

DOCU0449

**TP 1 – la recherche documentaire – méthodologie
exercice pratique à travers divers outils**

Une démarche méthodique

1. La question initiale
2. Identifier les concepts
3. Sélectionner le vocabulaire
4. La question documentaire
5. Les résultats

Exemple

Quelle méthode pour bien poser une question documentaire ?

pourquoi il n'y a pas plus de production de biocarburant à partir de l'algue bleue ?

La question

Autrement dit : quelle rentabilité pour de la production de biocarburant à partir de l'algue bleue ?

Identifier les concepts ?

Méthode OST :

- ✓ Quel est l'**objet**, l'organisme, l'individu, le groupe étudié ?
- ✓ Quel est le **sujet** de la recherche ?
- ✓ Quelle est la **technique**, la méthode de recherche utilisée ?
- ✓ Quel est l'espace géographique concerné ?

Quelle méthode pour bien poser une question documentaire ?

pourquoi il n'y a pas plus de production de biocarburant à partir de l'algue bleue ?

La question

Autrement dit : quelle rentabilité pour de la production de biocarburant à partir de l'algue bleue ?

Trois concepts dans cette question :

- Rentabilité
- Biocarburants
- Algue bleue

Quel vocabulaire (mots-clés) pour désigner ces concepts ?

- Dictionnaire
- Thésaurus
- Article/Abstract/Site web sur le même sujet
- ...

Alphabetical

Hierarchy

- properties
 - ability
 - acceptability
 - age
 - antibiotic properties
 - biological properties
 - botanical composition
 - chemicophysical properties
 - composition
 - efficiency
 - equipment characteristics
 - freshness
 - land suitability
 - medicinal properties
 - periodicity
 - pesticidal properties
 - productivity
 - profitability**
 - economic viability
 - quality
 - resilience
 - soil properties
 - stand characteristics
 - sustainability
 - technical properties
 - toxicity
 - uses
 - visibility
 - wind direction
 - wood properties

properties > profitability

PREFERRED TERM

profitability

DEFINITION

Ability of a firm to generate net income on a consistent basis. It is often measured by price to earnings ratio.

The amount of profit made, shown as a percentage of costs or sales revenue.

BROADER CONCEPT

[properties](#)

NARROWER CONCEPTS

[economic viability](#)

ALTERNATIVE LABEL

break-even point

INFLUENCES

[economic thresholds](#)
[profit](#)

IN OTHER LANGUAGES

ربحية	Arabic
收益性	Chinese
收支平衡点	
ziskovost	Czech
<i>mrtvý bod</i>	
Rentabilité	French
Rentabilitaet	German
<i>Rentabilität</i>	
लाभदायिकता	Hindi
बिन्दु कलिकायन-मस	
jövedelmezőség	Hungarian
<i>fedezeti pont</i>	
Redditività	Italian
<i>Punto di pareggio</i>	
收益性	Japanese
損益分岐点	
수익성	Korean
손익분기점	
ການໄດ້ຮັບຜົນປະໂຫຍດ	Lao

Alphabetical

Hierarchy

- damage
- deficiencies
- deterioration
- development
- disasters
- dosage effects
- economic phenomena
- geographical distribution
- hazards
- international relations
- interorganizational relationships
- mode of action
- natural phenomena
- physical phenomena
 - coagulation
 - condensation
 - crystallization
 - diffusion
 - dissolving
 - electric field
 - electricity
 - electromagnetic field
 - energy
 - animal power
 - electrical energy
 - energy for agriculture
 - nuclear energy
 - renewable energy
 - bioenergy
 - **biofuels**
 - biodiesel
 - biogas
 - fuelwood
 - wood energy
 - geothermal energy
 - marine energy
 - solar energy
 - water power

resources > natural resources > energy resources > fuels > biofuels

... > physical phenomena > energy > renewable energy > bioenergy > biofuels

... > natural resources > renewable resources > renewable energy > bioenergy > biofuels

PREFERRED TERM

biofuels

BROADER CONCEPT

bioenergy
fuels

NARROWER CONCEPTS

biodiesel
biogas
fuelwood

ALTERNATIVE LABEL

biomass fuels

IN OTHER LANGUAGES

وقود حيوي	Arabic
生物燃料	Chinese
生物质燃料	
biopaliva	Czech
<i>paliva z biomasy</i>	
Biocarburant	French
Biokraftstoff	German
<i>Biotreibstoff</i>	
जैविक ईंधन	Hindi
बायोमास ईंधन	
bioüzemanyag	Hungarian
<i>biomassza-üzemanyag</i>	
Biocarburanti	Italian
<i>Carburanti da biomasse</i>	
生物燃料	Japanese
バイオマス燃料	
바이오연료	Korean
ຊີ້ອເພີງຊີ້ອະພາບ	Lao
ຊີ້ອເພີງມອນຊີ້ອະພາບ	
زیست‌سوخت‌ها	Persian

Alphabetical

Hierarchy

- dwarfs
- Eukaryota
- females
- genetically modified organisms
- herbivores
- hosts
- indicator organisms
- indigenous organisms
- insectivores
- males
- mankind
- microorganisms
- monera
- natural enemies
- omnivores
- parasites
- pests
- **plants**
 - Algae
 - angiosperms
 - annuals
 - aquatic plants
 - biennials
 - C3 plants
 - C4 plants
 - carnivorous plants
 - climbers
 - crops
 - cryptogams
 - **Cyanobacteria**
 - Anabaena
 - Anacystis
 - Botryococcus
 - Calothrix
 - Microcystis
 - Nostoc
 - Rhodospirillum
 - Spirulina

organisms > plants > Cyanobacteria

PREFERRED TERM

Cyanobacteria

BROADER CONCEPT

[plants](#)

