



Frédéric Suffert

Senior researcher in plant disease epidemiology

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## BIOGRAPHY

I am plant disease epidemiologist for INRAE, the French National Institute for Agriculture, Food and Environment. I hold an engineering diploma in agronomy specialized in Crop Protection, a PhD in plant pathology from Institut Agro Rennes-Angers, and a HDR (habilitation). I work in the BIOGER research unit on the Campus Agro Paris-Saclay at Palaiseau. I co-lead the team ADEP, which studies the adaptive and epidemiological processes in wheat-fungal pathogen interactions. My research focuses on characterizing the processes involved in the development of *Septoria tritici* blotch through an experimental deconstruction-reconstruction approach centered on the inoculum. My current projects explore the determinants and consequences of *Zymoseptoria tritici* sexual reproduction (fungal biology, ecology of residues as source of primary inoculum, etc.) and adaptive dynamics of pathogen populations (virulence and aggressiveness patterns) in heterogeneous environments (deployment of resistances in cultivar mixtures, seasonal variations of temperature and moisture conditions, etc.). I have supervised several PhD candidates (ED ABIES) on these topics. I am also interested in the impact of interactions between cultivated and wild compartments (roles of alternating and alternative hosts, service vs. disservice plants, etc.) on the dynamics of diseases with complex biological cycles. I have initiated in 2023 a research program on the epidemiology of stem rust (*Puccinia graminis* f. sp. *tritici*), reemerging in Europe. I graduated from the IHEDN and I address cindynic issues applied to epidemiosurveillance and crop biosecurity for governmental agencies (C&Aw). I am member of the ANSES expert committee Risques Biological Risks to Plant Health and participates in expertise activities for INRAE (e.g. ESCo RegulNat). I am member of the steering committee of the international health monitoring (VSI) for the French plateform for Epidemiosurveillance in Plant Health (ESV), member of the board of the French Phytopathological Society (SFP) and associate editor for Journal of Plant Pathology. I am member of the Association of Naturalists of the Yvelines (ANY) and an enthusiastic photographer of micromycetes (mainly rusts and powdery mildews) during 'Phytopathological Strolls'.

## POSITIONS

- 2022-... Senior scientist (IRHC), co-head of the team *Adaptive and epidemiological processes in wheat-fungal pathogen interactions (ADEP)*, UR1290 BIOGER, INRAE Palaiseau, France
- 2007-2022 Senior scientist (IR1), head of the team *Evolutionary Epidemiology of Fungal Wheat Pathogens (EPIDEV)*, UR1290 BIOGER, INRAE Thiverval-Grignon, France
- 2000-2007 Junior scientist in the group *Epidemiology of Soil-borne Diseases*, UMR1099 IGEPP, INRA Rennes, France

## EDUCATION

- 2015 Habilitation to Supervise Research (Université Paris XI - Orsay). HDR dissertation "*Inoculum-centered processes and mechanisms: Towards a functional and experimental approach of plant disease epidemiology*" defended on June 23, 2015
- 2006 Former auditor of the Institute for Higher National Defence Studies (IHEDN)
- 2006 PhD in Plant Pathology (Doctoral School VAS, Rennes). PhD dissertation "*Epidemiology of the carrot cavity spot*" defended on June 20, 2006
- 1999 Agronomy Engineer (MSc) of Institut Agro Rennes-Angers, specialization in "*Plant Protection and Environment*"
- 1995-1996 BCPST (Lycée Fermat, Toulouse)

