

A socio-semantic analysis of the research domain on Xylella fastidiosa Structure and scientific dynamics

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CORTEXT



et TEchniques en Socié



3rd European Conference on Xylella fastidiosa and XF-ACTORS final meeting

A socio-semantic analysis of the research domain on Xylella fastidiosa

Structure and scientific dynamics

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OBJECTIVE

This poster intends to offer a socio-semantic overall view of the research domain on Xylella fastidiosa as a major quarantine pest with worldwide expansion. This scientometric analysis is applied on a corpus of bibliographic notices delineated in the Web of Science (WoS) database with a query based on the topic "Xylella fastidiosa".

↔ dashboard → scient	o_xylella_colloque_efsa	
latest analyses	upload file	📮 start discussion
Structural Analysis In Apr 13th 09:51		
Network Mapping ▶ 1rec Apr 13th 09:45	٩	
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BARBIER	/mapexplorer	

es co-auteur top 593 avec Raw; une belle carte de sociologie des

invite a co-worke

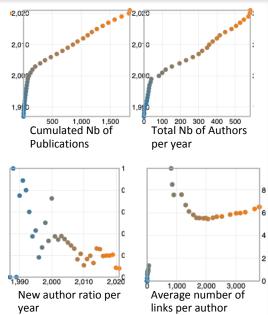
The purpose of this analysis is to deliver to researchers and policy-makers a retrospective account of the constitution and development of the research domain on Xylella fastidiosa. This account is based on the complementary visions and knowledge of authors' discipline: computational social science, ecology and genomics.

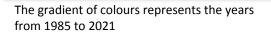
	AUTHORS	Total Nb of Authors	4207
Features of the		Number of	Prct of Total
		Authors	Pub.
Corpus extracted	With 3 publications at least	791	50%
from WoS	With 4 publications at least	593	40%
	With 7 publications at least	229	30%
Date of extraction:		Total Nb of	7763
15/03/2021 – Time	JOURNALS	Journals	7703
<u>Span:</u> 1987-2021		Number of	Prct of Total
<u>Topics</u> : TS=xylella		Journals	Publications
fastidiosa	Threshold 117 articles published	90	60%
	Threshold 17 articles published	449	80%
Size: 1840 publications		Total Nb of	Prct of Total
Export: Full records and	CITED REFERENCES	Cited Ref	Publications
cited references	Threshold 3 citations	3993	51%
	Threshold 10 citations	846	39%
	Threshold 29 citations	229	20%
	Threshold 70 citations	60	10%

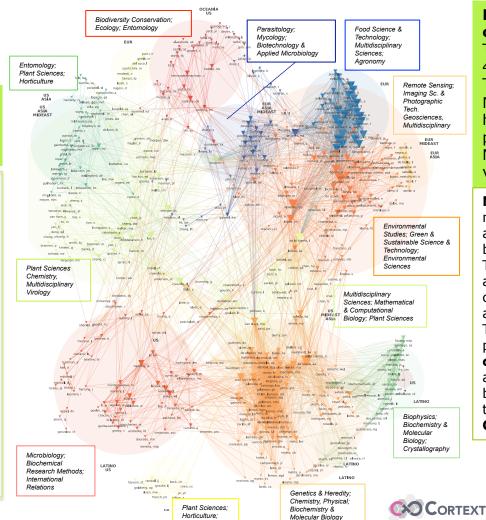
Analysis are conducted with the CorTexT Platform, an open science capacity to run various type of textual and network analysis which belong to the RISIS European Infrastructure for science and innovation policies.

AUTHORS

A growing population of authors but structurally stable in terms of new comers and links of co-authorship







Aaronomv

Network of co-authorship Top 593 Authors 40% of Publications The corpus includes Notices of authors that have more than 4 publications Metric Raw, Louvain viz.