NARROWER CONCEPTS

- [Anabaena](#)
- [Anacystis](#)
- [Botryococcus](#)
- [Calothrix](#)
- [Microcystis](#)
- [Nostoc](#)
- [Rhodospirillum](#)
- [Spirulina](#)
- [Synechocystis](#)
- [Westiellopsis](#)

ALTERNATIVE LABEL

- blue algae*
- blue green algae*
- Cyanophyta*
- Myxophyta*

IN OTHER LANGUAGES

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <ul style="list-style-type: none"> 蓝细菌 蓝绿海藻 蓝藻 蓝藻植物 蓝藻门 | <p>Chinese</p> |
| <ul style="list-style-type: none"> Cyanophyta <i>Myxophyta</i> <i>siné řasy</i> <i>Cyanobacteria</i> <i>sinice</i> | <p>Czech</p> |
| <ul style="list-style-type: none"> Cyanobacteria <i>Myxophyta</i> <i>Microalgue</i> <i>Algue bleu vert</i> <i>Algue bleue</i> | <p>French</p> |

Search Thesaurus :



Language

English

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biofuels [add](#)

Technical Category

P Plural Form

Subject Category

CH Chemicals and Chemical Groups

CO Commodities and Products

Term Definition

Liquid or gaseous fuels made from renewable organic matter.

Scope Note

For solid fuels of biological origin, use 'bioenergy' and 'fuels', and/or the individual fuel.

Non-preferred Term

biofuel

Broader Term

fuels [add](#)

Narrower Term

biodiesel [add](#)

biogas [add](#)

Related Term Narrower

ethanol [add](#)

methanol [add](#)

producer gas [add](#)

Related Term

bioenergy [add](#)

charcoal [add](#)

fuel crops [add](#)

fuelwood [add](#)

renewable energy [add](#)

renewable resources [add](#)

Nederlands

biobrandstoffen

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Cyanobacteria [add](#)

Taxonomic Rank

Class Class
Phylum Phylum or Division

Technical Category

SCI Scientific Name - Organisms

Subject Category

ON Organism Names

Organism Name Author

(ex Stanier, 1974) Cavalier-Smith, 2002

History Note

From 1983. 'Cyanophyta' was separate but related Descriptor, 1983-1988.

Notation

Phylum and class name.

Source of Term

Taxonomic Outline of the Bacteria and Archaea

Non-preferred Term

blue green algae
Cyanochloronta
Cyanophyta

Broader Term

Bacteria [add](#)

Narrower Term

Anabaena [add](#)
Anabaenopsis [add](#)
Anacystis [add](#)
Aphanizomenon [add](#)
Aphanocapsa [add](#)
Arthrospira [add](#)
Aulosira [add](#)
Borzia [add](#)
Calothrix [add](#)
Chamaesiphon [add](#)
Chlorococcoid

Search string

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On retiendra les mots-clés suivants :

Pour le concept de **rentabilité / aspects économiques** :

- profitability
- economic viability
- economic evaluation
- commercialization

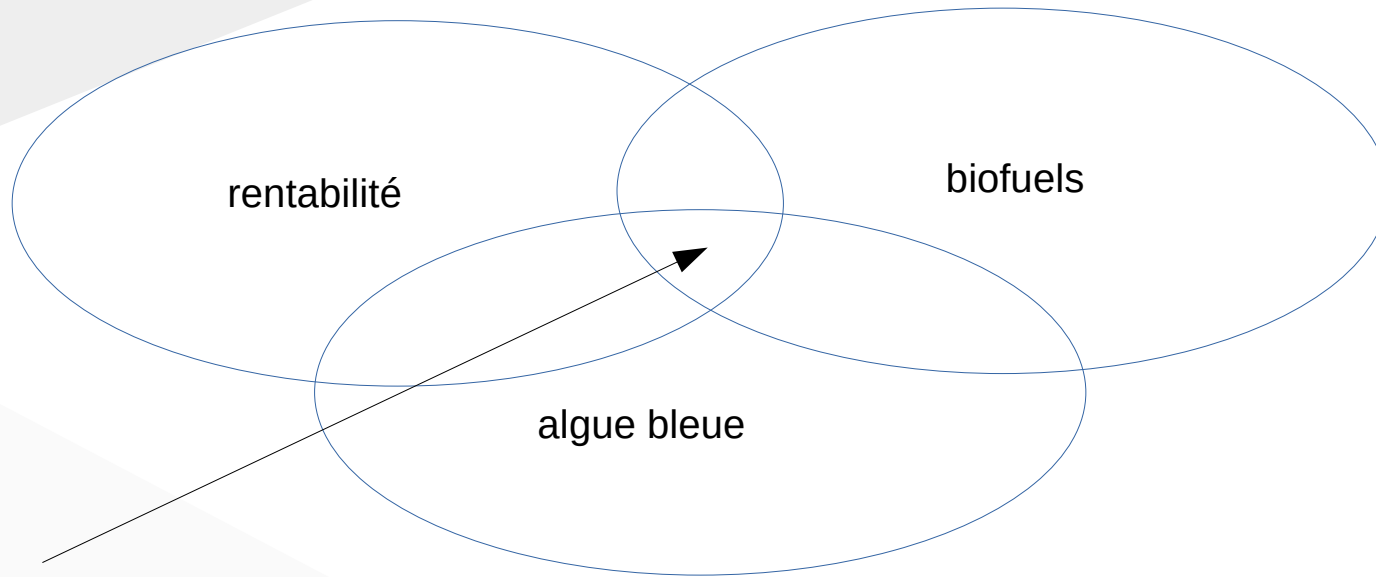
Pour le concept de **bio-carburants** :

