

The "Environmental Microbiology" Group at CIBNOR

Productivity in 2012

(Numbers in parenthesis adjacent a journal's name are the impact factor, 2011)

SUMMARY

- Original publications in peer-reviewed journals with impact factor	
- Published and "in press"	10
- Submitted manuscripts	3
- Publications in books	5
- Publications in websites	5
- Invited presentations at conferences/seminars	9
- Voluntary presentation at conferences	4
- Review of manuscripts for international and national journals and funding agencies	82

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Total productivity (without conferences, reviews, and websites) for 2012: 18

Average "Impact Factor" of papers published in 2012: 2.756

PUBLISHED AND "IN PRESS" PUBLICATIONS IN PEER-REVIEWED JOURNALS WITH AN IMPACT FACTOR

1. Trejo, A., de-Bashan, L.E., Hartmann, A., Hernandez, J.-P., Rothballer, M., Schmid, M., and Bashan Y. 2012. Recycling waste debris of immobilized microalgae and plant growth-promoting bacteria from wastewater treatment as a resource to improve fertility of eroded desert soil. **Environmental and Experimental Botany** 75: 65-73 (2.985).
2. Covarrubias, S.A., de-Bashan, L.E., Moreno, M., and Bashan, Y. 2012. Alginate beads provide a beneficial physical barrier against native microorganisms in wastewater treated with immobilized bacteria and microalgae. **Applied Microbiology and Biotechnology** 93: 2669-2680 (3.425)
3. Bashan, Y., Salazar, B.G, Moreno, M., Lopez, B.R., and Linderman, R.G. 2012. Restoration of eroded soil in the Sonoran Desert with native leguminous trees using plant growth-promoting microorganisms and limited amounts of compost and water. **Journal of Environmental Management** 102: 26-36. (3.245)
4. Lopez, B.R., Tinoco-Ojanguren, C., Bacilio, M., Mendoza, A., and Bashan, Y., 2012. Endophytic bacteria of the rock-dwelling cactus *Mammillaria fraileana* affect plant growth and mobilization of elements from rocks. **Environmental and Experimental Botany** 81: 26-36 (2.985)
5. de-Bashan, L.E., Hernandez, J.-P., and Bashan, Y., 2012. The potential contribution of plant growth-promoting bacteria to reduce environmental degradation - A comprehensive evaluation. **Applied Soil Ecology** 61: 171-189 (2.368)

6. Choix, F.J., de-Bashan, L.E., and Bashan, Y. 2012. Enhanced accumulation of starch and total carbohydrates in alginate-immobilized *Chlorella* spp. induced by *Azospirillum brasilense*. I. Autotrophic conditions. **Enzyme and Microbial Technology** 51: 294-299 (2.367)
7. Choix, F.J., de-Bashan, L.E., and Bashan, Y. 2012. Enhanced accumulation of starch and total carbohydrates in alginate-immobilized *Chlorella* spp. induced by *Azospirillum brasilense*. II. Heterotrophic conditions. **Enzyme and Microbial Technology** 51: 300-309 (2.367)
8. Bashan, Y., Kamnev, A.A., and de-Bashan, L.E. 2012. A proposal for isolating and testing phosphate-solubilizing bacteria that enhance plant growth. **Biology and Fertility of Soils** (in press) DOI: 10.1007/s00374-012-0756-4 (2.319)
9. Bashan, Y., Kamnev, A.A., and de-Bashan, L.E. 2012. Tricalcium phosphate is inappropriate as a universal selection factor for isolating and testing phosphate-solubilizing bacteria that enhance plant growth: a proposal for an alternative procedure. **Biology and Fertility of Soils** (in press) (2.319) DOI: 10.1007/s00374-012-0737-7
10. Bashan, Y., Moreno, M., Salazar, B.G., and Alvarez, L. 2012. Restoration and recovery of hurricane-damaged arid mangroves using the knickpoint-retreat effect and tides as dredging tools. **Journal of Environmental Management** (in press) (3.245)

PUBLICATION IN AN INTERNATIONAL BOOK

1. Kim, Y.-C., Glick, B.R., Bashan, Y., and Ryu, C.-M. 2012. Enhancement of plant drought tolerance by microbes. In: **Plant responses to drought stress: from morphological to molecular features**. Aroca, R (ed). Chapter 15. pp. 383-413. Springer Verlag, Berlin, Heidelberg, Germany.

