The Group "Environmental Microbiology"- CIB

Final Productivity: 2002

(***Numbers in parenthesis near journal's name are the scientific impact, 2001)(Codes refer to the financing project)***

Summary

- Original publications in peer-reviewed, scientific international journals. Published and "in press" -	11
- Original publications in peer-reviewed, national journals. Published and "in press" -	2
- Submitted papers -	5
- Publications in books -	8
- Publication in newspaper	1
- Abstracts in conferences	13
- Total productivity (without abstracts) for 2002	**26**

- Average impact factor of all published papers: 1.73

PUBLISHED AND "IN PRESS" PUBLICATIONS

Publications in scientific international reviewed journals

1. Bashan, Y. and Holguin, G. 2002. Plant growth-promoting bacteria: a potential tool for arid mangrove reforestation. **Trees** 16: 159-166 (1.324) (GEA-1).

2. Bashan, Y., and de-Bashan, L.E. 2002. Protection of tomato seedlings against infection by *Pseudomonas syringae* pv tomato by using the plant growth-promoting bacterium *Azospirillum brasilense.* **Applied and Environmental Microbiology 68**: 2637-2643 (3.691) (GEA-1)

3. Bashan, Y., Hernandez, J.P., Leyva, L.A. and Bacilio, M. 2002. Alginate microbeads as inoculant carrier for plant growth-promoting bacteria. **Biology and Fertility of Soils 35**: 359-368 (1.242) (GEA-1)

4. Bashan, Y., Li, C.Y., Lebsky, V.K., Moreno, M., and de-Bashan, L.E. 2002. Primary colonization of volcanic rocks by plants in arid Baja California, Mexico. **Plant Biology 4**: 392-402 (1.352) (GEA-1)

5. de-Bashan, L.E., Moreno, M. Hernandez, J.-P., and Bashan, Y. 2002. Removal of ammonium and phosphorus ions from synthetic wastewater by the microalgae *Chlorella vulgaris* coimmobilized in alginate beads with the microalage growth-promoting bacterium *Azospirillum brasilense.* **Water Research 36**: 2941-2948 (1.611)(GEA-1)

6. de-Bashan, L.E., Bashan, Y., Moreno, M., Lebsky, V.K., and Bustillos, J.J. 2002. Increased pigment and lipid content, lipid variety, and cell and population size of the microalgae *Chlorella* spp. when co-immobilized in alginate beads with the microalgae-growth-promoting bacterium *Azospirillum brasilenses.* **Canadian Journal of Microbiology 48**: 514-521 (1.08) (GEA-1)

7. Valderrama, L.T., Del Campo, C.M., Rodriguez, C.M., de-Bashan, L.E., and Bashan, Y. 2002. Treatment of recalcitrant wastewater from ethanol and citric acid production using the microalga *Chlorella vulgaris* and the macrophyte *Lemna minuscule.* **Water Research 36**: 4185 - 4192 (1.611) (GEA-1)

8. Carrillo, A.E., Li, C.Y., and Bashan, Y. 2002. Increased acidification in the rhizosphere of cactus seedlings induced by *Azospirillum brasilense*. **Naturwissenschaften 89**: 428-432 (1.693) (GEA-1)

9. Bashan, Y. and de-Bashan, L.E. 2002. Reduction of bacterial speck (*Pseudomonas syringae* pv *tomato*) of tomato by combined treatments of plant growth-promoting bacterium, *Azospirillum brasilense*, streptomycin sulfate, and chemo-thermal seed treatment. **European Journal of Plant Pathology 108**: 821-829 (1.475) (GEA-1)

10. Bacilio-Jimenez, M., Aguilar-Flores, S., Ventura-Zapata, E., and Zenteno, E. 2002. 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** (Accepted) (1.29).

11. Holguin, G. and Glick B.R. 2002. Transfer of the ACC deaminase gene (*acd*S) 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** (Accepted)(2.667)(BIVE 4)

PUBLICATIONS IN NATIONAL REVIEWED JOURNALS

12. Bashan, Y. 2002. Publicaciones en revistas de alto impacto internacional. **Ciencia y Desarrollo 28** (no.165)**:** 64-73. (GEA-1).

13. Bashan, Y., de-Bashan, L. E., and Leon de la Luz, J. L. 2002. The land of the giant rocks and weird trees. **Wildflower** (GEA-1) (In press).

PUBLICATIONS IN A REVIEWED INTERNATIONAL BOOK

14. 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 (GEA-1) (accepted).

PUBLICATIONS IN INTERNATIONAL BOOKS

15. Gonzalez-Bashan, L. E:, Holguin, G., Glick, B. R., and Bashan, Y. 2002. 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, Spain. (In press) (GEA-1).

16. Holguin, G., and Bashan, Y. 2002. Mangroves: microbiology and economical importance. In: **Agricultural Microbiology for the 21th century**. (ed.) R. Ferrera-Cerrato and A. Alarcon. Published by Mundi Prensa, Spain. (In press) (GEA-1).

17. de-Bashan L.E. and Bashan Y. 2002. Fertilizer potential of phosphorus recovered from wastewater treatments. In: **Phosphate solubilizing bacteria**. Edited by E. Velazquez, Kluwer Academic Publishers, Dordrecht, The Netherlands (accepted) (GEA-1).

18. Rodriguez, H., Fraga, R., Gonzalez, T., and Bashan, Y. 2002. 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 (accepted) (BIVE-1)

19. de-Bashan L.E. Hernandez J.-P. and Bashan Y. 2002. 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 (accepted) (GEA-1).

