

# The Group "Environmental Microbiology"- CIB

## Productivity: FINAL, 2001

(Numbers in parenthesis near journal's name are the scientific impact, 1999)(Codes refer to the financing project)

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### Summary

- Original publications in peer-reviewed, scientific international journals.  
Published and "in press" - 9
- Original publications in peer-reviewed, scientific national journals.  
Published and "in press" - 2
- Submitted papers - 8
- Publications in books (regular and conference)- 11
- Publications in National Newspapers 1
- Abstracts in conferences 10

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**- Total productivity (without abstracts) for 2001 31**

**- Average "Impact Factor" of all published and "in press" papers: 1.52**

### PUBLISHED AND "IN PRESS" PUBLICATIONS

#### ***Publications in scientific international reviewed journals***

1. Lebsky, V.K., Gonzalez-Bashan, L.E., and Bashan, Y. 2001. Ultrastructure of coimmobilization of the microalga *Chlorella vulgaris* with the plant growth-promoting bacterium *Azospirillum brasilense* and with its natural associative bacterium *Phyllobacterium myrsinacearum* in alginate beads. **Canadian Journal of Microbiology** 47: 1-8 (1.072) GEA 1
2. Bacilio-Jimenez, M., Aguilar-Flores, S., Velazquez del Valle, M., Perez, A., Zepeda, A., and Zenteno, E. 2001. Endophytic bacteria in rice seeds inhibit early colonization of roots by *Azospirillum brasilense*. **Soil Biology and Biochemistry** 33:167-172. (1.49) AGECE-1.
3. Holguin, G. Vazquez, P., and Bashan, Y. 2001. The role of sediment microorganisms in the productivity, conservation, and rehabilitation of mangrove ecosystems : an overview. **Biology and Fertility of Soils** 33: 265-278. (1.27) GEA 1
4. Toledo, G., Rojas, A., and Bashan, Y. 2001. Monitoring of black mangrove restoration with nursery-reared seedlings on an arid coastal lagoon. **Hydrobiologia** 444: 101-109 (0.706)( GEA 1)

5. Rojas, A., Holguin, G., Glick, B.R. and Bashan, Y. 2001. Synergism between *Phyllobacterium* sp. (N<sub>2</sub>-fixer) and *Bacillus licheniformis* (P-solubilizer), both from a semiarid mangrove rhizosphere. **FEMS Microbiology Ecology** **35**: 181-187 (2.405) (GEA 1)
6. Holguin, G. and Glick B.R. 2001. Expression of the ACC deaminase gene from *Enterobacter cloacae* UW4 in *Azospirillum brasilense*. **Microbial Ecology** **41**:281-288 (2.19)
7. Bashan, Y. and Holguin, G. 2001. Plant growth-promoting bacteria: a new tool in mangrove reforestation. **Trees: Structure and Function** (1.239) (GEA 1) (In Press)
8. de-Bashan, L.E., Moreno, M. Hernandez, J.-P., and Bashan, Y. 2001. Ammonium and phosphorus removal from continuous and semi-continuous cultures by the microalgae *Chlorella vulgaris* coimmobilized in alginate beads with *Azospirillum brasilense*. **Water Research** (1.748) (In Press) (GEA 1)
9. Valderrama, L.T., Del Campo, C.M., Rodriguez, C.M., de-Bashan, L.E., and Bashan, Y. 2001. Consecutive wastewater treatments using the microalga (*Chlorella vulgaris*) and the macrophyte (*Lemna valdiviana*) for ethanol and citric acid production effluents. **Water Research** (1.748) (Accepted) (GEA 1)

### **PUBLICATIONS IN NATIONAL REVIEWED JOURNALS**

10. Bashan, Y., Gonzalez-Bashan, L.E., and Leon de la Luz, J.L. 2001. King cactus. The giant cardon cactus of Baja California. **Wildflower** **17**: 10-16. (GEA 1)
11. Bashan, Y. 2001. Publication in high impact international journals, does it matter in Mexico? **Ciencia y Desarrollo** (in Spanish). (GEA 1) (In press).