## ASSOCIATIVE DUTIES

- 2016-2022 General Secretary of the *French Phytopathological Society (SFP)*

## PUBLICATIONS

### PEER-REVIEWED ARTICLES AND PREPRINTS (\* equal contribution)

- [A1] **Suffert F** (2005) A theoretical approach to the “complementation” notion concerning strategies of crop protection. *Phytoprotection* **86**: 89-92. <http://dx.doi.org/10.7202/012509ar>
- [A2] **Suffert F**, Guibert M (2007) The ecology of a *Pythium* community in relation to the epidemiology of carrot cavity spot. *Applied Soil Ecology* **35**: 488-501. <http://dx.doi.org/10.1016/j.apsoil.2006.10.003>
- [A3] **Suffert F** (2007) Kinetics modelling of the carrot cavity spot caused by a complex of pathogens of the genus *Pythium* dominated by *Pythium violae*. *Canadian Journal of Plant Pathology* **29**: 41-55. <http://dx.doi.org/10.1080/07060660709507436>
- [A4] **Suffert F**, Montfort F (2007) Demonstration of secondary infection by *Pythium violae* in epidemics of carrot cavity spot using root transplantation as method of soil infestation. *Plant Pathology* **56**: 588-594. <http://dx.doi.org/10.1111/j.1365-3059.2007.01566.x>
- [A5] Desprez-Loustau ML, Robin C, Buée M, Courtecuisse R, Garbaye J, **Suffert F**, Sache I, Rizzo D (2007) The fungal dimension of biological invasions. *Trends in Ecology and Evolution* **22**: 472-480. <http://dx.doi.org/10.1016/j.tree.2007.04.005>
- [A6] Latxague E, Sache I, Pinon J, Andrivon D, Barbier M, **Suffert F** (2007) A methodology for assessing the risk posed by the deliberate and harmful use of plant pathogens in Europe. *EPPO Bulletin* **37**: 427-435. <http://dx.doi.org/10.1111/j.1365-2338.2007.01118.x>
- [A7] **Suffert F**, Montfort F (2008) Pathometric relationships reveal epidemiological processes involved in carrot cavity spot epidemics. *European Journal of Plant Pathology* **122**: 425-436. <http://dx.doi.org/10.1007/s10658-008-9309-y>
- [A8] **Suffert F**, Delalande D, Prunier M, Andrivon D (2008) Modulation of primary and secondary infections in epidemics of carrot cavity spot through agronomic management practices. *Plant Pathology* **57**: 109-121. <http://dx.doi.org/10.1111/j.1365-3059.2007.01708.x>
- [A9] **Suffert F**, Lucas JM (2008) Lateral roots of carrot have a low impact on alloinfections involved in a cavity spot epidemic caused by *Pythium violae*. *Journal of General Plant Pathology* **74**: 296-301. <http://dx.doi.org/10.1007/s10327-008-0104-6>
- [A10] **Suffert F**, Latxague E, Sache I (2009) Plant pathogens as agroterrorist weapons: Assessment of the threat for European agriculture and forestry. *Food Security* **1**: 221-232. <http://dx.doi.org/10.1007/s12571-009-0014-2>
- [A11] Gosme M, **Suffert F**, Jeuffroy MH (2010) Intensive versus low-input cropping systems: What is the optimal partitioning of agricultural area in order to reduce pesticide use while maintaining productivity? *Agricultural Systems* **103**: 110-116. <http://dx.doi.org/10.1016/j.agsy.2009.11.002>
- [A12] **Suffert F**, Sache I, Lannou C (2011) Early stages of septoria tritici blotch epidemics of winter wheat: Build-up, overseasoning, and release of primary inoculum. *Plant Pathology* **60**: 166-177. <http://dx.doi.org/10.1111/j.1365-3059.2010.02369.x>
- [A13] **Suffert F**, Sache I (2011). Relative importance of different types of inoculum to the establishment of *Mycosphaerella graminicola* in wheat crops in north-west Europe. *Plant Pathology* **60**: 878-889. <http://dx.doi.org/10.1111/j.1365-3059.2011.02455.x>
- [A14] Ben Slimane R, Bancal P, **Suffert F**, Bancal M-O (2011). Localized septoria leaf blotch lesions in winter wheat flag leaf do not accelerate apical senescence during necrotrophic stage. *Journal of Plant Pathology* **94**: 543-553. <http://dx.doi.org/10.4454/JPP.FA.2012.055>
- [A15] Bernard E, Sache I, **Suffert F**, Chelle M (2013) The development of a foliar fungal pathogen does react to leaf temperature! *New Phytologist* **198**: 232-240. <http://dx.doi.org/10.1111/nph.12134>