PUBLICATIONS IN NATIONAL BOOKS (Mexico)

2. de-Bashan, L.E., and Bashan, Y. 2012. Microorganismos utilizados en la recuperación de suelos erosionados y ecosistemas degradados en México. In: **Biodiversidad Microbiana de México**. (Eds): Álvarez Sánchez J., Rodríguez Guzmán, P. and Alarcón, A. Chapter 24. Published by: SAGARPA, Mexico City, Mexico, (in Spanish) (accepted)
3. de-Bashan, L.E., Vazquez, P., Lopez, B.R., Moreno, M., Hernandez, J.-P., Bacilio, M., Leyva, L.A., and Bashan, Y. 2012. Los mas pequeños y los mas grandes: ¿Qué los microorganismos ayudan a las plantas del desierto? In: **¿Qué se mueve en el desierto?: la palpitante vida del matorral**. (Eds): de la Luz, J.L. and Blazquez, C. Published by: CIBNOR, La Paz, Mexico, (in Spanish) (In press)

PUBLICATIONS IN CONFERENCE BOOKS/PROCEEDINGS

4. de-Bashan, L.E., Cruz, I., Covarrubias, S.A. and Bashan, Y. 2012. Biological deteriorated alginate beads containing bacteria and microalgae provide a beneficial physical barrier against native organisms during tertiary wastewater treatment. In: **Proceedings of the 20th International Conference on Bioencapsulation**. Published by: Bioencapsulation Research Group, France/Canada. pp. 94-95.

- de-Bashan, L.E., Hernandez, J.-P. and Bashan, Y. 2012. Plant growth-promoting bacteria as a component for environmental improvement. In: **Proceedings of the International workshop on rhizosphere, biodiversity and sustainable agriculture**. Garcia de Salomone, I.E. and Cassan, F. (Eds), Published by: Asociacion Argentina de Microbiologia, Buenos Aires, Argentina. (*in Spanish*) (in press).

WEBSITES

- Bashan, Y., and Hernandez J.P. 2012. In memoriam; Dr. Jose Luis Ochoa (1951–2007). In: <http://www.bashanfoundation.org/ochoa/mainochoa.html>
- Bashan, Y., and Hernandez J.P. 2012. In memoriam; Dr. Horst Vierheilig (1960–2011). In: <http://www.bashanfoundation.org/horst/horstweb.html>
- Bashan, Y., and Hernandez J.P. 2012. In memoriam; Prof. Dr. Franco Favilli (1933–2012) <http://www.bashanfoundation.org/favilli/favilliweb.html>
- Bashan, Y., and Hernandez J.P. 2012. In memoriam; Prof. Simon Trakhtenberg (1926–2011) <http://www.bashanfoundation.org/trakhtenberg/simonweb.html>
- Bashan, Y., and Hernandez J.P. 2012. In memoriam; Prof. Yigal Henis (1926–2010). <http://www.bashanfoundation.org/henis/mainhenis.html>

SUBMITTED PUBLICATIONS

SCIENTIFIC INTERNATIONAL REVIEWED JOURNALS

- Leyva, L.A., de-Bashan, L.E., and Bashan Y. 2012. Lipids and activity of acetylCoA carboxylase are affected during interaction of *Chlorella* spp. with *Azospirillum brasilense*. **Naturwissenschaften** (2.278)
- Lopez, B.R., de-Bashan, L.E., Trejo, A., and Bashan, Y. 2012. Amendment of degraded desert soil with wastewater debris containing immobilized *Chlorella vulgaris* and *Azospirillum brasilense* significantly modifies soil bacterial community structure, diversity, and richness. **FEMS Microbiology Ecology** (3.408)
- Cruz, I., de-Bashan, L.E., Hernández-Carmona, G., and Bashan, Y. 2012. Partial biological deterioration of alginate beads containing immobilized microalgae and bacteria during tertiary wastewater treatment. **Applied Microbiology and Biotechnology** (3.425)

PRESENTATIONS AT CONFERENCES: (the invitee in bold, the presenter = first author)

