

Bashan Institute of Science

Final 2017

(Numbers in parenthesis adjacent a journal's name are the impact factor, 2016)

SUMMARY

- Original publications in peer-reviewed journals with Impact factor
- Published 7
- Submitted papers - 6
- Submitted chapter of a book 1
- Invited presentations at conferences/seminars 5
- Websites 2
- Active projects 3
- Submitted new projects 9
- Review of manuscripts for International and National journals and funding agencies 47

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- Total productivity (without conferences, reviews, and reports) for 2017: 14

- **Average "Impact Factor" of all published papers in 2017: 3.186**

Published and "in press" publications in peer-reviewed journals with an impact factor: 7

1. Bashan, Y., Huang, P., Kloepper, J.W., and de-Bashan, L.E. 2017. A proposal for avoiding fresh-weight measurements when reporting the effect of plant growth-promoting (rhizo)bacteria on growth promotion of plants. **Biology and Fertility of Soils** 53: 1-2 (3.683)
2. Amavizca, E., Bashan, Y., Ryu, C.-M., Farag, M.A., Bebout, B.M., and de-Bashan, L.E. 2017. Enhanced performance of the microalga *Chlorella sorokiniana* remotely induced by the plant growth-promoting bacteria *Azospirillum brasilense* and *Bacillus pumilus*. **Scientific Reports-Nature** 7: 41310 (4.259)
3. Huang, P., de-Bashan, L. E., Crocker, T., Kloepper, J.W., and Bashan, Y. 2017. Evidence that fresh weight measurement is imprecise for reporting the effect of plant growth-promoting (rhizo)bacteria on growth promotion of crop plants. **Biology and Fertility of Soils** 53: 199–208 (3.683)
4. Lopez, B.R., Hernandez, J.-P., Bashan, Y., and de-Bashan, L.E. 2017. Immobilization of microalgae cells in alginate facilitates isolation of DNA and RNA. **Journal of Microbiological Methods** 135: 96–104 (1.79)
5. Herrera, H., Valadares, R., Contreras, D., Bashan, Y., and Arriagada, C. 2017. Mycorrhizal compatibility and symbiotic seed germination of orchids in the Coastal Range and Andes in south central Chile. **Mycorrhiza** 27: 175-188 (3.047)

6. Bacilio, M., Moreno, M., Lopez-Aguilar, D. R., and Bashan, Y. 2017. Scaling from the growth chamber to the greenhouse to the field: demonstration of diminishing effects of mitigation of salinity in peppers inoculated with plant growth-promoting bacterium and humic acids. **Applied Soil Ecology** **119**: 327-338 (2.786)
7. Moreno, M., de-Bashan, L.E., Hernandez, J.P., Lopez, B.R., and Bashan, Y. 2017. Success of long-term restoration of degraded arid land using native trees planted 11 years earlier. **Plant and Soil** **421**:83-92 (3.052)

Publication in the Internet: 2

8. Bashan, Y., and Medel, A. 2017. In memoriam; Dr. Y.R. Sarma (1942-2016). <http://bashanfoundation.org/Sarma/Sarma.html>
9. Pedraza, R.O., Bashan, Y., and Medel, A. 2017. In memoriam; Dr. Katia Regina Dos Santos Teixeira (1966-2015). <http://www.bashanfoundation.org/inmemoriam/teixeira.html>

Submitted publications: 6

10. Cassan, F.D., Coniglio, A., Amavizca, E., Rivera, D., Maroniche, G., Bashan, Y., de-Bashan, L. E. 2017. Potential involvement of type VI secretion system in synthetic mutualism between *Azospirillum brasilense* and *Chlorella sorokiniana*. **Research in Microbiology** (2.561)
11. Garcia D. E., Lopez, B. R., Bashan, Y., Hirsch, M., and de-Bashan, L.E. 2017. Functional metabolic diversity of the bacterial community in undisturbed resource island soils in the southern Sonoran Desert. **Land Degradation & Development** (9.787)
12. Galaviz, M. C., Lopez, B.R., de-Bashan, L.E., Hirsch, A.M., Maymon, M., and Bashan, Y. 2017. Root growth improvement of mesquite seedlings and bacterial rhizosphere and soil community changes are induced by inoculation with plant growth-promoting bacteria and promote restoration of eroded desert soil. **Land Degradation & Development** (9.787)
13. Vital López, L, Cruz Hernández M.A, Ortiz Pérez E.L., de-Bashan L.E., Segoviano Ramírez, J.C. and Mendoza Herrera, A. 2017. Conventional and genetically modified maize: rhizobacterial communities and spatial distribution of *Azospirillum brasilense* in their rhizosphere. **Plant and Soil** (3.052)
14. Herrera H., Valadares, R., Oliveira, G., Fuentes, A., Almonacid, L., Vasconcelos, S., Bashan, Y., Arriagada, C. 2017. Proteomics and organic acid exudation in the *Tulasnella calospora*–*Bipinnula fimbriata* symbiosis provide evidence about adaptation of orchid mycorrhizae to heavy metal-polluted soils. **Mycorrhiza** (3.047)
15. Gonzalez E.J., Hernandez J.-P., de-Bashan L.E., and Bashan, Y. 2017. Dry micro-polymeric inoculant of *Azospirillum brasilense* useful for producing mesquite seedlings for reforestation of degraded arid zones. **Applied Soil Ecology** (2.786)