- [A16] **Suffert F**, Sache I, Lannou C (2013) Assessment of quantitative traits of aggressiveness in *Mycosphaerella graminicola* on adult wheat plants. *Plant Pathology* **62**: 1330-1341. <http://dx.doi.org/10.1111/ppa.12050>
- [A17] Siou D, Gelisse S, Laval V, Repinçay C, Canalès R, **Suffert F**, Lannou C (2013). Effect of wheat spike infection timing on *Fusarium* head blight development and mycotoxin accumulation. *Plant Pathology* **63**: 390-399. <http://dx.doi.org/10.1111/ppa.12106>
- [A18] Gautier A, Marcel T, Confais J, Crane C, Kema G, **Suffert F**, Walker A-S (2014) Development of a rapid multiplex SSR genotyping method to study populations of the plant pathogenic fungus *Mycosphaerella graminicola*. *BMC Research Notes* **7**: 373. <http://dx.doi.org/10.1186/1756-0500-7-373>
- [A19] Siou D, Gélisse S, Laval V, Repinçay C, Bourdat-Deschamps M, **Suffert F**, Lannou C (2014) Interactions between head blight pathogens: consequences on disease development and toxins production in wheat spikes. *Applied and Environmental Microbiology* **81**: 957-965. <http://dx.doi.org/10.1128/aem.02879-14>
- [A20] Siou D, Gélisse S, Laval V, **Suffert F**, Lannou C (2015) Mutual exclusion between fungal species of the FHB complex in a wheat spike. *Applied and Environmental Microbiology* **81**: 4682-4689. <http://dx.doi.org/10.1128/AEM.00525-15>
- [A21] **Suffert F**, Ravigné V, Sache I (2015) Seasonal changes drive short-term selection for fitness traits in the wheat pathogen *Zymoseptoria tritici*. *Applied and Environmental Microbiology* **81**: 6367-6379. <http://dx.doi.org/10.1128/AEM.00529-15>
- [A22] Morais D, Laval V, Sache I, **Suffert F** (2015) Comparative pathogenicity of sexual and asexual spores of *Zymoseptoria tritici* (Septoria tritici blotch) on wheat leaves. *Plant Pathology* **64**, 1429–1439. <http://dx.doi.org/10.1111/ppa.12372>
- [A23] Morais D, Sache I, **Suffert F\***, Laval V (2016) Is onset of Septoria tritici blotch epidemics related to local availability of ascospores? *Plant Pathology* **65**, 250-260. <http://dx.doi.org/10.1111/ppa.12408>
- [A24] Morais D, Gélisse S, Laval V, Sache I, **Suffert F** (2016) Inferring the origin of primary inoculum of *Zymoseptoria tritici* from differential adaptation of resident and immigrant populations to wheat cultivars. *European Journal of Plant Pathology* **145**, 393-404. <http://dx.doi.org/10.1007/s10658-015-0853-y>
- [A25] **Suffert F**, Delestre G, Carpentier F, Walker AS, Gazeau G, Gélisse S, Duplaix C (2016) Fashionably late partners have more fruitful encounters: impact of the timing of co-infection and pathogenicity on sexual reproduction in *Zymoseptoria tritici*. *Fungal Genetics and Biology* **92**: 40-49. <http://dx.doi.org/10.1016/j.fgb.2016.05.004>
- [A26] Soubeyrand S, Garreta V, Monteil C, **Suffert F**, Goyeau H, Berder J, Berge O, Moinard J, Fournier E, Tharreau D, Morris C, Sache I (2017) Testing differences between pathogen compositions with small samples and sparse data. *Phytopathology* **107**: 1199-1208. <https://doi.org/10.1094/PHYTO-02-17-0070-FI>
- [A27] **Suffert F**, Goyeau H, Sache I, Carpentier F, Gélisse S, Morais D, Delestre G (2018) Epidemiological trade-off between intra- and interannual scales in the evolution of aggressiveness in a local plant pathogen population. *Evolutionary Applications* **11**: 768-780 (also peer-reviewed by PCI Evolutionary Biology) <https://doi.org/10.1111/eva.12588>
- [A28] **Suffert F**, Delestre G, Gélisse S (2018) Sexual reproduction in the fungal foliar pathogen *Zymoseptoria tritici* is driven by antagonistic density-dependence mechanisms. *Microbial Ecology* **77**: 110-123 <http://dx.doi.org/10.1007/s00248-018-1211-3>
- [A29] **Suffert F**, Thompson R (2018) Some reasons why the latent period should not always be considered constant over the course of a plant disease epidemic. *Plant Pathology* **67**: 1831-1840 <https://doi.org/10.1111/ppa.12894>
- [A30] Boixel A-L, Delestre G, Legeay J, Chelle M, **Suffert F** (2019) Phenotyping thermal responses of yeasts and yeast-like microorganisms at the individual and population levels: proof-of-concept, development and

application of an experimental framework to a plant pathogen. *Microbial Ecology* **78**: 42-56  
<https://doi.org/10.1007/s00248-018-1253-6>

[A31] Morais D, Duplaix C, Sache I, Laval V, **Suffert F\***, Walker A-S (2019) Overall stability in the genetic structure of a *Zymoseptoria tritici* population from epidemic to interepidemic stages at a small spatial scale. *European Journal of Plant Pathology*, **154**: 423-436 <https://doi.org/10.1007/s10658-018-01666-y>

[A32] Kerdraon L, Balesdent M, Barret M, Laval V, **Suffert F** (2019) Crop residues in wheat-oilseed rape rotation system: a pivotal, shifting platform for microbial meetings. *Microbial Ecology* **77**: 931-945  
<https://doi.org/10.1007/s00248-019-01340-8>

[A33] Kerdraon L, Barret M, Laval V, **Suffert F** (2019) Differential dynamics of microbial community networks help identify microorganisms interacting with residue-borne pathogens: the case of *Zymoseptoria tritici* in wheat. *Microbiome* **7**: 125 <https://doi.org/10.1186/s40168-019-0736-0>

[A34] Kerdraon L, Laval V, **Suffert F** (2019) Microbiomes and pathogen survival in crop residues, an ecotone between plant and soil. *Phytobiomes Journal* **3**: 246-255 <https://doi.org/10.1094/PBIOMES-02-19-0010-RVW>

[A35] Kerdraon L, Barret M, Balesdent M, **Suffert F\***, Laval V (2020) Impact of a resistance gene against a fungal pathogen on the plant host residue microbiome: the case of the *Leptosphaeria maculans-Brassica napus* pathosystem. *Molecular Plant Pathology* **21**: 1545-1558 <https://doi.org/10.1111/mpp.12994>

[A36] Paumier D, Bammé B, Penaud A, Valade R, **Suffert F** (2021) First report of the sexual stage of the flax pathogen *Mycosphaerella linicola* in France and its impact on pasmo epidemiology. *Plant Pathology* **70**: 475-483 <https://doi.org/10.1111/ppa.13296>

[A37] Laval V, Kerdraon L, Barret M, Boudier B, Liabot A-L, Marais C, Balesdent M, Fischer-Le Saux M, **Suffert F** (2021) Assessing the cultivability of bacteria and fungi from arable crop residues. *Diversity* **13**: 404 <https://doi.org/10.3390/d13090404>