- biofuels
- bioenergy
- fuels
- biodiesel

Pour le concept « **algue bleue** » :

- blue algae
- blue green algae
- cyanophyta
- cyanobacteria

On peut même représenter graphiquement cette question :



Notre point focal
(« réservoir » de réponses)

La question documentaire va donc ressembler à ça :

(profitability **OR** “economic viability” **OR** “economic evaluation” **OR** commercialization)

AND

(biofuels **OR** bioenergy **OR** fuels **OR** biodiesel)

AND

(“blue algae” **OR** “blue green algae” **OR** Cyanophyta **OR** Cyanobacteria)

Équation à adapter en fonction des outils, de leurs vocabulaire, de leur syntaxe ... évidemment

Recherche simple

Partout contient 'economic viability" OR "economic evaluation" OR commercialization

ET Partout contient biofuels OR bioenergy OR fuels OR biodiesel

ET Partout contient ie" OR "blue green algae" OR Cyanophyta OR Cyanobacteria

Ajouter une nouvelle ligne
 Effacer

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Tous les documents

Langue

N'importe quelle langue

Date de début :

Jour Mois

Date de fin :

Jour Mois

→ Partout *contient* profitability OR "economic viability" OR "economic evaluation" OR commercialization
 ET Partout *contient* biofuels OR bioenergy OR fuels OR biodiesel
 ET Partout *contient* "blue algae" OR "blue green algae" OR Cyanophyta OR Cyanobacteria

Recherche

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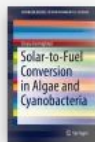
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Affiner

Aviez-vous l'intention de rechercher : profitability OR "economic liability" OR "economic evaluation" OR commercialisation ?

2 résultats Personnaliser ?

- LIVRE
Solar-to-Fuel Conversion in Algae and Cyanobacteria
 Formighieri, Cinzia. author.
 2015
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- LIVRE
Biohydrogen Production: Sustainability of Current Technology and Future Perspective
 Singh. Anoop. editor. : Rathore. Dheerai. editor. :



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Par by Cinzia Formighieri.

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Édition 1st ed. 2015.

Date de création 2015

Éditeur Cham : Springer International Publishing : Imprint: Springer

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Collection [SpringerBriefs in Environmental Science, 2191-5547](#) >

Identifiant ISBN : 3-319-16730-8
DOI : 10.1007/978-3-319-16730-5
ISBN : 3-319-16729-4

Notes Description based upon print version of record.

Description physique 1 online resource (102 p.)

Contenu Includes bibliographical references and index.

1. Introduction -- 2. Introduction to biofuels: An emerging industry. 3. Exploring novel feedstocks and technologies for advanced biofuels: the promises of algae -- 4. Bio-ethanol from algae polysaccharides -- 5. Biodiesel from microalgae -- 6. Processing of algal biomass for the production of biogas and bio-oil -- 7. Cyanobacteria as a platform for direct photosynthesis-to-fuel conversion -- 8. Economic viability of algal biodiesel -- 9. Photosynthesis: a dynamic process -- 10. Solar-to-biomass conversion efficiency -- 11. Light Saturation of photosynthesis -- 12. Downstream biochemical reactions: carbon assimilation -- 13. Light-utilization inefficiency of wild type algal mass cultures -- 14. Genetic modification of the pigment optical density -- 15. Development of microalgae cultivation and biomass harvesting systems for biofuel production -- 16. Environmental sustainability of biofuel production from algae -- 17. Concluding remarks.

Description

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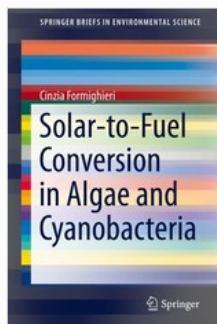
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Solar-to-fuel conversion in algae and cyanobacteria

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Cinzia Formighieri

Pages 3-5

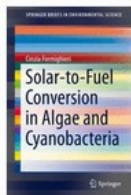
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Biofuels: An Emerging Industry

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Chapter

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Abstract

Dealing with the nonrenewable nature of fossil fuels, and with the effect of carbon dioxide emissions on global warming, requires transformation of the energy sector toward renewable, carbon neutral resources. This chapter introduces the biofuel industry, which relies on the energy derived from living organisms or from their metabolic products, in the contest of global energy supply.

Keywords

Biofuels Carbon dioxide Energy Fossil fuel Global warming Greenhouse gas

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Development of our modern society has been strictly dependent on the consumption of fossil fuels. However, these energy resources are being depleted much faster than the millions of years they take to form, leading to the concept of nonrenewable resources. World energy consumption has duplicated in the past 40 years, reaching 8,000 Mtoe (Million Tonnes of Oil Equivalent), of which 80 % is still covered by fossil fuels, namely, oil, coal, and natural gas

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épaules d'un géant

economic|commercialization|profitability
biofuels|bioenergy|fuels|biodiesel
"blue algae"|Cyanophyta|Cyanobacteria

Articles

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Ma bibliothèque

[HTML] [Cyanobacteria and microalgae: a positive prospect for biofuels](#)

A Parmar, NK Singh, A Pandey, E Gnansounou... - Bioresource ..., 2011 - Elsevier

... use of renewable alternatives such as **biofuels** dominates the political and **economic** agenda worldwide ... To make **biofuels** economically viable, using appropriate technologies, all primary components of algal ... to be employed will be determined, primarily by the **economics** of the ...