1. **de-Bashan, L.E.** 2012. Joint immobilization of plant growth-promoting bacteria and green microalgae in alginate beads as an experimental model for studying plant-bacterium interactions. Seminar of the Academy of Biotechnology of the Northwestern Center for Biological Research, February 2, 2012, La Paz, Baja California Sur, Mexico (**Invited lecture**)
2. **de-Bashan, L.E.** 2012. Aplicaciones biotecnologicas de microalgas inmovilizadas con bacterias en esferas de alginato. Special seminar in: Institute of Biotechnology. February 9, 2012, Cuernavaca, Mexico (**Invited lecture**)
3. **Bashan, Y.**, Lopez, B.R, de-Bashan, L.E., Moreno, M., Hernandez, J.P., Bacilio, M., and Vazquez, P. 2012. Restoration of degraded ecosystems using plant growth-promoting bacteria. In: Microbe Club, Department of Molecular, Cell, and Developmental Biology, University of California, Los Angeles (UCLA), April 17, 2012, Los Angeles, USA. (**Invited lecture**)
4. **Bashan, Y.**, and de-Bashan, L.E. 2012. Plant growth-promoting bacteria from isolation to future application. Special seminar in: Agradis Co., April 18, 2012. San Diego, California, USA. (**Invited lecture**)
5. Lopez, B.R. 2012. Next Generation Sonoran Desert Researchers Summit. April 18 to 20. Arizona-Sonora Desert Museum, Tucson, Arizona, USA. (**Participation and drafting of the final document of the Summit**, available at: <http://nextgensd.com/researchers>).
6. Choix, F.J., de-Bashan, L.E., and Bashan, Y. 2012. Enhanced accumulation of starch and total carbohydrates in alginate-immobilized microalgae *Chlorella* spp. induced by *Azospirillum brasilense* under autotrophic and heterotrophic conditions. 9th international and 1st Latinoamerican PGPR workshop, June 3–8, 2012, Medellin, Colombia, p. 89.
7. Leyva, L.A., de-Bashan, L.E., and Bashan, Y. 2012. Interaction of *Chlorella* spp. with *Azospirillum brasilense* affects lipid and fatty acid content and activity of acetylCoA carboxylase. 9th international and 1st Latinoamerican PGPR workshop, June 3–8, 2012, Medellin, Colombia, p.64
8. Bacilio M., Moreno M. and Bashan Y. 2012. Effects of humic acids and plant growth-promoting bacteria on chili pepper plants under progressive saline stress. 9th international and 1st Latinoamerican PGPR workshop, June 3–8, 2012, Medellin, Colombia, p. 65
9. **de-Bashan, L.E.**, Choix, F.J., Leyva, L.A., Trejo, A., Lopez, B.R., and Bashan, Y. 2012. Joint immobilization of plant growth-promoting bacteria and green microalgae in alginate beads as an experimental model for studying plant-bacterium interactions, and its application for wastewater treatment and enhancing soil fertility. 9th international and 1st Latinoamerican PGPR workshop, June 3-8, 2012, Medellin, Colombia, p. 63 (**Invited speaker**)
10. **Bashan, Y.**, and de-Bashan, L. E. 2012. The potential contribution of plant growth-promoting bacteria to reduce environmental degradation- an overview. 9th international and 1st Latin-American PGPR workshop, June 3-8, 2012, Medellin, Colombia, p. 62 (**Plenary speaker and Chairman of session**)

11. **de-Bashan, L.E.**, Cruz, I., Covarrubias, S.A. and Bashan, Y. 2012. Biological deteriorated alginate beads containing bacteria and microalgae provide a beneficial physical barrier against native organisms during tertiary wastewater treatment. 20th International conference on bioencapsulation, September 21–24, 2012. Orillia, Ontario, Canada (**Invited speaker and Chairman of session**).
12. **de-Bashan, L.E.** 2012. Environmental use of microalgae and plant growth-promoting bacteria. Special seminar In: Iberoamericana network on diversity of beneficial microorganisms to improve plant growth, October 12, 2012, Puebla, Mexico. (**Invited lecture**)
13. **de-Bashan, L.E.** 2012. Environmental use of microalgae and plant growth-promoting bacteria. Special seminar In: Department of Plant Pathology and Entomology, Auburn University, November 26, 2012, Auburn, Alabama, USA (**Invited lecture**)