[A38] Ben Krima S, Slim A, Gélisse S, Houki H, Nadaud I, Sourdille P, Yahyaoui A, Ben M'Barek S, **Suffert F**, Marcel TC (2021) Life story of Tunisian durum wheat landraces revealed by their genetic and phenotypic diversity. *bioRxiv* <https://doi.org/10.1101/2020.08.14.251157>

[A39] Orellana-Torrejon C, Vidal T, Boixel A-L, Sandrine Gélisse, Saint Jean S, **Suffert F** (2022). Annual dynamics of *Zymoseptoria tritici* populations in a wheat cultivar mixture: a compromise between the efficiency and durability of a recently broken-down resistance gene? *Plant Pathology* **71**: 289-303  
<https://doi.org/10.1111/ppa.13458>

[A40] Karisto P, **Suffert F**, Mikaberidze A (2022) Measuring splash-dispersal of a major wheat pathogen in the field. *PhytoFrontiers* **2**: 30-40 <https://doi.org/10.1094/PHYTOFR-05-21-0039-R>

[A41] Vialatte A, Tibi A, Alignier A, Angeon V, Bedoussac L, Bohan D, Bougerara D, Carpentier A, Castagneyrol B, Cordeau S, Courtois P, Deguine J-P, Enjalbert J, Fabre F, Féménia F, Fréville H, Goulet F, Grateau R, Grimonprez B, Gross N, Hannachi M, Jeanneret P, Kuhfuss L, Labarthe P, Launay M, Lefebvre M, Lelièvre V, Lemarié S, Martel G, Masson A, Navarette M, Plantegenest M, Ravigné V, Rusch A, **Suffert F**, Tapsoba A, Thérond O, Thoyer S, Martinet V (2022). Promoting crop pest control by plant diversification in agricultural landscapes: a conceptual framework for analysing feedback loops between agro-ecological effects and socio-economical levers and locks. *Advances in Ecological Research* **65**: 133-165 <https://doi.org/10.1016/bs.aecr.2021.10.004>

[A42] **Suffert F**, Suffert M (2022). 'Phytopathological strolls' in the dual context of Covid-19 lockdown and IYPH2020: transforming constraints into an opportunity for a popular education on plant pathogens. *Plant Pathology* **71**: 30-42 <https://doi.org/10.1111/ppa.13430>

[A43] Boixel A-L, Gélisse S, Marcel T, **Suffert F** (2022) Differential tolerance of *Zymoseptoria tritici* to altered optimal moisture conditions during the early stages of wheat infection. *Journal of Plant Pathology* **104**: 495-507  
<https://doi.org/10.1007/s42161-021-01025-7>