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Y Chisti - Biotechnology advances, 2007 - Elsevier

... Renewable, carbon neutral, transport **fuels** are necessary for environmental and **economic** sustainability. ... the only source of renewable **biodiesel** that is capable of meeting the global demand for transport **fuels**. ... **Biofuels**; **Biodiesel**; Microalgae; Photobioreactors; Raceway ponds. ...

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BD Wahlen, RM Willis, LC Seefeldt - Bioresource technology, 2011 - Elsevier

... that quantitative conversion of triglycerides from several different microalgae and **cyanobacteria** could be ... For example, life cycle analysis conducted on the process of **biodiesel** production from microalgae ... in lipid extraction will have a significant impact on the **economics** of the ...

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[Microalgae as biodiesel & biomass feedstocks: review & analysis of the biochemistry, energetics & economics](#)

PJB Williams, LML Laurens - Energy & Environmental Science, 2010 - pubs.rsc.org

... Thus the **economics** are profoundly different. ... In Section 6, we bring together the findings of the two preceding sections in the form of an **economic** analysis of various ... Finally, in Section 7, we explore the answers to two questions: (i) can the production of **biofuels** from algae be ...

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[PDF] [researchgate.net](#)

[HTML] [Biofuels sources, biofuel policy, biofuel economy and global biofuel projections](#)

A Demirbas - Energy conversion and management, 2008 - Elsevier

... environmentally friendly potential, (d) there are many benefits the environment, **economy** and consumers in ... and reliable fuel obtained from renewable sources [5]. Liquid **biofuels** being considered ... Third, it appears to have significant **economic** potential provided that fossil fuel ...

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[HTML] [sciencedirect.com](#)

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[HTML] [Engineering cyanobacteria to generate high-value products](#)

DC Ducat, JC Way, PA Silver - Trends in biotechnology, 2011 - Elsevier

... Unfortunately, **biofuels** also garner attention as a result of economically unsuccessful efforts 4, 7 ... As the industry for cyanobacterial products is developing, **economics** might favor scaled ... to substitutes for relatively inexpensive **fuels** (Box 3). The overall **economic** proposition for ...

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[HTML] [Microalgae for biodiesel production and other applications: a review](#)

TM Mata, AA Martins, NS Caetano - Renewable and sustainable energy ..., 2010 - Elsevier

... methane (CH₄) [2]. It is expected that with the development of new growing **economics**, such as ... is still growing in Europe, Brazil, and United States, based on political and **economic** objectives. ... The utilization of microalgae for **biofuels** production can also serve other purposes. ...

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[HTML] [Algae biofuels: versatility for the future of bioenergy](#)

CS Jones, SP Mayfield - Current opinion in biotechnology, 2012 - Elsevier

... are important to the success of this biofuel platform both in terms of **economic** competitiveness and ... General schematic of the algal **biofuels** production chain. ... ethanol production in the United States: conversion technologies, current production status, **economics**, and emerging ...

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[Biofuels from algae: challenges and potential](#)

M Hannon, J Gimpel, M Tran, R Rasala, S Mayfield - Biofuels, 2010 - Taylor & Francis

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- Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence And Lecture Notes in Bioinformatics (5,119)
- Advanced Materials Research (4,674)
- Nature (4,534)
- Energy Policy (4,449)

Year

- 2017 (4,174)
- 2016 (90,899)
- 2015 (103,663)
- 2014 (103,784)
- 2013 (94,371)
- 2012 (91,244)
- 2011 (87,524)
- 2010 (80,730)
- 2009 (73,513)
- 2008 (64,078)

Author Name

- Anon (6,376)
- Pallarito, K. (520)
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- Lutz, S. (453)

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- UC Berkeley (6 026)
- University of Oxford (5 267)
- The University of British Columbia (5 019)
- UCL (4 823)











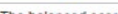



Subject Area

- Medicine (413,919)
- Social Sciences (336,789)
- Engineering (308,866)
- Economics, Econometrics and Finance (182,024)
- Environmental Science (183,397)

Source Type

Keyword

- Article (349,844)
- Human (337,476)
- Economics (330,540)
- Humans (226,453)

<input type="checkbox"/> 1	The assessment and analysis of handedness: The Edinburgh inventory	Oldfield, R.C.	1971	Neuropsychologia	19076
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<input type="checkbox"/> 2	Global cancer statistics	Jemal, A., Bray, F., Center, M.M., (…), Ward, E., Forman, D.	2011	CA Cancer Journal for Clinicians	18833
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<input type="checkbox"/> 3	Measuring the efficiency of decision making units	Chames, A., Cooper, W.W., Rhodes, E.	1978	European Journal of Operational Research	9841
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<input type="checkbox"/> 6	Some tests of specification for panel data: monte carlo evidence and an application to employment equations	Arellano, M.	1991	Review of Economic Studies	6491
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<input type="checkbox"/> 7	On the mechanics of economic development	Lucas Jr., R.E.	1988	Journal of Monetary Economics	6339
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<input type="checkbox"/> 9	Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies	Venkatesh, V., Davis, F.D.	2000	Management Science	4988
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<input type="checkbox"/> 10	Genome sequencing in microfabricated high-density picolitre reactors	Margulies, M., Egholm, M., Altman, W.E., (…), Begley, R.F., Rothberg, J.M.	2005	Nature	4634
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<input type="checkbox"/> 12	Hydrogen-storage materials for mobile applications	Schlapbach, L., Züttel, A.	2001	Nature	4523
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<input type="checkbox"/> 13	Outline of a New Approach to the Analysis of Complex Systems and Decision Processes	Zadeh, L.A.	1973	IEEE Transactions on Systems, Man and Cybernetics	4347
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- SAE Technical Papers (21,877)
- Journal Of Power Sources (8,997)
- International Journal Of Hydrogen Energy (8,795)
- Fuel (5,521)
- Ecs Transactions (5,282)