Submitted chapter of a book

16. de-Bashan, L.E., Lopez, B.R., Garcia, E., Galaviz, C., Moreno, M. y Bashan, Y. 2017. Bacterias del suelo asociadas a plantas. In: **La biodiversidad de Baja California Sur, Mexico**. Published by CONABIO and the state of Baja California Sur, La Paz, Mexico (submitted)

Presentations at conferences: 5 (the invitee or the presenter = in bold)

1. **Palacios, O. A.** 2017. Interacciones microalgas-bacterias, su papel en la naturaleza y en la biotecnología. Special seminar in: programa de "Difusión de la investigación" of the Autonomous University of Baja California Sur, 5.5. 2017, La Paz, BCS, Mexico (**Invited speaker**).
2. **Bashan, Y.** 2017. Bashan Institute of Science, information and capabilities. Special seminar in: Meeting of the Directors of Alabama Agricultural Experimental Station. 8.6. 2017, Auburn, Alabama, USA (**Invited speaker**).
3. **de-Bashan, L.E.**, Bashan, Y., Lopez, B.R. and Palacios, O. 2017. Interaccion entre *Chlorella* y *Azospirillum*: aspectos basicos y aplicados. First International Congress of Basic and Applied Microbiology and 2nd Symposium of Microbial Models, 6-8.9. 2017, Puebla, Mexico (**Invited speaker**).
4. **Bashan, Y.**, and de-Bashan, L.E. 2017. Las bacterias promotoras de crecimiento vegetal *Azospirillum* y *Bacillus* como organismos modelo para la interaccion con plantas. First International Congress of Basic and Applied Microbiology and 2nd Symposium of Microbial Models, 6-8.9. 2017, Puebla, Mexico (**Invited speaker**).
5. **de-Bashan, L.E.**, Bashan, Y., Lopez, B.R. and Palacios, O. 2017. Immobilization of microorganisms for the environment and agriculture. In: 6th International Congress on Biology, Chemistry and Agronomy of the Autonomous University of Guadalajara. September 27-29, 2017. Guadalajara, Mexico (**Invited speaker**).

Scientific recognition and international services

1. **Promotion to the rank of Full Professor** in the Mexican Federal Governmental Research System (Prof. Luz de-Bashan, Professor-Investigador Titular C).
2. 2017 – 2021. Promoted to the rank of "**National Researcher Level 3**" by the National research system (Highest rank, Sistema Nacional de Investigadores, SNI) of Mexico (Prof. Luz de-Bashan).
3. **Institutional Homage** by the Northwestern Center for Biological Research (CIBNOR) to Prof. Yoav Bashan for his lifetime contributions to Mexico and CIBNOR.

4. **National Recognition.** The Federal Government of Mexico via its National System of Researchers (SNI) recognized Prof. Yoav Bashan as “National Researcher by Merit”. This life time membership, is the highest scientific recognition the country offers and the first one for CIBNOR.
5. **Review of manuscripts** for journals, funding agencies and foreign universities: **Total: 47**

Reviewer	Journal, University or Funding Agency	Country	Number of manuscripts
Yoav Bashan	Critical Reviews in Microbiology	UK	1
	Critical Reviews in Biotechnology	UK	1
	Scientific Reports-Nature	UK	1
	Chemistry and Ecology	UK	1
	Journal of Biomaterials Science, Polymer Editions	UK	2
	Arid Land Research and Management	UK	1
	Biology and Fertility of Soils	Germany	1
	Plant and Soil	Germany	7
	Journal of Applied Phycology	Germany	3
	Symbiosis	Germany	1
	Biotechnology for Biofuels	Germany	1
	World Journal of Microbiology and Biotechnology	Germany	1
	Annals of Microbiology	Germany	1
	Journal of Environmental Management	The Netherlands	1
	International Journal of Microbiology	USA	1
	Journal of the Professional Association for Cactus Development	USA	1
	Soil Research	Australia	2
	Frontiers in Plant Science	Switzerland	1
	France National Agency for research	France	1
Luz de-Bashan	Journal of Applied Phycology	Germany	3
	Biology and Fertility of Soils	Germany	3
	Plant and Soil	Germany	4
	Applied Energy	The Netherlands	1
	Science of the Total Environment	The Netherlands	1
	Journal of Biotechnology	The Netherlands	1
	Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales	Colombia	1
	CONACYT-Frontera de la Ciencia	Mexico	1
	Murdoch University-PhD Thesis	Australia	1
Blanca Lopez	Plant and Soil	Germany	2

External research projects: 3

(total:\$ 4,315,000 pesos)=(US\$ 240,000) (18 Mexican pesos = 1 USD).

“Establishment and functional optimization of natural and synthetic mutualisms”.