- [A44] Boixel A-L, Chelle M, **Suffert F** (2022) Patterns of thermal adaptation in a globally-distributed plant pathogen: local diversity and plasticity reveal two-tier dynamics. *Ecology and Evolution* **12**: e8515 <https://doi.org/10.1002/ece3.8515>
- [A45] Orellana-Torrejon C, Vidal T, Saint Jean S, **Suffert F** (2022) The impact of cultivar mixtures on virulence dynamics in *Zymoseptoria tritici* populations persist after interseason sexual reproduction. *Plant Pathology* **71**: 1537-1549 <https://doi.org/10.1111/ppa.13577>
- [A46] Bernard E, Chelle M, Riahi El Kamel O, Pincebourde S, Sache I, **Suffert F** (2022) Daily fluctuations in leaf temperature modulate the development of a foliar pathogen. *Agricultural Forest Meteorology* **322**: 109031 <https://doi.org/10.1016/j.agrformet.2022.109031>
- [A47] Fontyn C, Zippert AC, Delestre G, Marcel TC, **Suffert F**, Goyeau H (2022) Is the evolution of virulence phenotype in French *Puccinia triticina* exclusively driven by *Lr* genes deployment? *Plant Pathology* **71**: 1511-1524 <https://doi.org/10.1111/ppa.13599>
- [A48] Barroso-Bergada D, Vignolles N, Massot M, Faivre d'Arcier J, Chancerel E, Guichoux E, Walker A-S, Bohan DA, Vacher C, Laval F, **Suffert F** (2022) NGS data revealing the phyllosphere microbiome of wheat plants infected by the fungal pathogen *Zymospetoria tritici* <https://doi.org/10.1094/PBIOMES-02-22-0008-FI>, *Phytobiomes Journal*, in press
- [A49] McDonald B, **Suffert F**, Bernasconi A, Mikaberidze A (2022) How large and diverse are field populations of fungal plant pathogens? The case of *Zymoseptoria tritici*. *Evolutionary Applications* **15**: 1360-1373 <https://doi.org/10.1111/eva.13434>
- [A50] Rodriguez-Algaba J, Hovmøller MS, Schulz P, Hansen JG, Lezaun JA, Joaquim J, Randazzo B, Czembor P, Zemeca L, Slikova S, Hanzalová A, Holdgate S, Wilderspin S, Mascher F, **Suffert F**, Leconte M, Flath K, Justesen AF (2022) Stem rust on barberry species in Europe: Host specificities and genetic diversity. *Frontiers in Genetics* **13**: 988031 <https://doi.org/10.3389/fgene.2022.988031>
- [A51] Orellana-Torrejon C, Vidal T, Gazeau G, Boixel A-L, Gélisse S, Lageyre J, Saint Jean S, **Suffert F** (2022) Multiple scenarios for sexual crosses in the fungal pathogen *Zymoseptoria tritici* on wheat residues: potential consequences for virulence gene transmission. *Fungal Genetics and Biology* **163**: 103744 <https://doi.org/10.1016/j.fgb.2022.103744>
- [A52] Lapalu N, Simon A, Demenou B, Paumier D, Guillot MP, **Suffert F**, Gout L, Valade R (2022) Complete genome sequences of *Septoria linicola*: a resource for studying a damaging flax pathogen. *Molecular Plant-Microbe Interactions*, **36**: 59-63 <https://doi.org/10.1094/MPMI-09-22-0185-A>
- [A53] Feurtey A, Lorrain C, McDonald MC, Milgate A, Solomon P, Warren R, Puccetti G, Scalliet G, Torriani S, Gout L, Marcel T, **Suffert F**, Alassimone J, Lipzen A, Yoshinaga Y, Daum C, Barry K, Grigoriev I, Goodwin SB, Genissel A, Seidl MF, Stukenbrock EH, Lebrun M-H, Kema G, McDonald BA, Croll D (2022). A thousand-genome panel retraces the global spread and climatic adaptation of a major fungal crop pathogen. *Nature Communications*, **14**: 1059 <https://doi.org/10.1038/s41467-023-36674-y>
- [A54] Bourgeois TP, **Suffert F**, Durya G, Biaua G, Lacoste S, Prado S, Dupont J, Salmon S (2023) Dietary preferences of *Heteromurus nitidus* (Collembola) among wheat fungal communities: implications for bioregulation of two widespread pathogens. *Applied Soil Ecology*, **188**: 104897 <https://doi.org/10.1016/j.apsoil.2023.104897>
- [A55] Karisto P, **Suffert F**, Mikaberidze A (2023) Spatially explicit ecological modeling improves empirical characterization of dispersal. *Plant-Environment Interactions*, **4**: 86-96 <https://doi.org/10.1002/pei3.10104>
- [A56] Fontyn C, Meyer KJG, Boixel A-L, Delestre G, Piaget E, Picard C, **Suffert F**, Marcel TC, Goyeau H (2023) Evolution within a given virulence phenotype (pathotype) is driven by change in aggressiveness: a case study on French wheat leaf rust populations. *Peer Community Journal, section Infections*, **3**: e39 <https://doi.org/10.24072/pcjournal.264>