Year

- 2017 (2,430)
- 2016 (35,592)
- 2015 (39,750)
- 2014 (39,581)
- 2013 (38,741)
- 2012 (35,261)
- 2011 (35,222)
- 2010 (30,620)
- 2009 (28,778)
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Author Name

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- Gupta, A.K. (308)
- Reitz, R.D. (293)
- ANON (253)
- Logan, B.E. (250)

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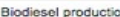


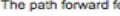

Subject Area

- Engineering (255,051)
- Energy (177,503)
- Chemical Engineering (96,978)
- Environmental Science (96,104)
- Chemistry (86,362)

Source Type

Keyword

- Fuels (48,563)
- Article (45,212)
- Fuel Cells (44,484)
- Combustion (39,083)
- Carbon Dioxide (26,269)
- Priority Journal (26,045)

<input type="checkbox"/> 1	Nanostructured materials for advanced energy conversion and storage devices	Aricò, A.S., Bruce, P., Scrosati, B., Tarascon, J.-M., Van Schalkwijk, W.	2005	Nature Materials	4583
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<input type="checkbox"/> 10	Storage of hydrogen in single-walled carbon nanotubes	Dillon, A.C., Jones, K.M., Bekkedahl, T.A., (...), Bethune, D.S., Heben, M.J.	1997	Nature	3108
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<input type="checkbox"/> 12	A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: A systematic analysis for the Global Burden of Disease Study 2010	Lim, S.S., Vos, T., Flaxman, A.D., (...), Murray, C.J.L., Ezzati, M.	2012	The Lancet	2940
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<input type="checkbox"/> 14	The path forward for biofuels and biomaterials	Ragauskas, A.J., Williams, C.K., Davison, B.H., (...), Templer, R., Tschaplinski, T.	2006	Science	2825
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- Journal Of Biological Chemistry (553)
- Applied And Environmental Microbiology (551)
- Proceedings Of The National Academy Of Sciences Of The United States Of America (482)

Year

- 2017 (98)
- 2016 (2,112)
- 2015 (2,217)
- 2014 (2,205)
- 2013 (2,071)
- 2012 (2,019)
- 2011 (1,916)
- 2010 (1,673)
- 2009 (1,550)
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Author Name

- Codd, G.A. (188)
- Sivonen, K. (158)
- Bryant, D.A. (157)
- Gerwick, W.H. (153)
- Neilan, B.A. (146)

Affiliation

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- Institute of Hydrobiology, Chinese Academy of Sciences (446)
- Russian Academy of Sciences (430)
- University of Tokyo (411)
- Lomonosov Moscow State University (355)

Subject Area

- Agricultural and Biological Sciences (14,135)
- Biochemistry, Genetics and Molecular Biology (12,164)
- Environmental Science (9,050)
- Immunology and Microbiology (6,700)
- Medicine (4,652)

Source Type

Keyword

<input type="checkbox"/> Profiling of complex microbial populations by denaturing gradient gel electrophoresis analysis of polymerase chain reaction-amplified genes coding for 16S rRNA 1	Muyzer, G., De Waal, E.C., Uitterlinden, A.G.	1993	Applied and Environmental Microbiology	7412
<input type="checkbox"/> Generic assignments, strain histories and properties of pure cultures of cyanobacteria 2	Rippka, R., Deruelles, J., Waterbury, J.B.	1979	Journal of General Microbiology	3798
<input type="checkbox"/> Environmental Genome Shotgun Sequencing of the Sargasso Sea 3	Venter, J.C., Remington, K., Heidelberg, J.F., (...), Rogers, Y.-H., Smith, H.O.	2004	Science	2323
<input type="checkbox"/> Architecture of the Photosynthetic Oxygen-Evolving Center 4	Ferreira, K.N., Iverson, T.M., Maghlaoui, K., Barber, J., Iwata, S.	2004	Science	2162
<input type="checkbox"/> Construction of a genetic toggle switch in Escherichia coli 5	Gardner, T.S., Cantor, C.R., Collins, J.J.	2000	Nature	2057
<input type="checkbox"/> Sequence analysis of the genome of the unicellular cyanobacterium <i>Synechocystis</i> sp. strain PCC6803. II. Sequence determination of the entire genome and assignment of potential protein-coding regions 6	Kaneko, T., Sato, S., Kotani, H., (...), Yasuda, M., Tabata, S.	1996	DNA Research	1869
<input type="checkbox"/> Obesity alters gut microbial ecology 7	Ley, R.E., Bäckhed, F., Turnbaugh, P., (...), Knight, R.D., Gordon, J.I.	2005	Proceedings of the National Academy of Sciences of the United States of America	1845
<input type="checkbox"/> Molecular bases for circadian clocks 8	Dunlap, J.C.	1999	Cell	1813
<input type="checkbox"/> Purification and properties of unicellular blue-green algae (order Chroococcales). 9	Stanier, R.Y., Kunisawa, R., Mandel, M., Cohen-Bazire, G.	1971	Bacteriological reviews	1710
<input type="checkbox"/> Crystal structure of photosystem II from <i>Synechococcus elongatus</i> at 3.8 Å resolution 10	Zouni, A., Witt, H.-T., Kern, J., (...), Saenger, W., Orth, P.	2001	Nature	1505
<input type="checkbox"/> Three-dimensional structure of cyanobacterial photosystem I at 2.5 Å resolution 11	Jordan, P., Fromme, P., Witt, H.T., (...), Saenger, W., Krauß, N.	2001	Nature	1499
<input type="checkbox"/> Crystal structure of oxygen-evolving photosystem II at a resolution of 1.9 Å 12	Umena, Y., Kawakami, K., Shen, J.-R., Kamiya, N.	2011	Nature	1413
<input type="checkbox"/> Towards complete cofactor arrangement in the 3.0 Å resolution structure of photosystem II 13	Loll, B., Kern, J., Saenger, W., Zouni, A., Biesiadka, J.	2005	Nature	1309
<input type="checkbox"/> Hydrogen production by biological processes: A survey of literature 14	Das, D., Veziroğlu, T.N.	2001	International Journal of Hydrogen Energy	1188