### **PUBLICATION IN AN INTERNATIONAL BOOK**

12. Bashan, Y. and de-Bashan, L.E. 2002. Plant growth-promoting bacteria. In: **Encyclopedia of soils in the environment**. (eds.) D. Hillel, C. Rosenzweig, D. Powlson, K. Scow, M. Singer and D. Sparks. Academic Press, London (in Press).

## PUBLICATIONS IN NATIONAL BOOKS

13. Gonzalez-Bashan, L.E., Holguin, G., Glick, B.R., and Bashan, Y. 2001. Plant growth-promoting bacteria for agriculture and the environment. In: **Agricultural Microbiology for the 21th century.** (Ed). R. Ferrera-Cerrato and A. Alarcon. Published by Mundi Prensa, Mexico. (in press) BIVE 1
14. Holguin, G., and Bashan, Y. 2001. Mangroves: microbiology and economical importance. In: **Agricultural Microbiology for the 21th century.** (Ed). R. Ferrera-Cerrato and A. alarcon. Published by Mundi Prensa, Mexico.(in press) GEA 1
15. Bethlenfalvay, G.J., Bashan, Y., Carrillo-Garcia, A.E. and Stutz, J.C. 2001. Mycorrhizae as biological components of resource islands in the Sonoran desert. In: **Mycorrhizal fungi of arid and semiarid ecosystems.** (Ed.). A. Montroy-Ata. Published by: The National Autonomous University of Mexico (UNAM), Mexico City (in press). BIVE 1

## PUBLICATION IN CONFERENCE'S BOOKS

16. Bashan, Y. Bashan, L.E., Moreno, M., Puente, M.E., Rojas, A., Bethlenfalvay, G.J., Carrillo, A., Holguin, G., Vazquez, P., and Glick, B.R. 2001. Environmental applications of plant growth-promoting bacteria of the genus *Azospirillum*. In: **Plant Pathogenic Bacteria.** (Ed.) S.H. De Boer. Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 68-74. GEA 1
17. Bashan, Y. 2001. Reduction of bacterial leaf speck disease (*Pseudomonas syringae* pv *tomato*) in tomatoes treated with a combination of *Azospirillum brasilense*, bactericides and mild heat. In: **Plant Pathogenic Bacteria.** (Ed.) S.H. De Boer. Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 296-300. GEA-1
18. Bashan, Y. 2001. Population dynamics of the plant growth-promoting bacterium *Azospirillum brasilense* and the pathogen *Pseudomonas syringae* pv *tomato* in the tomato rhizosphere and foliage and its use as a strategy to control bacterial leaf speck of tomato. In: **Plant Pathogenic Bacteria.** (Ed.) S.H. De Boer. Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 345-349. GEA-1
19. Bashan, Y., Gonzalez, L.E., Puente, M.E., Lebsky, V.K., Moreno, M., Rojas, A., Carrillo, A.E., Hernandez, J.P., Bacilio, M., Li, C.Y., and Bethlenfalvay, G. 2001. The role of *Azospirillum* as plant growth promoter to solve environmental problems. 3<sup>rd</sup> International Congress on

Environmental Microbiology. Bogota, Colombia 9-11.5. 2001. pp. 35-38.  
GEA 1

20. Bashan, Y., Vazquez, P., Holguin, G., Rojas, A., and Puente, M.E. 2001. Microbiology of mangroves and recuperation of estuaries and coastal environments using plant growth-promoting bacteria. 3<sup>rd</sup> International Congress on Environmental Microbiology. Bogota, Colombia 9-11.5. 2001. pp. 46-50. GEA 1
21. Bacilio, M., Vázquez, P., Moreno, M. and Bashan, Y. 2001. Participación de *Azospirillum* y la composta en la germinación de semillas de trigo. 3<sup>rd</sup> International Congress on Environmental Microbiology. Bogota, Colombia 9-11.5. 2001. pp. 199-202. (AGEC-1)
22. Poghosyan A., Bykova G., Kinosyan M. and Lebsky V. 2001. The study case of tomato early wilt in Ararat valley of Armenia. In: Memorias de "4<sup>o</sup> Ciclo Académico Agropecuario". 13-16.11.2001. UABCS, La Paz, Mexico. pp. 61-64.