Node size reflects the number of publications and **lines** show links between authors. The landscape of coauthors clusters is calculate with louvain algo. Two variables are projected: the **main continents** to which authors of each cluster belong (Chi2 score) and the top 3 **WoS**

Category (Chi2 score).



THE EPISTEMIC COMMUNITIES OF THE RESEARCH DOMAIN

This map shows clusters of terms extracted from abstracts (top 150) built with a vectorial metric (Cosine-Heterogene) that measure the proximity of terms thanks to the calculation of the weighted contributions of Cited References (Top 500, this threshold corresponds to a score of citation above 10).

On each cluster the main Continents are projected (Top 3 with Chi2 score). Each Cluster is interpreted as an epistemic communities, meaning the proximity of concepts and objects of enquiry that emerged from authors' practices of citations.

The **landscape** shows **three clusters** that are **diseases dependant** (Pierce Dis., Blue; CVC Yellow; QDS Orange) with **clear geographical association**.

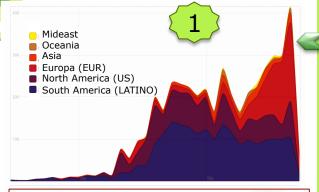
Two other main **clusters** are less disease dependant, one (Orange) on **vector life cycle** (US & OCEANIA), another cluster (Red) on **biofilm formation** (ASIA & LATINO & MIDEAST). A last cluster (Green) is associated to the Blue one and shows the research on **pathogen transmission and feeding behavior** (US)

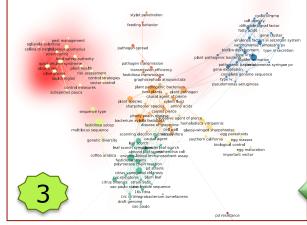


ASIA LATINO MIDEAST stylet penetration cyclic di-gmp cell density feeding behavior diffusible signal factor US fatty acids biofilm development gene cluster virulence factors iii secretion system xanthomonas campestris pv pathogen spread biofilm formation type iii secretion EUR pseudomonas syringae pv OCEANIA^{plant} pathogenic bacteria type iv pili pest management pathogenic bacteria pathogen transmission food safety authority transmission efficiency gene expression strain codiro fastidiosa transmission complete genome sequence philaenus spumarius graphocephala atropunctata type iv olive groves plant health plant pathogenic bacteriu pseudomonas aeruginosa ogliarola salentinapulia region vector control host plants plant pathogen quick decline syndromesk assessment causal agent of pierce control strategies olive trees sharpshooter species control measures cellina di nardo plant species subspecies pauca sequence type phony peach disease lem fluid causes pierce fastidiosa subsp amino acids a fastidiosative agent of pierce multilocus sequence cell wall genetic diversity homalodisca vitripennis disease of grapevine US glassy-winged sharpshooter scanning electron microscopy OCEANIA egg parasitoids coffea arabica causal agent vitis vinifera southern california egg masses leaf scorch oleander leaf scorch leaf scorch symptoms escherichia coli biological control egg maturation almond leaf scorch fastidiozerstatiinked immunosorbent assay important vector polymerase chain reaction citrus variegated chlorosis cvc symptoms pd strains plum leaf citrus sinensis strain 9a5c sao paulo statacleotide sequence 16s rdna cvc strainagrobacterium tumefaciens draft genome sao paulo endophytic bacteria pd resistance LATINO endophytic bacterial MIDEAST endophytic bacterial community US plant grewin promotion ASIA **OCECANIA** communities

grape species

GEO-SCIENCE OF XYLELLA FASTIDIOSA RESEARCH





1. The demography of Continents shows an expansion of Xyl.fast. Res.Domain through years and continents. This extension is related to disease outbreaks. 2. A Contingency Matrix crossing Clusters of epistemic communities (see colours) with Continents shows a **clear** specificity of association (measured by the Nb of documents and the Chi 2 score) 3. To better highlight the

position of European countries a heat map (Scale of Chi2 intensity, red background) shows how Europe impacts the global landscape with research targeted around QDS.