DOMESTIC OUTREACH AND COMMUNITY SERVICES

1. **Strategic line of research of CIBNOR.** The use of plant growth-promoting bacteria to solve environmental problems in the desert. (Prof. Yoav Bashan, Dr. Luz de-Bashan, and Dr. Macario Bacilio) (CIBNOR internal code: P.C. 6.0)

SCIENTIFIC RECOGNITION AND INTERNATIONAL SERVICES

1. **2011-2012. Guest editor of Applied Soil Ecology.** Special issue "Microorganisms and the Sustainable Management of Soil". Volume 61, October 2012 (**Prof. Yoav Bashan**, Joint position (on an equal basis) with Prof. Joseph Kloepper (Auburn University, USA) and Dr. Jay Garland, (Environmental Protection Agency, USA).
2. **Invitation to organize a conference's session in:** 9th international and 1st Latin-American PGPR workshop, June 3-8, 2012, Medellin, Colombia (Session: Environmental applications of PGPB) (**Prof. Yoav Bashan**)
3. **2012 - A top download article.** The paper "The potential contribution of plant growth-promoting bacteria to reduce environmental degradation (Applied Soil Ecology, 61: 171-189) originated from two conference presentations in Argentina and Colombia reached the first place in number of worldwide downloads in the "Top 25 articles" of the high impact journal "Applied Soil Ecology". (ScienceDirect.com; June 20, 2012) (**Dr. Luz de-Bashan, M.Sc. Juan-Pablo Hernandez, and Prof. Yoav Bashan**).
4. **2012 - Nominated as Editorial Board member of "Bioencapsulation innovations".** France (**Dr. Luz de-Bashan**).
5. **2012 - Nominated as member of the "National appeal committee of Mexico"** for biological and chemical sciences (8 members). The national system of researchers (SNI), Mexico City. This committee evaluates appeals of rejected national promotions done by the national evaluation committee of the SNI (**Prof. Yoav Bashan**).

6. 2012 – **Recognized by the Congress of the State of Baja California Sur, Mexico** for outstanding scientific activities and promotion of science and technology for the benefit of the citizens of the state (Prof. Yoav Bashan).

7. **Review of manuscripts for journals, funding agencies, and foreign universities: Total: 82**

Reviewer	Journal, University, or Funding Agency	Country	Number of manuscripts
Yoav Bashan	Applied and Environmental Microbiology	USA	1
	Desalinization and Water Treatment	USA	1
	Plant and Soil	Germany	5
	Plant Growth Regulation	Germany	1
	Biology and Fertility of Soils	Germany	7
	Applied Microbiology and Biotechnology	Germany	1
	Bulletin of Environmental Contamination and Toxicology	Germany	1
	Annals of Microbiology	Germany	2
	Aquatic Botany	Germany	1
	Journal of Applied Phycology	Germany	1
	Water Research	Netherlands	1
	Applied Soil Ecology	Netherlands	4
	Journal of Arid Environment	Netherlands	1
	Crop Protection	Netherlands	1
	Environmental Science and Pollution Research	Netherlands	1
	European Journal of Soil Biology	Netherlands	2
	International Journal of Molecular Sciences	Switzerland	1
	Chemistry and Ecology	UK	1
	Chemical and Biochemical Engineering Quarterly	Croatia	1
	Critical Reviews in Environmental Science and Technology	Australia	1
	Chinese Journal of Oceanology and Limnology	P.R. China	2
	The Open Conference Proceedings Journal	UAE	1
	National Science Foundation; Science and Technology Centers	USA	1
French National Research Agency	France	1	
Fund for Scientific & Technological Development	Chile	1	
University of New England: promotion to Assoc. Prof.	Australia	1	
University of Auckland- Ph.D. dissertation	New Zealand	1	
National System of Researchers (SNI)	Mexico	21	
Luz de-Bashan	International Journal of Environmental Technology and Management	Switzerland	1
	Antonie van Leeuwenhoek International Journal of General and Molecular Microbiology	Netherlands	1
	European Journal of Soil Biology	Netherlands	3
	Journal of Hazardous Materials	Netherlands	1
	Biosystems Engineering	Netherlands	1
	Biology and Fertility of Soils	Germany	5
	Plant Growth Regulation	Germany	1
	Annals of Microbiology	Germany	1
	Journal of Microencapsulation	UK	1
	Botany	Canada	1

	Suelos Ecuatoriales	Colombia	1
	Universidad Industrial de Santander: Lic. thesis	Colombia	1

EXTERNAL RESEARCH PROJECTS

(total:\$5,337,000 pesos)(= US\$410,000) (13 Mexican pesos = 1 USD).

