

The Group "Environmental Microbiology"- CIB

Final productivity for 2003

(Numbers in parenthesis near journal's name are the scientific impact, 2002
(Codes refer to the financing project))

Summary

- Original publications in peer-reviewed, scientific <u>international</u> journals.	
Published and "in press" -	6
- Original publications in peer-reviewed, <u>national</u> journals.	
Published and "in press" -	4
- Non-reviewed publication in national journals	3
- Submitted papers -	8
- Publications in books -	9
- Abstracts in conferences	4
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- Total productivity (without abstracts) for 2003	30

- **Average impact factor of all published and "in press" papers: 1.965**

PUBLISHED AND "IN PRESS" PUBLICATIONS

Publications in scientific international reviewed journals

1. Bacilio-Jimenez, M., Aguilar-Flores, S., Ventura-Zapata, E., and Zenteno, E. 2003. Chemical characterization of root exudates from rice (*Oryza sativa*) and their effects on the chemotactic response of endophytic bacteria. **Plant and Soil** **249**: 271-277 (ZA 2.5) (1.29).
2. Bacilio M., Vazquez P., and Bashan Y. 2003. Alleviation of noxious effects of cattle ranch composts on wheat seed germination by inoculation with *Azospirillum* spp. **Biology and Fertility of Soils** **38**: 261-266 (ZA 2.5; PC 5.1) (1.242)
3. Liu X., Tiquia S.M., Holguin G., Wu L., Nold S.C., Devol A.H., Luo K., Palumbo A.V., Tiedje J.M., and Zhou J. 2002. Molecular diversity of denitrifying genes in continental margin sediments within the oxygen deficient zone of the Pacific Coast of Mexico. **Applied and Environmental Microbiology** **69**:3549-3560 (3.691) (ZA 2.2)

4. Holguin, G. and Glick B.R. 2003. Transfer of the ACC deaminase gene (*acdS*) from *Enterobacter cloacae* under the control of the *Tetr* gene promoter into *Azospirillum brasilense* Cd improves the fitness and ability of the bacterium to promote the growth of tomato seedlings. **Microbial Ecology** **46**:122-133 (2.667) (ZA 2.2)
5. Rodriguez, H., Fraga, R., Gonzalez, T., and Bashan, Y. 2004. Genetics of phosphate solubilization and its potential application for improving plant growth-promoting bacteria. **Plant and Soil** (in Press)(PC 5.1) (1.29).
6. de-Bashan L.E. Hernandez J.-P., Morey, T., and Bashan Y. 2004. Microalgae growth-promoting bacteria as “helpers” for microalgae: a novel approach for removing ammonium and phosphorus from municipal wastewater. **Water Research** **38**: 466-474 (PC 5.1) (1.611).

PUBLICATIONS IN NATIONAL REVIEWED JOURNALS

7. Bashan, Y., de-Bashan, L. E., and Leon de la Luz, J. L. 2003. Land of the strange trees and giant rocks. **Wildflower** **19** (1): 34-41 (PC 5.1)
8. Bashan, Y., Moreno, M., de-Bashan, L.E., Leyva L.A. and Leon de La Luz J.-L. 2003. Crawling devil: a rare and mobile desert cactus. **Wildflower** **19**(4): 38-42. (PC 5.1)
9. de-Bashan L.E., and Bashan Y. 2003. Bacterias promotoras de crecimiento de microalgas: una nueva aproximacion en el tratamiento de aguas residuales (Microalgae growth-promoting bacteria: a novel approach in wastewater treatment). **Revista Colombiana de Biotecnologia** **5**: 85-90 (In Spanish)
10. Holguin, G., Bashan, Y., Puente, E., Carrillo, A., Bethlenfalvay, G., Rojas, A., Vazquez, P., Toledo, G., Bacilio-Jimenez, M., Glick, B. R., Gonzalez de-Bashan, L., Lebsky, V., Moreno, M., and Hernández, J. P., 2003. Promoción del crecimiento en plantas por bacterias de la rizosfera. **Agricultura Técnica en México** **29**:201-211 (PC 3.2)