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- Biotechnology For Biofuels (6)
- Bioresource Technology (4)
- Journal Of Biotechnology (4)

Year

- 2017 (1)
- 2016 (15)
- 2015 (19)
- 2014 (9)
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Author Name

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- Sakurai, H. (4)
- Jones, P.R. (3)
- Kitashima, M. (3)

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- Kanagawa University (4)
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Subject Area

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- Agricultural and Biological Sciences (28)
- Immunology and Microbiology (26)
- Chemical Engineering (22)
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Source Type

- Keyword
- Cyanobacteria (79)
- Cyanobacterium (43)
- Biofuel (39)

<input type="checkbox"/> 1	Anaerobic digestion of microalgae as a necessary step to make microalgal biodiesel sustainable	Sialve, B., Bemet, N., Bernard, O.	2009	Biotechnology Advances	499
	View at Publisher				
<input type="checkbox"/> 2	Biofuels from microalgae	Li, Y., Horsman, M., Wu, N., Lan, C.Q., Dubois-Calero, N.	2008	Biotechnology Progress	464
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<input type="checkbox"/> 3	Engineering cyanobacteria to generate high-value products	Ducat, D.C., Way, J.C., Silver, P.A.	2011	Trends in Biotechnology	187
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<input type="checkbox"/> 8	Dual purpose microalgae-bacteria-based systems that treat wastewater and produce biodiesel and chemical products within a Biorefinery	Olguin, E.J.	2012	Biotechnology Advances	122
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<input type="checkbox"/> 9	Photosynthetic production of ethanol from carbon dioxide in genetically engineered cyanobacteria	Gao, Z., Zhao, H., Li, Z., Tan, X., Lu, X.	2012	Energy and Environmental Science	89
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<input type="checkbox"/> 10	Algal diseases: Spotlight on a black box	Gachon, C.M.M., Sime-Ngando, T., Strittmatter, M., Chambouvet, A., Kim, G.H.	2010	Trends in Plant Science	75
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<input type="checkbox"/> 11	Bioengineering of carbon fixation, biofuels, and biochemicals in cyanobacteria and plants	Rosgaard, L., de Porcellinis, A.J., Jacobsen, J.H., Frigaard, N.-U., Sakuragi, Y.	2012	Journal of Biotechnology	60
	View at Publisher				
<input type="checkbox"/> 12	Engineering cyanobacteria for photosynthetic production of 3-hydroxybutyrate directly from CO2	Wang, B., Pugh, S., Nielsen, D.R., Zhang, W., Meldrum, D.R.	2013	Metabolic Engineering	52
	View at Publisher				
<input type="checkbox"/> 13	Modeling the effects of light and temperature on algae growth: State of the art and critical assessment for productivity prediction during outdoor cultivation	Béchet, Q., Shilton, A., Guieysse, B.	2013	Biotechnology Advances	47
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<input type="checkbox"/> 14	Microalgae as versatile cellular factories for valued products	Koller, M., Muhr, A., Braunneg, G.	2014	Algal Research	44
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Biotechnology Advances

Volume 27, Issue 4, July 2009, Pages 409-416

Anaerobic digestion of microalgae as a necessary step to make microalgal biodiesel sustainable (Review)

Sialve, B.^a , Bernet, N.^a, Bernard, O.^b ^a INRA, UR050, Laboratoire de Biotechnologie de l'Environnement, Avenue des Etangs, Narbonne F-11100, France^b INRIA-COMORE, 2004 Avenue des Lucioles, Sophia-Antipolis, F-06902, France

Abstract

 View references (84)

The potential of microalgae as a source of **biofuels** and as a technological solution for CO₂ fixation is subject to intense academic and industrial research. In the perspective of setting up massive cultures, the management of large quantities of residual biomass and the high amounts of fertilizers must be considered. Anaerobic digestion is a key process that can solve this waste issue as well as the economical and energetic balance of such a promising technology. Indeed, the conversion of algal biomass after lipid extraction into methane is a process that can recover more energy than the energy from the cell lipids. Three main bottlenecks are identified to digest microalgae. First, the biodegradability of microalgae can be low depending on both the biochemical composition and the nature of the cell wall. Then, the high cellular protein content results in ammonia release which can lead to potential toxicity. Finally, the presence of sodium for marine species can also affect the digester performance. Physico-chemical pretreatment, co-digestion, or control of gross composition are strategies that can significantly and efficiently increase the conversion yield of the algal organic matter into methane. When the cell lipid content does not exceed 40%, anaerobic digestion of the whole biomass appears to be the optimal strategy on an energy balance basis, for the energetic recovery of cell biomass. Lastly, the ability of these CO₂ consuming microalgae to purify biogas and concentrate methane is discussed. © 2009 Elsevier Inc. All rights reserved.