- [A57] Langlands-Perry C, Pitarch A, Lapalu N, Bergez C, Cuenin M, Gélisse S, Barrachina C, Parrinello H, **Suffert S**, Valade R, Marcel TC (2023). Quantitative and qualitative plant-pathogen interactions call upon similar pathogenicity genes with a spectrum of effects. *Frontiers in Plant Science*, **14**: 1128546 <https://doi.org/10.3389/fpls.2023.1128546>
- [A58] Barroso-Bergada D, Tamaddoni-Nezhad D, Varghese D, Vacher C, Galic N, Laval V, **Suffert F**, Bohan DA. (2023). Unravelling the web of dark interactions: explainable inference of the diversity of microbial interactions. *Advances in Ecological Research*, **68**: 155-183 <https://doi.org/10.1016/bs.aecr.2023.09.005>
- [A59] Boixel A-L, Goyeau H, Berder J, Moinard J, **Suffert F**, Soubeyrand S, Sache I, Vidal T (2024) A landscape-scale field survey demonstrates the role of wheat volunteers as a local and diversified source of leaf rust inoculum. *Scientific Reports*, **13**: 20411 <https://doi.org/10.1038/s41598-023-47499-6>
- [A60] Meyer KJG, Leconte M, Vidal T, Goyeau H, **Suffert F** (2024) Is thermal aptitude a pivotal driver in the establishment of recent *Puccinia striiformis* f. sp. *tritici* lineages in Europe? **106**: 469-482 *Journal of Plant Pathology*, in press <https://doi.org/10.1007/s42161-024-01590-7>
- [A61] Bourgeois TP, Prado S, **Suffert F\***, Salmon S (2024) *Heteromurus nitidus* (Collembola) grazes the wheat pathogenic fungus *Zymoseptoria tritici* on infected tissues: opportunities and limitations for bioregulation. *Pest Management Science*, **80**: 3238-3245 <https://doi.org/10.1002/ps.8026>
- [A62] **Suffert F**, Le Prieur S, Dzialo S, Gélisse S, Marcel T (2024) Estimating the frequency of virulence against *Stb* genes in *Zymoseptoria tritici* populations with bulk phenotyping on checkerboard micro-canopies of wheat NILs. *Plant pathology*, **73**: 1573-1585 <https://doi.org/10.1111/ppa.13894>
- [A63] Fontyn C, Meyer KJG, Boixel A-L, Picard C, Destanque A, Marcel TC, **Suffert F**, Goyeau H (2024) Can higher aggressiveness effectively compensate for a virulence deficiency in plant pathogen? A case study of *Puccinia triticina*'s fitness evolution in a diversified varietal landscape. *Journal of Plant Pathology*, on line <https://doi.org/10.1007/s42161-024-01653-9>
- [A64] Soubeyrand S, Estoup A, Cruaud A, Malembic-Maher S, Meynard C, Ravigné V, Barbier M, Barrès B, Berthier K, Boitard S, Dallot S, Gaba S, Grosdidier M, Hannachi M, Jacques M-A, Leclerc M, Lucas P, Martinetti D, Mougel C, Robert C, Roques A, Rossi J-P, **Suffert F**, Abad P, Auger-Rozenberg M-A, Ay J-S, Bardin M, Bernard H, Bohan DA, Candresse T, Castagnone-Sereno P, Danchin EGJ, Delmas CEL, Ezanno P, Fabre F, Facon B, Gabriel E, Gaudin J, Gauffre B, Gautier M, Guinat C, Lavigne C, Lemaire O, Martinez C, Michel L, Moury B, Nam K, Nédellec C, Ogliastro M, Papaïx J, Parisey N, Poggi S, Radici A, Rasplus J-Y, Reboud X, Robin C, Roche M, Rusch A, Sauvion N, Streito J-C, Verdin E, Walker A-S, Xuéreb A, Thébaud G, Morris CE (2024) Research strategies for developing integrated plant health surveillance to anticipate and mitigate disease and pest emergence in the face of global change. *CABI Agriculture and Bioscience*, **5**: 72 <https://doi.org/10.1186/s43170-024-00273-8>
- [A65] **Suffert F** (2024) Disruptive effect of rainfalls on the diurnal periodicity of airborne wheat rust spore under field conditions. *bioRxiv* <https://doi.org/10.1101/2024.10.03.616546> *Agricultural and Forest Meteorology*, submitted.
- [A66] Vialatte A, Tibi A, Alignier A, Angeon V, Bedoussac L, Bohan D, Bougerara D, Cordeau S, Courtois P, Deguine J-P, Enjalbert J, Fabre F, Fréville H, Grimonprez B, Gross N, Hannachi M, Launay M, Lemarié S, Martel G, Navarrete M, Plantegenest M, Ravigné V, Rusch A, **Suffert F**, Thoyer S, Martinet V (-). Protecting crops with plant diversity: agroecological promises, socioeconomic lock-in and political levers. *One Hearth*, submitted.
- [A67] Moreau D, Ballini E, Chave M, Cordeau S, Djian-Caporalino C, Lavori A-V, **Suffert F**, Cortesero A-M (-) Potential of service plants for multi-pest regulation in agroecosystems. A review. *Agronomy for Sustainable Development*, submitted.
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#### EXPERTISE ACTIVITIES

- 2012-2018 Member of the expert committee *CES Biological Risk for Plant Health* for the French Agency for Food, Environmental and Occupational Health and Safety (ANSES):
  - Coordinator of 8 expert reports as chairman or member of *ad-hoc* working groups and reporter for the CES (list of reports below)
  - Contribution to >60 expert reports and opinion papers as CES member (complete list of reports available on <https://www.anses.fr/>)
- 2019-2024 Member of two working groups "SORE" and "International Health Surveillance (VSI)" for the DGAL-INRAE-ANSES Plant Health Epidemiosurveillance Platform of Avignon (ESV)
- 2019-... Member of the scientific committee of the National Action Plan against declining Vineyards (PNDV)

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[C40] Marliac G, Nowak B, Valade R, **Suffert F**, Saintenac C (2024) Addressing the impact of *Septoria tritici* blotch pressure on wheat cultivar resistance in France. *ISCLB 2024 - International Symposium on Cereal Leaf Blights*, June 5-9 2024, Zurich, Switzerland.

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## PHD SUPERVISION

- **Rym Ben Slimane (2007-2010). Contributor** (co-supervisors M-O Bancal, P Bancal). "Effects of septoria leaf blotch on senescence and nitrogen fluxes during grain filling in bread wheat". Doctoral School ABIES. Defended on Decembre 15 2010.
- **Frédéric Bernard (2009-2012). Co-supervisor** (co-directors M Chelle and I Sache). "The development of a foliar fungal pathogen does react to temperature, but to which temperature?" Doctoral School ABIES. Defended on Decembre 10 2012.
- **David Morais (2011-2015). Co-supervisor** (director I Sache ; co-supervisor V Laval). "Determinants of the early epidemic stages of wheat septoria leaf blotch: quantity, efficacy and origin of primary inoculum". Doctoral School ABIES. Defended on April 2 2015.
- **Lydie Kerdraon (2015-2019). Director** (co-supervisors V Laval, M Barret and M-H Balesdent). "Microbial diversity and pathogen-microbiome interactions in crop residues: the case of *Zymoseptoria tritici* and *Leptosphaeria maculans* in a wheat-oilseed rape system". Doctoral School ABIES. Defended on May 15 2019.
- **Anne-Lise Boixel (2015-2020). Co-director** (co-director M Chelle). "Adaptive responses of foliar pathogen populations to spatio-temporal variations in temperature: from observed phenotypic patterns to eco-evolutionary insights." Doctoral School ABIES / EIR-A Agreenium. Defended on June 19 2020.
- **Safa Ben Krima (2017-2020). Co-supervisor** (director T Marcel). "Adaptation of *Zymoseptoria tritici* to genetically heterogeneous durum wheat populations from Tunisia." Doctoral School SEVE. Defended on December 15 2020.