“Physiological and genetic mechanisms in the establishment and maintenance of mutualisms of plants with different partners.”

Funding: MN\$4,380,000; Funded by CONACYT (investigacion basica)

Duration: Four years (2011–2014).

PI: Prof. Yoav Bashan

Co-PI: Dr. Luz E. de-Bashan and Prof. Martin Heil (CINVESTAV, Irapuato)

“Influence of biochar and compost in the phytoremediation of oil contaminated soil.”

Funding: MN\$307,000. Funded by UC-Mexus

Duration: 18 months (July 2011–December 2013)

PIs: Dr. Macario Bacilio (Mexico); Prof. David Crowley (UC Riverside, USA)

“Asociación microalga- bacterias promotoras de crecimiento vegetal—Efecto de la ficosfera y exudados bacterianos en el establecimiento y mantenimiento de la interacción cuando están inmovilizadas en esferas de alginato.”

Funding: MN\$650,000; Funded by CONACYT (investigacion basica)

Duration: 3 years (2012–014)

PI: Dr. Luz de-Bashan

Co-PI: Prof. Yoav Bashan

PERSONNEL IN 2012

(SNI-National academic ranking according to the National Research System of Mexico; Candidate<1< 2< 3)

Researchers (full time)

1. Dr. Luz Gonzalez de-Bashan (SNI level 1)
2. Prof. Yoav Bashan (SNI level 3)
3. Dr. Macario Bacilio (SNI level 1)

Full-time research staff

4. Mar. Biol. Patricia Vazquez
5. M.Sc. Manuel Moreno
6. M.Sc. Juan-Pablo Hernandez (SNI level 1)

Post-doctoral fellow (full-time)

7. Dr. Blanca Lopez (SNI Candidate level)

Sabbatical year scientist (full-time)

8. Dr. Alberto Mendoza, Center of Genetic Biotechnology, Reynosa, Mexico (To February 2012)

Graduate students (Research, full-time)

9. Ivonne Cruz. **M.Sc. Graduated March 2, 2012.** (CIBNOR, La Paz, Mexico) (with Prof. Yoav Bashan).
10. M.Sc. Luis Leyva. **D.Sc.** Student since 2009 (CIBNOR, La Paz, Mexico) (with Prof. Yoav Bashan and Dr. Luz de-Bashan).
11. M.Sc. Francisco Choix. **D.Sc.** Student, since 2010. (CIBNOR, La Paz, Mexico) (with Prof. Yoav Bashan and Dr. Luz de-Bashan).
12. Eng. Beatriz Meza. **M.Sc.** student since 2010. (CIBNOR, La Paz, Mexico) (with Dr. Luz de-Bashan).
13. Eng. Cinthya Chavez. **M.Sc.** student since 2010. (CIBNOR, La Paz, Mexico) (with Prof. Yoav Bashan).
14. M.Sc. Oskar Palacios, **D.Sc.** Student, since 2011. (CIBNOR) La Paz, Mexico (with Prof. Yoav Bashan and Dr. Luz de-Bashan).
15. Eng. Emmanuel Vidaña, **M.Sc.** student since 2011. (CIBNOR), La Paz, Mexico (with Prof. Yoav Bashan).
16. Biol. Edgar Amavizca, **M.Sc.** student since 2011. (CIBNOR), La Paz, Mexico (with Dr. Luz de-Bashan).
17. M.Sc. Alejandro Alarcon. 2012. **Ph.D.** (Universidad de Granma), Granma, Cuba (with Dr. Macario Bacilio).
18. Eng. Cristina Galaviz. 2012. **M.Sc.** student (CIBNOR), La Paz, Mexico (with Prof. Yoav Bashan).
19. Biol. Edisa Garcia. 2012. **M.Sc.** student (CIBNOR), La Paz, Mexico (with Prof. Yoav Bashan).

