (FR)
PERROT Sophie, GEVES – Angers (FR)
PORTIER Perrine, IRHS-INRA – Angers (FR)
POUPARD Pascal, IRHS-University of Angers (FR)
POUVREAU Jean-Bernard, LBPV - University of Nantes (FR)
REDJALA Tanegmart, Business Developer, RFI Objectif Végétal, Angers (FR)
REMNANT Benoît, ANSES-Angers (FR)
ROLLAND Mathieu, ANSES-Angers (FR)
ROUSSEAU David, IRHS – University of Angers (FR)
SAKR Soulaiman, IRHS-AgroCampus Ouest-Angers (FR)
SAMIEI Salma, IRHS – University of Angers (FR)
SERANDAT Isabelle, GEVES – Angers (FR)
SOL-MOCHKOVITCH Zoé, IGEPP-EGI-INRA – Angers (FR)
SYMONEAUX Ronan, GRAPPE – ESA - Angers (FR)
THOMAS Caroline, CeLFE - Angers (FR)
THOUROUDE Tatiana, IRHS-INRA – Angers (FR)
VERDIER Jérôme, IRHS-INRA – Angers (FR)
ZINE Mouad, IRHS – University of Angers (FR)

Invited speakers

GAUDIN Jonathan, INRA – Bordeaux (FR)
MOREL Jean-Benoît, INRA –Montpellier (FR)
PAUL-GILLOTEAUX Perrine, CNRS Nantes (FR)
PENNFIELD Steve, John Innes Center-Norwich (UK)
TASIN Marco, Swedish University of Agricultural Science (SE)
YONEYAMA Kaori, Ehime University (JP)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Details about the welcome day page</td>
<td>Welcome coffee</td>
<td>Distribution of welcome pack</td>
<td>Presentation of the school - Room F204</td>
<td>Opening ceremony Plenary conference</td>
<td>P Paul-Guilloteaux - A Paré</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>French language course</td>
<td>French language course</td>
<td>French language course</td>
<td>French language course</td>
<td>Chemical ecology of insect crop pests</td>
<td>Atlantic seacoast day</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Caroline Thomas</td>
<td>Caroline Thomas</td>
<td>Caroline Thomas</td>
<td>Room A119</td>
<td>Faculty of sciences</td>
<td>La Baule</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Opening ceremony</td>
<td>Opening ceremony</td>
<td>Opening ceremony</td>
<td>Opening ceremony</td>
<td>Applied chemical ecology at work in apple orchards</td>
<td>a plant-themed amusement park</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Welcome lunch in the campus</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Welcome lunch in the campus</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>Welcome words Presentation of research structures (SFR QUASAV, Végopolys)</td>
<td>1:30-2:45pm</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Example of sustainability resistance based on diversity - Jean-Benoit Morel</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>Group A: Aphid and parasitoid olfactory choice experiments - Martin Luquet &amp; Clarice Moulin - Room E232-Bât E - ACO</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Welcome words Presentation of research structures (SFR QUASAV, Végopolys)</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>Group B: Electrophysiological recordings of insect antennae - Sylvia Anton &amp; Zoé Sol-Mochkivitch - Room E222-Bât E - ACO</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Welcome words Presentation of research structures (SFR QUASAV, Végopolys)</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td>French culture course</td>
<td></td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Guided tour of Angers Office de tourisme</td>
<td>Kayak session</td>
<td>Bowling</td>
<td>Social activities</td>
<td>Social activities</td>
<td>Social activities</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Wine tasting Museum Jean-Lurçat</td>
<td>Bowling Le Colisée</td>
<td>Social activities</td>
<td>Social activities</td>
<td>Social activities</td>
<td>Social activities</td>
</tr>
</tbody>
</table>