Author keywords

Anaerobic digestion; Biochemical methane potential; Biofuel; Biogas; CO₂ mitigation; Codigestion; Microalgae; Pretreatment

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Biochemical methane potential; CO₂ mitigation; Codigestion; Microalgae; Pretreatment**Engineering controlled terms:** Algae; Biodegradation; Biofuels; Biogas; Biological materials; Biomass; Cell culture; Dyes; Industrial research; Metal recovery; Methane; Microorganisms; Organic compounds; Sodium; Sodium compounds**Engineering main heading:** Anaerobic digestion**EMTREE drug terms:** carbon dioxide; methane; sodium**GEOBASE Subject Index:** anoxic conditions; biochemical composition; biodegradation; biofuel; biogas; biomass power; biotechnology; carbon dioxide; carbon fixation; energy balance; methane; microalga; organic matter; protein**EMTREE medical terms:** alga; anaerobic growth; biomass; bioremediation; Cyanobacterium; energy resource; lipid metabolism; metabolism; review**MeSH:** Algae; Anaerobiosis; Biodegradation, Environmental; Biomass; Carbon Dioxide; Cyanobacteria; Energy-Generating Resources; Lipid Metabolism; Methane; Sodium*Medline is the source for the MeSH terms of this document.***Species Index:** algae**Chemicals and CAS Registry Numbers:** carbon dioxide, 124-38-9, 58561-67-4; methane, 74-82-8; sodium, 7440-23-5; Carbon Dioxide, 124-38-9; Methane, 74-82-8; Sodium, 7440-23-5ISSN: 07349750 CODEN: BIADD Source Type: Journal Original language: English
DOI: 10.1016/j.biotechadv.2009.03.001 PubMed ID: 19289163 Document Type: Review

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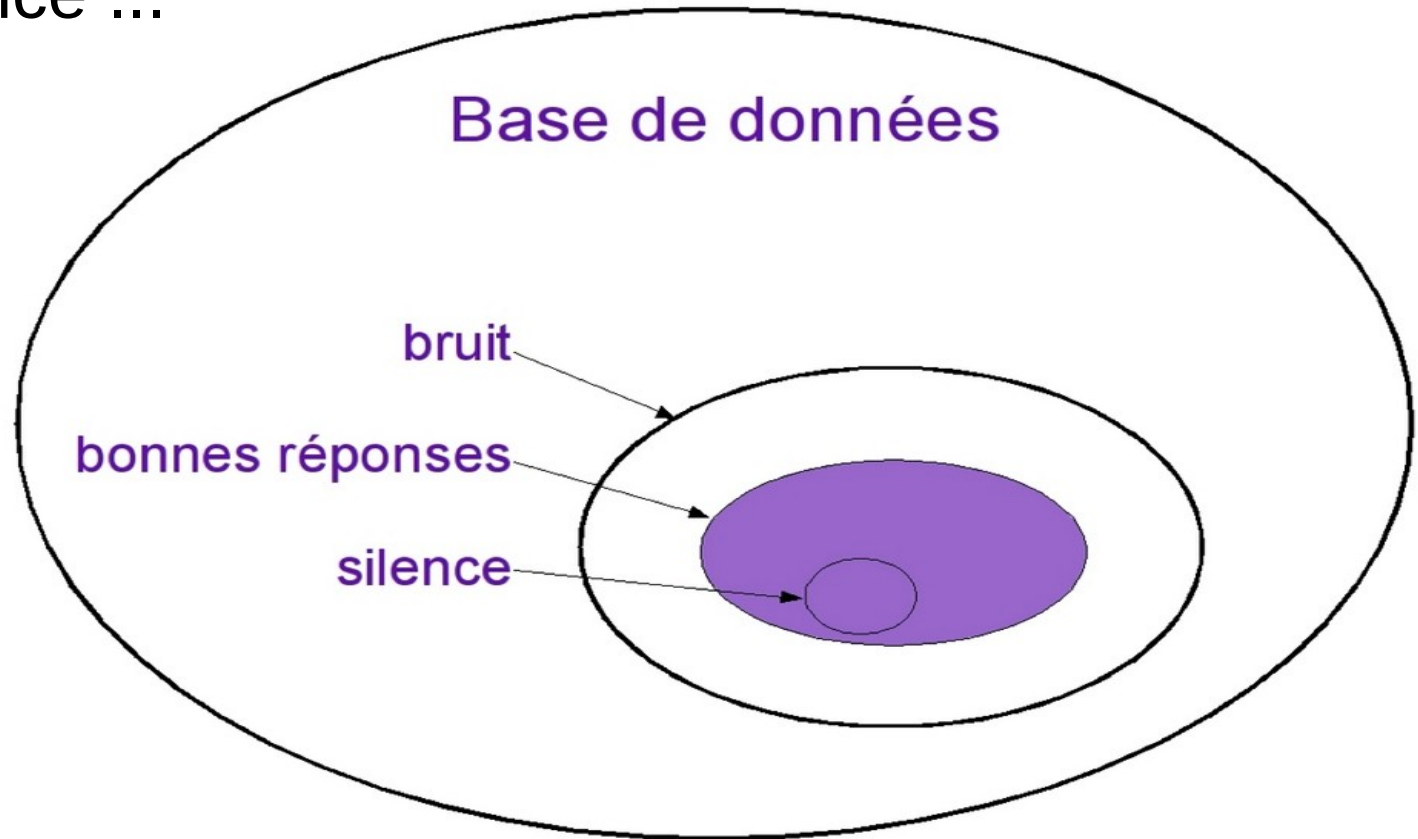
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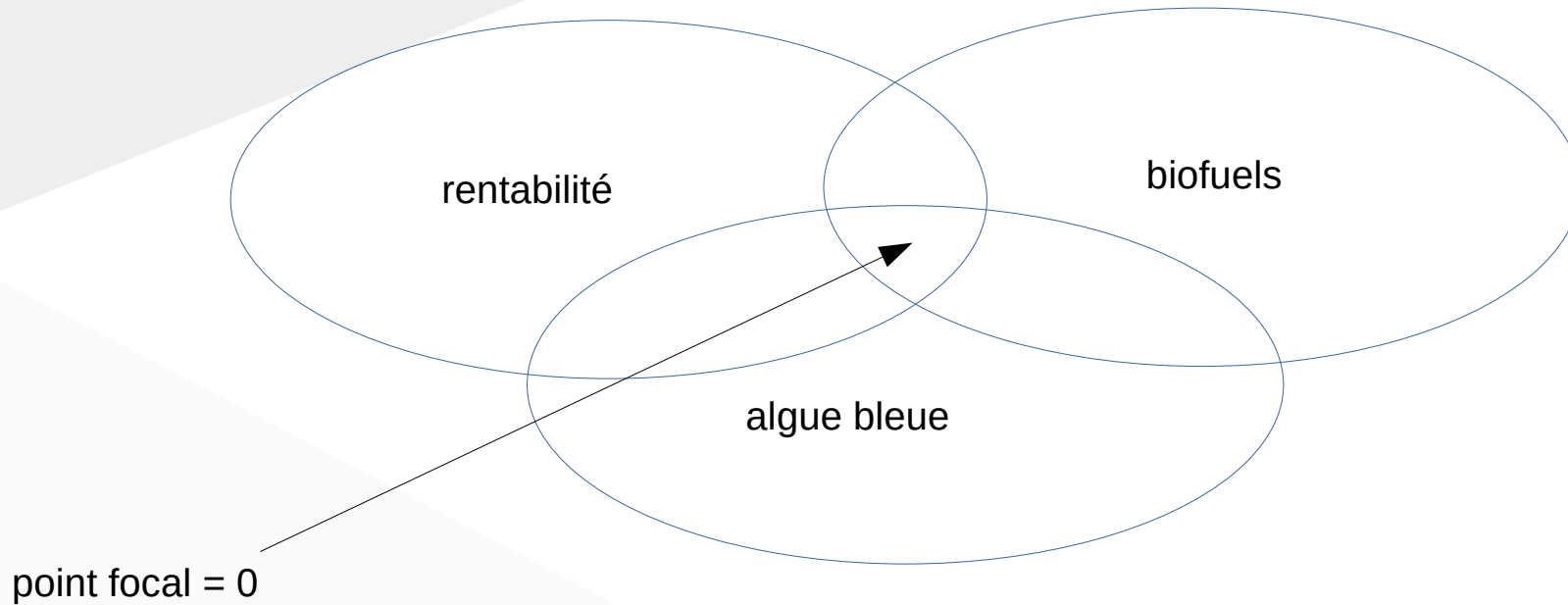