### **PUBLICATIONS IN A NATIONAL NEWSPAPER**

23. Bashan, Y., and Holguin, G. 2001. Serios problemas enfrenta en Baja California Sur el Cardon o cactus gigante. **La Jornada**, Mexico City, January 8, 2001 (seccion Lunes en la Ciencia). GEA-1

### **SUBMITTED PUBLICATIONS**

#### **PUBLICATIONS IN SCIENTIFIC INTERNATIONAL REVIEWED JOURNALS**

1. Bashan, Y., Li, C.Y., Moreno, M., Lebsky, V.K. and de-Bashan, L.E. 2001. Primary rock colonizing plants from arid Baja California, Mexico. **Trees: Structure and Function** (1.239)
2. Puente, M.E., Bashan, Y., Li, C.Y., Moreno, M., Soeldner, A., and Lebsky, V.K. 2001. Microbial population of the rhizoplane of arid, lava-rocks-weathering cacti. **Plant Biology**
3. de-Bashan, L.E., Bashan, Y., Moreno, M., Lebsky, V.K., and Bustillos, J.J. 2001. Lipid and pigment content, and cell size of the microalgae *Chlorella* spp. increased when coimmobilized in alginate beads with *Azospirillum brasilenses*. **Canadian Journal of Microbiology** (1.072)
4. Bacilio-Jiménez, M., Aguilar-Flores, S., Ventura-Zapata, E. and Zenteno E. 2001. Chemical characterization of radical exudates from rice (*Oryza sativa*) and their effect on the chemotactic capacity of endophytic bacteria and two

root and soil plant growth-promoting bacteria (*Azospirillum* and *Bacillus* spp.).  
**Plant and Soil**

5. Bashan, Y., and de-Bashan, L.E. 2001. Reduction of bacterial speck disease (*Pseudomonas syringae* pv *tomato*) in tomato by an integrated treatment. **European Journal of Plant Pathology**
6. Bashan, Y., and de-Bashan, L.E. 2001. Protection of tomato seedlings against infection by *Pseudomonas syringae* pv *tomato* using the plant growth-promoting bacterium *Azospirillum brasilense*. **Applied and Environmental Microbiology**
7. Bashan, Y., Hernandez, J.P., Leyva, L.A. and Bacilio, M. 2001. Alginate microencapsulation as a potential carrier for plant growth-promoting bacteria. **Biology and Fertility of Soils**
8. Carrillo, A.E., Li, C.Y., and Bashan, Y. 2001. Increased acidification and solubilization of hard-to-dissolved iron phosphate in the rhizosphere of cardon cactus seedlings induced by inoculation with *Azospirillum brasilense*. **Naturwissenschaften**

### **ABSTRACTS IN CONFERENCES**

1. Bashan, Y., González-Bashan, L.E., Puente, M.E., Lebsky, V.K., Moreno, M., Rojas, A., Carrillo, A. E., Hernandez, J.P., Bacilio, M., Li, C.Y., and Bethlenfalvay, G. 2001. Environmental applications of the plant growth-promoting bacterium *Azospirillum*. First international symposium on microbial ecology of soils. Universidad de Los Andes, March 29-30, 2001, Santafe de Bogota, Colombia. **(Invited lecture)**
2. Bashan, Y., Hernandez, J.P., Gonzalez-Bashan, L.E., and Leyva, L. 2001. New innovations in bacterial inoculants. First international symposium on microbial ecology of soils. Universidad de Los Andes, March 29-30, 2001, Santafe de Bogota, Colombia. **(Invited lecture)**
3. Puente M.E., Bashan, Y., Li, C.Y., Moreno, M., Soeldner, A., de-Bashan, L.E., and Lebsky, V.K. 2001. Soil genesis associated with microorganisms residing in cactus rhizosphere in arid zone. 13<sup>th</sup> International Congress on Nitrogen Fixation, July 2-7, 2001, Hamilton, Ontario, Canada. P. 62.
4. Lebsky, V.K., de-Bashan, L.E., and Bashan, Y. 2001. The plant growth-promoting bacterium *Azospirillum brasilense* stimulates lipid synthesis in the microalga *Chlorella* spp. 13<sup>th</sup> International Congress on Nitrogen Fixation, July 2-7, 2001, Hamilton, Ontario, Canada. P. 58.