PUBLICATIONS IN A REVIEWED INTERNATIONAL BOOK

11. Bashan, Y., and de-Bashan, L. E. 2003. 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 (PC 5.1) (accepted).

PUBLICATIONS IN INTERNATIONAL BOOKS

12. Bashan, Y., and de-Bashan, L.E. 2003. Microalgae growth-promoting bacteria: a novel approach in water science; a micro-review. In: Vol 1. Oral presentations. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 53-58. (PC 5.1)
13. de-Bashan, L.E., Hernandez, J.-P., Antoun, H. and Bashan, Y. 2003. Enhanced removal of nitrogen and phosphorus from wastewater by the microalgae *Chlorella* sp. using the microalgae growth-promoting bacterium *Azospirillum brasilense*. In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 294-300. (PC 5.1)
14. Puente, M. E., Li, C.Y., and Bashan, Y. 2003. Rock weathering, plant growth-promoting bacteria from desert plants allow the growth of cactus seedling in rocks. In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 386-392. (PC 5.1)
15. Holguin, G., Carrillo, A., Eberhard, A., Gronquist, M.R., and Bashan, Y. 2003. *Vibrio* Sp., a potential plant growth-promoting bacterium from mangrove roots, produces four types of acyl homoserine lactone. In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 410-417. (ZA 2.2)
16. de-Bashan L.E. and Bashan Y. 2003. Fertilizer potential of phosphorus recovered from wastewater treatments. In: **Phosphate solubilizing bacteria**. Edited by E. Velazquez, Kluwer Academic Publishers, Dordrecht, The Netherlands (In Press) (PC 5.1).
17. Rodriguez, H., Fraga, R., Gonzalez, T., and Bashan, Y. 2003. Genetic modifications of phosphate solubilizing bacteria to be used as agricultural inoculants. In: **Phosphate solubilizing bacteria**. Edited by E. Velazquez, Kluwer Academic Publishers, Dordrecht, The Netherlands (In Press) (PC 5.1)
18. de-Bashan L.E. Hernandez J.-P. and Bashan Y. 2003. Microalgae growth-promoting bacteria as “helpers” for microalgae: a novel approach for removing ammonium and phosphorus ions from wastewater. In: **Phosphate**

solubilizing bacteria. Edited by E. Velazquez, Kluwer Academic Publishers, Dordrecht, The Netherlands (in Press) (PC 5.1).

19. Whitmore, R.C., Brusca R.C., González-Zamorano, P., Mendoza-Salgado R., Amador-Silva E.S., Holguin G., McIvor C.C. 2003. The Ecological importance of mangrove ecosystems in Baja California Sur. In: **Biodiversity, ecosystems, and conservation in northern Mexico.** Cartron, J.-C. and Ceballos, G. (editors), Oxford University Press. (PC 3.2)

PUBLICATIONS IN NATIONAL NON-REVIEWED JOURNALS

20. Flores-Mireles, A.L., and Hogue, G. 2003. Manglares: importancia economica vs.ecológica. Cual tiene mas peso en la sociedad? **Revista Análisis 3** (29): 28-29. (PC 3.2)
21. de-Bashan L.E., Hernandez J.-P., and Bashan Y. 2003. Utilidad de las bacterias de uso agrícola, para el crecimiento de algas empleadas en el tratamiento de aguas residuales. **Gaceta Biomédica 8** (4): 8-9. (PC 5.1)
22. Bashan, Y., and de-Bashan, L.E. 2004. The giant cardon cactus of Baja California, Mexico; the massive cactus on Earth. **Tzabar 11**: (accepted) (PC 5.1)

SUBMITTED PUBLICATIONS

PUBLICATIONS IN SCIENTIFIC INTERNATIONAL REVIEWED JOURNALS

1. de-Bashan, L.E., and Bashan Y. 2003. Recent advances in removal of phosphorus from wastewater and its future use as fertilizer (1997-2003). **Water Research** (PC 5.1) (1.611).
2. de-Bashan L.E. and Donato J.C. 2003. Microalgae (desmids) from highland Andean lakes within the alpine paramo ecosystems of Colombia. **European Journal of Phycology** (1.439)(PC 5.1).
3. Bashan, Y., Holguin, G. and de-Bashan, L.E. 2003. *Azospirillum*-plant relationships: agricultural, physiological, molecular and environmental advances. **Canadian Journal of Microbiology** (PC 5.1) (1.08).
4. Strangmann, A., Bashan, Y. and Giani, L. 2003. Methane dynamics and related soil properties of natural and anthropogenically impaired mangrove soils in Baja California Sur, Mexico. **Geoderma** (PC 5.1) (1.348)
5. Bacilio M., Rodriguez H., Moreno M., Hernandez J.-P., and Bashan Y. 2003. Mitigation of sodium chloride stress in wheat seedlings by a *gfp*-tagged *Azospirillum lipoferum*. **Biology and Fertility of Soils** (PC 5.1) (1.241)