- **Official ceremony**
- **Invited speaker**
- **Social activities**
- **Conference**
- **French course**
- **Workshop**
- **Personal work**
- **Visit**
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday, 01 July 2019</th>
<th>Tuesday, 02 July 2019</th>
<th>Wednesday, 03 July 2019</th>
<th>Thursday, 04 July 2019</th>
<th>Friday, 05 July 2019</th>
<th>Saturday, 06 July 2019</th>
<th>Sunday, 07 July 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>Visit of the LSV Plant Health Laboratory - ANSES building</td>
<td>Ornamental plant architecture and environmental factors - Soulaïman Sak - Ground floor meeting room</td>
<td>Plant resistance inducers (elicitors)</td>
<td>Travel to Paris by coach</td>
<td>A methodology to quantify defense gene expression in plant by qPCR</td>
<td>Visit of greenhouses National Museum of Natural History (MNHN) Paris</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Group A - Workshop Droplet digital PCR applied to plant health and quality - M Rolland, M Le Gallo - ANSES</td>
<td>Personal work to prepare the presentation of Master’s project</td>
<td>Matthieu Gaucher, Alexandre Degraeve, Marie-Noëlle Brisset, Brice Marolleau</td>
<td>Departure at 5:45pm from the residence</td>
<td>Visit of greenhouses National Museum of Natural History (MNHN) Paris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Group 3 - Visit of CIRM-CFPB: a microbial resource center - P Portier - Bat C INRA</td>
<td>Low-cost imaging for plant health monitoring</td>
<td>Room Authion, Bât E INRA</td>
<td></td>
<td></td>
<td>Possibility to stay the week-end in Paris at your own expense</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Picnic in the Gardens of the MNHN</td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>University Restaurant Belle-Beille</td>
<td>University Restaurant Belle-Beille</td>
<td>University Restaurant Belle-Beille</td>
<td>University Restaurant Belle-Beille</td>
<td>University Restaurant Belle-Beille</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Group A - Visit of CIRM-CFPB: a microbial resource center - P Portier - Bat C INRA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Group B - Workshop Droplet digital PCR applied to plant health and quality - M Rolland, M Le Gallo, AL Boutigny - ANSES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 PM</td>
<td>Social Activity Parc Bhotr</td>
<td>General information about PhD fellowships</td>
<td></td>
<td>Dinner in the restaurant Bistrot Bigot in Paris (trip back to Angers by coach at 9:00pm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 PM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Monday 08 July 2019</td>
<td>Tuesday 09 July 2019</td>
<td>Wednesday 10 July 2019</td>
<td>Thursday 11 July 2019</td>
<td>Friday 12 July 2019</td>
<td>Saturday 13 July 2019</td>
<td>Sunday 14 July 2019</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>------------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Analytical and sensory methods to assess fruit quality</td>
<td>Parastic plant seed preparation</td>
<td>Maternal effects in seeds</td>
<td>Departure from the residence at 8:00am</td>
<td>Departure from</td>
<td>Visit of ITEPMAI - Chemillé</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kaori Yoneyama GF meeting room - M. Recherche</td>
<td>GF meeting room - M. Recherche</td>
<td>Steve Penfield GF meeting room - M. Recherche</td>
<td></td>
<td></td>
<td>The French research institute for perfume, medicinal and aromatic plants</td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Ronan Symonex</td>
<td>The secrets of eternal life: anhydrobiosis</td>
<td>Activities of the Variety and Seed Study and Control Group</td>
<td>Lawrence Hibrand Saint Oyant &amp; Tatiana Thouroude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Room at ESA</td>
<td>J. Buitink</td>
<td>Isabelle Sérandet &amp; Sophie Perrot - GEVES</td>
<td></td>
<td></td>
<td>Laurence Hibrand Saint Oyant &amp; Tatiana Thouroude</td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>Parastic plant seed preparation</td>
<td>Seeds capsule of time</td>
<td>Activity from the seed</td>
<td>Visit of an old rose garden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rooms E228 and E225 - ACQ - Grégory Montiel &amp; J-B Pouvreau</td>
<td>(seed conservation) O. Leprince GF meeting room - M. Recherche</td>
<td>O. Leprince GF meeting room - M. Recherche</td>
<td>Rosiers s/Loire</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Lunch at ESA</td>
<td>University Restaurant</td>
<td>Lunch</td>
<td>Visit of the PHENOTIC facilities Didier Demilly GEVES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Belle-Beille</td>
<td>Belle-Beille</td>
<td>University Restaurant</td>
<td>GEVES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Oral presentation of the students works and projects</td>
<td>Workshop 1 (group A/B) : parasitic plant seed germination: a Stroglonate Bioasay</td>
<td>Workshop 2 (group II/A) : parasitic plants - host plant interaction</td>
<td>Visit of the PHENOTIC facilities Didier Demilly GEVES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marion Fischer-Le Saux, Nadine Dueso, Sébastien Soulé, Tanegmat Redjila</td>
<td>Impact of abiotic stresses or seed quality - Jérôme Verdier GF meeting room - M. Recherche</td>
<td>Visit of a seed company (Vilmorin)</td>
<td>GEVES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>Ground floor meeting room, Maison de la Recherche</td>
<td>Phenotyping image analysis and study of germination - D. Demilly, Room Artion, Bât. E - INRA</td>
<td>Pierre Ferraton</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:00 PM</td>
<td></td>
<td>Plate reading and workshop conclusion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:00 PM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:00 PM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6:00 PM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Diner - Quinguette la Riviera near the Loire river</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Official ceremony**
- **Social activities**
- **French course**
- **Visit**
- **Workshop**
- **Personal work**
First week: 24th – 28th June

The presentation of the school
22 responses

- Really appropriate: 81.8%
- Partly appropriate: 18.2%

The lecture "example of sustainability resistance based on diversity"
22 responses

- Really interesting: 59.1%
- Interesting: 40.9%
The Presentation of research structures
22 responses

French culture courses
22 responses

French language courses
22 responses
"Electrophysiological recordings of insect antennae"
22 responses