- **Carolina Orellana-Torrejon (2018-2022).** **Co-director** (co-director S Saint-Jean, co-supervisor T Vidal). “Impact of varietal mixtures on local dynamics of resistance breakdown: case of inter-epidemic transmission of a virulence recently appeared in *Zymoseptoria tritici* populations.” Doctoral School ABIES.
- **Cécilia Fontyn (2018-2022).** **Director** (co-supervisors H Goyeau and T Marcel) “Is aggressiveness a significant selective force for the adaptation of *Puccinia triticina* populations to the cultivated wheat landscape?” Doctoral School ABIES.
- **Chloé Papin (2023-...).** **Director** (co-supervisors T Marcel and R Valade) “Characterising the impact of wheat cultivar mixtures on the evolution of the virulence structure of a *Zymoseptoria tritici* population” Doctoral School ABIES.
- **Alicia Culot (2024-...).** **Co-director** (co-director S Soubeyrand, co-supervisor T Marcel). “Analysis and management of a re-emerging epidemic risk in plant health: survival, dispersal and recurrence of wheat stem rust at the interface between cultivated and natural compartments” Doctoral School ABIES.

#### **MEMBER OF PhD JURY AND COMMITTEES**

- **Julie Crombez, MSc examiner.** Epidémiologie de la septoriose sur blé : premiers éléments pour la construction d'un modèle prédictif. Defended in 2007.
- **Céline Janvier, PhD examiner.** Recherche d'indicateurs de la santé des sols. Defended in 2007.
- **Rim Ben Slimane, PhD committee member** (2008-2009).
- **Christophe Gigot, PhD committee member** (2010-2011).
- **Maxime Duvivier, PhD rapporteur.** Distribution of the airborne inoculum of wheat leaf rust and septoria tritici blotch: impact on epidemics in wheat fields and implications for integrated pest management. Defended in 2015.
- **Nicolas Mariette, PhD rapporteur.** Evolution de populations de *Phytophthora infestans* en lien avec leur pouvoir pathogène et leur réponse à la température. Defended in 2016.
- **Kenny Agésilas-Lequeux, MSc examiner.** Étude d'un système de surveillance épidémiologique de la culture de la vanille en Polynésie. Defended in 2016.
- **Fabienne Legrand, PhD rapporteur.** Gestion des communautés microbiennes telluriques pour réduire l'incidence des *Fusarium toxinogènes* sur céréales à pailles et développer une stratégie de lutte biologique. Defended in 2017.
- **Maxime Garault, PhD committee member** (2017-2021).
- **Candy Abboud, PhD committee member** (2017-2020).
- **Nicolas Niko, PhD committee member** (2019-2023).
- **Paul Chretien, PhD examiner.** Caractérisation des agents phytopathogènes responsables des pertes de la filière ail. Mise au point d'une méthode de détection. Defended in 2021.
- **Antoine Vajou, PhD committee member** (2021-2023).
- **Thomas Bourgeois, PhD committee member** (2021-2023).
- **Paola Pilo, PhD rapporteur.** Detection and diversity of *Zymoseptoria tritici* and its effectors from wheat field sites. Defended in 2022.
- **Ammar Abdalrahem, PhD committee member** (2022-...).
- **Elodie Muller, PhD committee member** (2022-...).
- **Lisa Besson, PhD committee member** (2022-...).

- **Clément Plessis, PhD committee member** (2022-...).
- **Simon Laubray, PhD examiner.** Déterminants de la production d'inoculum chez *Hymenoscyphus fraxineus*, agent de la chalarose du frêne. Defended in 2023.
- **Elise Forgues, PhD committee member** (2024-...).
- **Lolita Pilet, PhD rapporteur.** Biocontrôle de *Datura stramonium* L., plante adventice toxique pour la santé humaine et animale. Defended in 2024.

#### **MEMBER OF RECRUITMENT PANELS**

- **Member of external recruitment panel (IR), campaign 2019.** Ingénieur-e en analyses de données épidémiologiques. Profil IR19-SPE-2, unité INRA BioSP Avignon.
- **Chairman of external recruitment panel (IR), campaign 2020.** Ingénieur-er chargé du suivi des risques d'émergence des maladies en forêt. Profil IR20-ECOFA-1, unité INRAE IAM Nancy.

#### **MSc STUDENT (CO)SUPERVISION**

INRA traineeship: Estelle Remy (2002), Vincent Boaglio (2003), Julien Beuzelin (2003), David Delalande (2004), Adeline Picot (2007), Majed Tliha (2008), Rekah Sekar-Lecomte, David Morais (2011), Jean Legeay (2015), Carolina Orellana-Torrejon (2018), Auriane Pinton (2018), Oumaima Oumi (2020), Anaïs Fermier (2021), Younes Amara (2023), Marion Petit-Garcia (2024), Marion Slesia (2024).