Contrôle systématique des résultats

Le bruit et le silence ...



Que peut signifier un point focal vide ?



Critique les sources (puis-je utiliser ce document dans mon travail ?)

1. Intérêt du document : répond-t-il à la question ?
2. Évaluation externe : auteur, affiliation, date, objectif, support
3. Évaluation interne
 - Le fonds : contexte, qualité scientifique, discussion, sources (bibliographie)
 - La forme : lisibilité, clarté, précision, style, orthographe

Voilà donc quelques exemples d'utilisation d'outils ...

Il faut nécessairement en utiliser plusieurs pour mener une recherche exhaustive

Et ensuite ... ?

On va :

- Prendre connaissance des références
- Sélectionner les documents pertinents :
 - ✓ Sur base de titre
 - ✓ Sur base du résumé
 - ✓ ...

On va :

- Sauvegarder les références sélectionnées
- Obtenir les documents (pdf, prêt-inter, demande à l'auteur...)
- Gérer le tout avec un logiciel de gestion bibliographique (TP2)

Exercice

Déterminez les concepts des questions suivantes :

1. comment faire la mise au point d'une technique de culture *in vitro* d'embryons immatures de *Phaseolus* ?
2. quelles mesures d'incitation faut-il prendre en faveur de la conservation de la diversité génétique en matière agricole ?
3. quel est le comportement physiologique d'*Andropogon gayanus* Kunth var. *bisquamulatus* en conditions de stress hydrique ?

Exercice

4. Le développement de l'ovule chez deux espèces de *Phaseolus* : *P. polyanthus* et *P. Vulgaris* est-il comparable ?
5. quelle sont les diversités naturelles des espèces ligneuses en tant que source de plantes ornementales et utilitaires ?
6. quels sont les mécanismes responsables de la résistance aux insecticides chez les insectes ?
7. quelle est la qualité microbiologique des fromages artisanaux fabriqués au lait cru en Région wallonne ?

Exercice

8. quel est l'effet d'un couvert forestier sur la précision d'un système de positionnement global différentiel ?
9. quel sont les émissions gazeuses des élevages porcins et comment les réduire ?
10. quelle est l'activité de butinage des Apoides sauvages (*Hymenoptera Apoidea*) sur les fleurs de maïs à Yaounde ?