Second week: 1st – 5th July

Visit of the LSV Plant Health Laboratory
18 responses
Pathogenicity determinants and plant partial resistance against fungal pathogens
18 responses

Low-cost imaging for plant health monitoring
18 responses

Image processing for plant health monitoring
18 responses
Methodology to quantify defense gene expression in plant by qPCR
18 responses

Apple breeding program
18 responses

Quantitative Trait Loci detection using RGTL
18 responses
Visit of the tropical greenhouse of the National Museum of Natural History
16 responses

- Had a lot of interest: 43.8%
- Had interest: 18.8%
- Had little interest: 12.5%
- Had no interest: 25%

Third week: 8th – 12th July

Workshop: Analytical and sensory methods to assess fruit quality
16 responses

- Had a lot of interest: 62.5%
- Had interest: 31.3%
- Had little interest: 12.5%
- Had no interest: 25%
Seed quality session / Conference: Introduction to seed biology
16 responses

The secrets of eternal life: anhydrobiosis
16 responses

Conference: Seeds capsule of time (seed conservation)
16 responses
Conference: Impact of abiotic stresses on seed quality, J. Verdier
16 responses

Visit of a seed company (Vilmorin, La Ménitré, Pierre Ferraton)
16 responses

Conference (invited speaker) : Maternal effects in seeds
16 responses
Visit: Activities of the Variety and Seed Study and Control Group, Isab Perrot
16 responses

Conference: Processes involved in assembly of the seed microbiota, M. Barret
16 responses
Workshop: Phenotyping - Image analysis and study of germination, Didier Demilly
16 responses

Visit of Phenotypic facilities, Didier Demilly
16 responses
Visit of the Parfumerie de Genève - The French research institute for perfume, medicinal and aromatic plants
16 responses

Visit of an old rose garden (Roses Loubert, Rosiers s/ Loire)
16 responses
Social program feedback

The welcome lunch was:

22 responses

- Delicious: 54.5%
- Good: 45.5%

The guided tour of Angers:

22 responses

- Really interesting: 63.6%
- Interesting: 31.8%
What do you think about your day at La Baule
15 responses

What do you think about your day at Terra Botanica
15 responses

What do you think about the evening activities organised at Parc Balzac
15 responses
What do you think about your evening night with Greenyd Students at La Reserve restaurant
15 responses

- 60% No interest
- 40% Little interest

What did you think about your free time in Paris on the 5th of July?
16 responses

- 62.5% Insufficient
- 18.8% Average
- 18.8% Good
- 18.8% Very good
What did you think about the Bistrot Bigo where you eat in the evening in Paris?
15 responses

What did you think about the Guinguette near the Loire river on Wednesday night?
14 responses
General feedback

How would you rate the application procedure and your contacts before your arrival?
16 responses

- 75% Easy
- 18.8% Complicated

What did you think about the welcome arrival at the Charles de Gaulle airport on the 22nd of June?
16 responses

- 56.3% Very good
- 12.5% Good
- 18.8% Average
- 18.8% Insufficient
- Not concerned
What did you think about the welcome arrival at the Angers train station on the 22nd of June?
16 responses

- Insufficient: 12.5%
- Average: 18.8%
- Good: 62.5%
- Very good: 0%
- Not concerned: 0%

The opening ceremony was:
22 responses

- Really appropriate: 27.3%
- Partly appropriate: 72.7%
- Partly disappointing: 0%
- Really disappointing: 0%

What did you think about the goodies you received during the opening ceremony?
16 responses

- Insufficient: 43.8%
- Average: 0%
- Good: 56.3%
- Very good: 0%
How would you rate the accommodation in Angers?
16 responses

- Very good: 7 (43.8%)
- Good: 62.5%
- Insufficient: 12.5%
- Average: 43.8%

How would you rate the lunches during the Summer Schools?
16 responses

- Very good: 1 (3.1%
- Good: 62.5%
- Insufficient: 43.8%
- Average: 12.5%

How would you rate the breakfast?
16 responses

- Very good: 7 (43.8%)
- Good: 62.5%
- Insufficient: 12.5%
- Average: 43.8%
How would you rate the dinner at Foyer Darwin?
16 responses

- Insufficient: 43.8%
- Average: 12.5%
- Good: 37.5%
- Very good: 5.2%

How would you rate the staff availability during the Plant Summer School?
16 responses

- Insufficient: 43.8%
- Average: 56.3%

How would you rate the contacts with the speakers and opportunities for interaction?
16 responses

- Insufficient: 56.3%
- Average: 37.5%
- Good: 6.2%
How would you rate Plant Health and Quality Summer School overall?
16 responses

- Insufficient: 31.3%
- Average: 62.5%
- Good: 6.2%
- Very good: 0%

Would you advise one of your friends to attend the Plant Summer School?
16 responses

- No: 43.8%
- Probably not: 6.2%
- Maybe: 6.2%
- For sure: 43.8%