5. Bashan, Y., Holguin, G., Rojas, A., and Vazquez, P. 2001. The role of sediment microorganisms in the productivity, conservation, and rehabilitation of mangrove ecosystems. International Mangrove Symposium, Tokyo, Japan, July 2001 (**Key Note Lecture**)
6. Liu, X., Wu, L., Hurt, R., Holguin, G., Devol, A., Tiedje, J.M., and Zhou, J. 2001. Nitrite reductase (nir) genes as functional markers to analyze diversity of denitrifying bacteria in Mexican continental margin sediments. BI-OMP 2001, Biotechnology Investigations-Oceans Margins Program. March 29-31, 2001, Savannah Georgia, USA.
7. Bashan, Y. 2001. Environmental applications for *Azospirillum* sp. 10<sup>th</sup> National congress for biochemistry and molecular biology of plants. La Paz, Mexico, October 27-30, 2001. p. 37. (**Invited lecture**).
8. de-Bashan, L.E. and Bashan Y. 2002. Plant growth-promoting bacteria as “helpers” for microalgae: a novel approach in cleaning polluted water. The 6<sup>th</sup> International Symposium on Environmental Biotechnology and The 4<sup>th</sup> International Symposium on Cleaner Bioprocesses and Sustainable Development. Vera Cruz, Mexico, June 9-12, 2002. (**Invited lecture**).
9. de-Bashan, L. E., Hernández, J.-P., Moreno, M., and Bashan Y. 2002. Improved growth and water bioremediation capacity of the microalga *Chlorella vulgaris* when co-immobilized in alginate beads with the microalgae growth-promoting bacterium *Azospirillum brasilense*. The 6<sup>th</sup> International Symposium on Environmental Biotechnology and The 4<sup>th</sup> International Symposium on Cleaner Bioprocesses and Sustainable Development. Vera Cruz, Mexico, June 9-12, 2002. (accepted)
10. Rodríguez H., and Bashan, Y. 2002. Tagging the plant-growth promoting bacterium *Azospirillum* with green fluorescent protein genes for environmental studies. The 6<sup>th</sup> International Symposium on Environmental Biotechnology and The 4<sup>th</sup> International Symposium on Cleaner Bioprocesses and Sustainable Development. Vera Cruz, Mexico, June 9-12, 2002. (accepted)

### **Staff and collaborations in 2001**

#### **Researchers**

Dr. Yoav Bashan  
 IBQ Esther Puente  
 Dr. Vladimir Lebsky  
 Dr. Macario Bacilio  
 Dra. Gina Holguin

#### **Visiting Researchers**

Dra. Hilda Rodriguez - Cuba  
 Dra. Arevik Poghosyan - Armenia

**Students**

IBQ Esther Puente- Ph.D. Student since 1999  
 Agro. Moises Carcano - M.Sc student since 1998  
 pBiol. Luis Alonso Leyva- since 2000  
 M.Sc. Luz Gonzalez de-Bashan - Ph.D. Student since 2001  
 M.Sc. Carlos Yabur - Ph.D. Student since 2001

**Associated researchers at the rank of technicians**

M.Sc. Angel Carrillo  
 Biol. Patricia Vazquez  
 cM.Sc. Manuel Moreno  
 Biol. Juan-Pablo Hernandez  
 M.Sc. Luz Gonzalez de-Bashan

**Laboratory instrument designer**

Ing. Taylor Morey

**Group administrator**

Biol. Adriana Rojas

**Local Collaborations in 2001**

Dr. Jose Luis Leon de la Luz- Herbarium CIB- Conservation of cardons.

**Foreign collaborations in 2001**

Dr. C.Y. Li, USDA - Forestry, Corvallis Oregon, USA.- Rock weathering by plants.  
 Profa. Luz T. Valderamma, Pontificia Universidad Javeriana, Bogota, Colombia. Water Bioremediation.  
 Ing. B. Liao and Ing. H. Kang, Tropical Forestry Research Institute, Goangzhou, PRC (China). Inoculation of mangroves with plant growth promoting bacteria.

**Collaboration with the private sector**

Laboratorios Agroenzymas- Dr. Daniel Diaz and Ing. Angel Chao, Tlanepantla, Estado de Mexico-New industrial project

**Collaboration with the governmental sector**

SEMARNAP - Conservation of cardons and mangroves in Baja California Sur