Undergraduate student (training)

20. Luis Francisco Garcia. 2012. **Summer training.** (Tecnologico de Monterey), Monterey, Mexico (With M.Sc. Manuel Moreno and Mar. Biol. Patricia Vazquez).

Webmaster-in-Chief

M.Sc. Juan-Pablo Hernández

Group aid

Biol. Paulina Adams

CIBNOR editor

Ira Fogel

INTERNATIONAL AND NATIONAL COLLABORATIONS IN 2012

(in projects, publications, and supervising of graduate students, in chronological order of cooperation)

1. **Prof. Hani Antoun.** Laval University, Quebec, **Canada.** Water bioremediation.
2. **Dr. S.R. Prabhu.** TerraBioGen Technologies. Vancouver, B.C., **Canada.** Inoculant information from developing countries.
3. **Dr. Robert Linderman.** Plant Health, LLC. Corvallis, OR, **USA.** Reforestation of desert eroded lands.
4. **Prof. Anton Hartmann.** German Research Center for Environmental Health, München, **Germany.** FISH and plant-bacteria interactions.
5. **Dr. Michael Schmid.** German Research Center for Environmental Health, München, **Germany.** FISH and plant-bacteria interactions.

6. **Prof. Martin Heil.** CINVESTAV, Guanajuato, **Mexico**. Mutualism between microalgae and bacteria.
7. **Prof. Gabriela Olmedo.** CINVESTAV, Guanajuato, **Mexico**. Mutualism between microalgae and bacteria.
8. **Dr. Michael Cohen.** Sonoma State University, California, **USA**. Enzymatic and molecular mechanisms of fatty acids in microalgae and tertiary wastewater treatment.
9. **Dr. Alberto Mendoza.** CBG-IPN Reynosa, Tamaulipas, **Mexico**. Enzymatic and molecular mechanisms of fatty acids in microalgae.
10. **Prof. Chris Rensing.** University of Copenhagen, **Denmark**. Enzymatic and molecular mechanisms of fatty acids in microalgae.
11. **Prof. Felipe Ascencio.** CIBNOR, La Paz, BCS, **Mexico**. Enzymatic and molecular mechanisms of fatty acids in microalgae.
12. **Prof. Jesus Cordova.** University of Guadalajara, **Mexico**. Carbohydrate and starch production by microalgae.
13. **Prof. Gustavo Hernandez-Carmona.** CICIMAR-IPN, La Paz, BCS, **Mexico**. Scaling-up wastewater treatment.
14. **Prof. Joseph Kloepper and M.Sc. John McInroy.** Auburn University, Auburn, AL, **USA**. FISH techniques for detection of PGPB and phosphate solubilization.
15. **Prof. Beatriz Baca.** Autonomous University of Puebla, Puebla, **Mexico**. Indole-3-acetic acid regulation in *Azospirillum*.
16. **Dr. Cecilia Creus.** University of Mar de Plata, Balcarce, **Argentina**. Signal molecules in *Azospirillum*.
17. **Dr. Claudio Penna and Dr. Rosana Messa.** Stoller Co., **Brazil, Argentina**. Synthetic inoculants for plant growth-promoting bacteria. (Not active in 2012)
18. **Dr. Fabricio Cassan.** University of Rio Cuarto, **Argentina**. Synthetic inoculants for plant growth-promoting bacteria. (Not active in 2012)
19. **Prof. David Crowley.** University of California-Riverside, **USA**. Phytoremediation of oil-contaminated soil using biochar.
20. **Dr. Gracia Gomez.** CIBNOR, La Paz, B.C.S., **Mexico**. Genetic manipulation of microalgae.
21. **Prof. Ann Hirsh.** University of California-Los Angeles, CA, **USA**. Microbial ecology of the desert.
22. **Dr. Choong-Min Ryu.** Korean Institute of Bioscience and Biotechnology, Daejeon, **Korea**. Volatile in bacteria-microalgae interaction.
23. **Dr. S. Y. Park.** Korean Institute of Bioscience and Biotechnology, Daejeon, **Korea**. Molecular biology of desert bacilli.
24. **Prof. Rainer Borriss.** Humboldt University, **Germany**. Molecular biology of desert bacilli.