AgroParistech arrangement « La recherche & moi » : Lucas Rebuffet (2016-2017), Quentin Fort (2017-2018), Lucas Pavlovic (2018-2019).

#### **ORGANISATION OF SCIENTIFIC EVENTS**

- **9th International Workshop on Plant Disease Epidemiology** [2005], Landerneau. Member of the organising committee.
- **3rd European Crop Biosecurity Workshop of the CropBioterror EU project** [2007], Paris. Organiser.
- **8e Colloque National de la Société Française de Phytopathologie (SFP)** [2012], Paris. Member of the scientific and organising committee
- **10e Rencontres de Phytopathologie-Mycologie de la SFP** [2014], Aussois. Member of the organising committee and co-chair of the *Epidemiology* session.
- **9th International Symposium on Septoria Diseases of Cereals** [2016], Paris. Co-chair of the *Epidemiology, Cultural Management and Fungicide Resistance* session.
- **2th European Foundation for Plant Pathology-10th SFP Conference** [2017], Malo-les-Bains. Member of the scientific committee and co-chair of the *Epidemiology* session.
- **10th International Symposium on Cereal Leaf Blights** [2019], Dublin. Co-chair of the *Cultural Management, Fungicide Resistance and Epidemiology* session.
- **11e Rencontres de Phytopathologie-Mycologie de la SFP** [2022], Aussois. Member of the organising committee and co-chair of the *Epidemiology* session.
- **12e Rencontres de Phytopathologie-Mycologie de la SFP** [2024], Aussois. Member of the organising committee and co-chair of the *Epidemiology* session.

## MEMBER OF HCERES COMMITTEES

- UMR 1136 *Interactions Arbres / Micro-organismes (IAM)* in Nancy (2016).
- SF 4242 *Ecosystème Forestier, Agroressources, Bioprocédés et Alimentation (EFABA)* in Nancy (2016).

## REFEREE REPORTS FOR SCIENTIFIC JOURNALS

- Associate Editor for *Journal of Plant Pathology* (2017-...).
- Reviewer for *Annals of Applied Biology*, *Biological Invasions*, *EPPO Bulletin*, *European Journal of Plant Pathology*, *Evolutionary Applications*, *Fungal Biology*, *Frontiers in Plant Science*, *Journal of Phytopathology*, *Journal of Plant Pathology*, *Plant Pathology*.

## RECENT PROJECTS

- **MOBIDIV** (PPR ANR 2021-2026). Mobilizing and breeding Intra and inter-specific crop diversity for a systemic change towards pesticide-free agriculture.
- **COMBINE** (ANR 2023-2027). Combining varieties to compel the adaptation of plant pathogen populations: how to solve the efficiency - sustainability - adoption trade-off.
- **DURABLASSO** (Thèse CIFRE ARVALIS 2023-2026). Characterising the impact of wheat variety associations on the evolution of the virulence structure of a *Zymoseptoria tritici* population.
- **WHEATSECURITY** (ERA-NET SusCrop UE 2023-2026). Identification and sustainable deployment of wheat genetic diversity to enhance the resilience and security of the European food supply.
- **MYCOMIX** (SPE INRAE 2024-2026 and BIOSPHERA transverse 2024-2025). Do varietal mixtures influence the composition and structure of fungal communities in the phyllosphere and residuesphere?
- **MICROBIAL RENDEZ-VOUS** (INRAE-CSIRO linkage proposal 2024). Crop residues are an unchecked meeting place for plant pathogens that offer opportunities for the development of novel strategies for sustainable disease management.
- **SEED** (Métaprogramme INRAE SuMCrop 2021-2022). Impact of the management of durum wheat seeds by Tunisian farmers on the sustainability of disease control.
- **TREMÄ** (Métaprogramme INRAE SuMCrop 2024-2025). Tunisian-French consortium and seminar on disease resistance in field crops.
- **PROFAS** (France-Algérie 2023-2024). Promoting Saharan wheat and related know-how.
- **BLADE2025** (IVD4 2021-2025). Wheats for sustainable and ecological agriculture.
- **BASTAFUN** (SPE INRAE, 2023-2025). The genomic basis of multi-stress adaptation in a phytopathogenic fungus.
- **PHECOLLPHYT 1 and 2** (Aviv MNHN 2021-2022 and prématuration Alliance Sorbonne Université SATT Lutech 2023-2025). Use of collembola pheromones for the control of wheat fungal pathogens.
- **RUSTWATCH** (H2020 UE, 2018-2022). A European early-warning system for wheat rust diseases.
- **ROUILLENOIRE\_2.0** (FSOV 2024-2026). Anticipating the re-emergence of stem rust of wheat in France by combining epidemiosurveillance and characterisation of plant material.
- **MYCORE** (OI BASC Paris-Saclay 2022-2023). Myco-control of wild buckwheat by a naturally occurring rust.