6. Puente, M.E., Bashan, Y., Li, C.Y., and Lebsky, V.K. 2003. Microbial populations and activities in the rhizoplane of rock-weathering desert plants, I. Root colonization and weathering of lava rocks. **Plant Biology** (1.352) (PC 5.1)
7. Puente, M.E., Li, C.Y., and Bashan, Y. 2003. Microbial populations and microbial activities in the rhizoplane of rock-weathering desert plants, II. Growth promotion of cactus seedlings. **Plant Biology** (1.352) (PC 5.1)
8. Holguin, G., Carrillo, A., Eberhard, A., Gronquist, M.R. 2003. Acyl homoserine lactone-producing bacteria from mangrove roots with plant-growth promoting properties: analysis of *Vibrio* sp. strain LR6HC. **FEMS Microbiology Ecology**. (2.81)(PC 3.2)

ABSTRACTS IN CONFERENCES

1. Bashan, Y. 2003. Plant growth-promoting bacteria and desert re-vegetation. Arid Southwest Lands Habitat Restoration Conference. March 3-7, 2003, Palm Springs, California, USA **(Invited lecture)**. P. 37.
2. Bacilio, M., Vázquez, P., and Bashan, Y. 2003. Effect of combined *Azospirillum brasilense* inoculation and compost amendment on the growth of plantlets of the cardon cactus (*Pachycereus pringleii*). In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 264-265.
3. Holguin, G., Carrillo, A., Eberhard, A., and Bashan, Y. 2003. Carbon starvation of the PGPB *Vibrio* Sp. induces tolerance to some types of environmental stress. In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 393-394.
4. Holguin, G., and Bacilio, M. 2003. Plant growth promoting bacteria isolated from the rhizosphere of papaya plants (*Carica papaya* L. var. Criolla) cultivated in a semi-desert area of Mexico. In: Vol 2. Abstracts and short papers. 6th International PGPR workshop, 5-10 October 2003, *Edited by*: M.S. Reddy, M. Anandaraj, S.J. Eapen, Y.R. Sarma, and J.W. Kloepper. Indian Institute of Spices Research, Calicut, India. pp. 409-410.

Staff and collaborations in 2003

Researchers

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

Visiting Researcher

Dra. Hilda Rodriguez - Cuba

Students

IBQ Esther Puente- Ph.D. Student since 1999
 M.Sc. Luz Gonzalez de-Bashan - Ph.D. Student since 2001
 M.Sc. Ricardo Yabur - Ph.D. Student since 2001
 M.Sc. Barbara Gonzalez - Ph.D. Student since 2001
 Biol. Juan-Pablo Hernández- M.Sc student since 2002.
 Biol. Ana Flores – M.Sc student since 2003
 Eng. Luis Leyva - M.Sc student since 2003

Associated researchers at the rank of technicians

Biol. Patricia Vazquez
 cM.Sc. Manuel Moreno
 M.Sc. Luz Gonzalez de-Bashan

Laboratory instrument designer

Eng. Taylor Morey

Group administrator

Eng. Luis A. Leyva

Local Collaborations in 2003

Dr. J. L. Leon de la Luz- Herbarium CIB- Conservation of cacti.
 Dr. Jose J. Bustillos- Pigments in inoculated plants

Foreign collaborations in 2003

Dr. C.Y. Li, USDA – Forest Service, Corvallis Oregon, USA.- Rock weathering by plants.
 Dr. R.G. Linderman, USDA - ARS, Corvallis Oregon, USA.- Use of mycorrhizae for desert vegetation.
 Ing. B. Liao, Ing. H. Kang and Dr. X. Ping, Tropical Forestry Research Institute, Goangzhou, PRC (China). Inoculation of mangroves with plant growth promoting bacteria.
 Prof. Hani Antoun. Laval University, Quebec (Canada). Water Bioremediation.