20. Whitmore, R.C., Brusca R.C., González-Zamorano, P., Mendoza-Salgado R., Amador-Silva E.S., Holguin G., McIvor C.C. 2002. 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. (BIVE 4)

PUBLICATIONS IN NATIONAL BOOK

21. Bethlenfalvay, G. J., Bashan, Y., Carrillo-Garcia, A. E., and Stutz, J. C. 2002. 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) (GEA-1).

PUBLICATIONS IN NEWSPAPER

22. Holguin, G. 2002. Puede un organismo acelerar su propia evolución? Gaceta Biomédica, Octubre 6.

SUBMITTED PUBLICATIONS

PUBLICATIONS IN SCIENTIFIC INTERNATIONAL REVIEWED JOURNALS

1. de-Bashan, L.E., and and Bashan Y. 2002. Recent advances in removal of phosphorus from wastewater and its future use as fertilizer (1997-2002). **Water Research** (GEA-1)

2. Rodriguez, H., Fraga, R., Gonzalez, T., and Bashan, Y. 2002. Genetic modifications of phosphate solubilizing bacteria to be used as agricultural inoculants. **Plant and Soil** (GEA-1) (1.229).

3. de-Bashan L.E. Hernandez J.-P. and Bashan Y. 2002. Microalgae growth-promoting bacteria as “helpers” for microalgae: a novel approach for removing ammonium and phosphorus from municipal wastewater. **Water Research** (GEA-1)

4. 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** (3.688)

PUBLICATIONS IN NATIONAL REVIEWED JOURNALS

5. Holguin, G., Bashan, Y., Puente, E., Carrillo, A., Gonzalez de-Bashan, L., Bethlenfalvay, G., Rojas, A., Vazquez, P., Glick, B. R., Toledo, G., Lebsky, V., Hernández, J. P., Moreno, M. 2002. Promocion del crecimiento en plantas por bacterias de la rizosfera. **Agricultura Técnica en México**

ABSTRACTS IN CONFERENCES

1. de-Bashan, L.E. and Bashan Y. 2002. Plant growth-promoting bacteria as "helpers" for microalgae: a novel approach in cleaning polluted water. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (**Invited lecture).** (Published on line only)

2. 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 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)

3. Rodríguez H., and Bashan, Y. 2002. Tagging the plant-growth promoting baterium *Azospirillum* with green fluorescent protein genes for environmental studies. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)

4. Holguin, G., and Glick, B.R. 2002. Transfer of the ACC deaminase gene from *Enterobacter cloacae* UW4 into *Azospirillum brasilense* gives the latter biocontrol properties. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)

5. Holguin, G., Carrillo, A.E. and Bashan, Y. 2002. Beneficial bacteria and signal molecules in the rhizosphere of mangrove trees. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)

6. Bacilio, M., Vazquez, P. and Bashan, Y. 2002. Alleviation of noxious effects of cattle-ranch composts on wheat seed germination by inoculation with *Azospirillum* spp. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)

7. Lebsky, V.K., de-Bashan, L.E., Bashan, Y., and Moreno, M. 2002. The use of *Chlorella* in biological wastewater treatment in the arid region of Baja California Sur. The 6th International Symposium on Environmental Biotechnology and The 4th International Symposium on Cleaner Bioprocesses and Sustainable Development. Veracruz, Mexico, June 9-12, 2002. (Published on line only)
8. Rodriguez, H., Fraga, R., Gonzalez, T., and Bashan, Y. 2002. Genetic modifications of phosphate solubilizing bacteria to be used as agricultural inoculants. First International Meeting on Microbial Phosphate Solubilization. Salamanca, Spain, July 16-19, 2002, pp. 23-24. (**Invited lecture**)
9. Bashan, Y., de-Bashan, L.E. and Hernandez, J.-P. 2002. Removal of phosphates from contaminated water by microorganisms. First International Meeting on Microbial Phosphate Solubilization. Salamanca, Spain, July 16-19, 2002, pp. 35-36 (**Invited lecture**)
10. de-Bashan, L.E., Hernandez, J.-P. and Bashan, Y. 2002. Co-immobilization in alginate beads of microalgae with microalgae growth-promoting bacterium as a novel approach for removing ammonium and phosphorus ions from wastewater. First International Meeting on Microbial Phosphate Solubilization. Salamanca, Spain, July 16-19, 2002, p. 73.
11. Puente, M.E., Lebsky, V.K., Bashan, Y., Li, C.Y., and Moreno, M. 2002. Biological factors in soil genesis of an arid zone of Mexico. 9th International Symposium on Nitrogen Fixation with non-legumes. Leuven, Belgium, September 1-5, 2002. p. 105.
12. Holguin, G., Bashan, Y., Puente, M.E., Carrillo, A., Bethlenfalvay, G., Glick, B.R., Vazquez, P., Rojas, A., Toledo, G., Moreno, M. 2002. Plant growth promoting bacteria: basic and applied research. 21st Latino-American meeting on rhizobiology and 6th national congress on biological nitrogen fixation, Cocoyoc, Mexico, October 21-24, 2002. pp 50-51. **(Invited lecture).**
13. Bashan, Y., Puente, M.E., Bethlenfalvay, G.J., Bacilio, M., Li, C.Y., Carrillo, A.E., Moreno, M., Vazquez, P., Holguin, G., and de-Bashan, L.E. 2003. Plant growth-promoting bacteria and desert re-vegetation. Public Lands Restoration Conference. March 1-4, 2003, Palm Springs, California, USA **(Invited lecture).**

Staff and collaborations in 2002

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 2002

Associated researchers at the rank of technicians
M.Sc. Angel Carrillo
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 2002
Dr. J. L. Leon de la Luz- Herbarium CIB- Conservation of cardon cactus.
Dr. Jose J. Bustillos- Pigments in inoculated plants

Foreign collaborations in 2002
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.
Prof. Hani Antoun. Laval University, Quebec (Canada). Water Bioremediation.