Funding: MN\$ 3,000,000; Convocatoria CONACYT Investigación Científica Básica 2015 – Continuación de Proyecto de Grupo Consolidado –

Duration: 3 years (2016-2018).

PI: Prof. Yoav Bashan

Co-PI: Prof. Martin Heil CINVESTAV- Irapuato, Dr. Luz de-Bashan

Participantes: Dr. Gabriela Olmedo CINVESTAV- Irapuato, Dr. Blanca Lopez CIBNOR.

“Cooperación técnica México-Colombia: Mejoras en los procesos de producción de biofertilizantes aplicados en cultivos de interés agroindustrial en Colombia”

Funding: Agencia Mexicana de Cooperación Internacional para el Desarrollo, Secretaria de Relaciones Exteriores. Agencia Presidencial de Cooperación Internacional de Colombia.

Duration: 2 years (2017-2018).

PI: Prof. Yoav Bashan and Dr. Thelma Castellanos; Dr. Ruth Bonilla

Co-PI: Dr. Luz de-Bashan

“Symbiotic association between microalga and Plant Growth-Promoting Bacteria: reciprocal effect of extracellular metabolites on metabolism and gene expression of each partner” CONACYT Ciencia Basica 2016

Responsable Técnico: Dra. Luz Estela Gonzalez de Bashan

Duration: 2018-2020

Participantes

Dr. Yoav Bashan, Dra. Blanca Estela Romero Lopez, Dr. Oskar Palacios Microbiología Ambiental, CIBNOR

Dra. Gracia Gómez Anduro Grupo de Biología Molecular de Plantas CIBNOR

Dr. Brendan Higgins, Biosystems Engineering Department, Auburn University

Funding: MN\$ 1,320,000

Submitted projects: 9

1. “Endophytic bacteria of the woolly moss (*Racomitrium lanuginosum*): biogeography, ecology and geomicrobiology”.

Funding agency: Icelandic Research Fund (IRF) 2017- Via Bashan Institute of Science - USA

PI: Dr. Oddur Vilhelmsson, University of Akureyri, Iceland

Co-PI: Prof. Yoav Bashan, Dr. Luz E. de-Bashan

2. "Establishment and maintenance of synthetic mutualism between microalga and plant growth promoting bacteria”

Funding agency: National Science Foundation (NSF), USA- via Bashan Institute of Science - USA

PI: Dr. Luz de-Bashan

Co-PI: Prof. Yoav Bashan (BIS), Dr. David Bliersch, Dr. Andres Carrano Auburn University

Participante: Dr. Blanca Lopez (CIBNOR) and Dr. Fabricio Cassan (University of Rio Cuarto, Argentina) (**Not financed**)

3. "Investigation of stresses produced during inoculant formation to improved susthetic inoculant for agricultura and the environment".
Funding agency: National Science Foundation (NSF), USA- Via Bashan Institute of Science - USA
PI: Dr. Luz de-Bashan
Co-PI: Prof. Yoav Bashan, Ass. Prof. Yi Wang Auburn University (**Not financed**)

4. Preliminary proposal, Proyecto de Grupo: "Recuperación de suelos degradados después de su uso agrícola, con inoculantes mixtos de microalga y bacterias promotoras de crecimiento vegetal, utilizando agave azul como planta modelo"
CONACYT – Proyectos de desarrollo científico para atender problemas Nacionales 2017
PI: Dr. Luz Estela Gonzalez de Bashan – CIBNOR
coPI: Prof. Yoav Bashan – CIBNOR
coPI: Dr. Froylán Mario Espinoza Escalante, Laboratorio de Metabolismo Microbiano, Universidad Autónoma de Guadalajara
Participants
Dr. Blanca Romero Lopez CIBNOR
Dr. Oskar Palacios CIBNOR
MC Manuel Moreno CIBNOR
Presupuesto: \$ 3,600.000

5. Preliminary proposal, Proyecto de Grupo "Análisis del metaboloma de la rizósfera de árboles de manglar y de sus comunidades microbianas asociadas, para la generación de indicadores específicos de conservación and restauración en ecosistemas árido-tropicales".
CONACYT, Proyectos de desarrollo científico para atender problemas Nacionales 2017
PI: Dr. Yoav Bashan
CoPI: Dr. José Carlos Espinoza Hicks. Facultad de Ciencias Químicas - Universidad Autónoma de Chihuahua (UACH).
Participants
Dra. Luz Estela González de Bashan CIBNOR
Dra. Blanca Estela Romero López CIBNOR
Dr. Oskar Alejandro Palacios López CIBNOR
M.C. Manuel Moreno Legorreta CIBNOR
Dr. Alejandro Alberto Camacho Dávila. Facultad de Ciencias Químicas - Universidad Autónoma de Chihuahua (UACH).
Collaborator: Dr. Alexander Kamnev Institute of Biochemistry and Physiology of Plants and Microorganisms, Russian Academy of Sciences, Saratov, Russia. Asesorara los análisis e interpretación biologica de muestras provenientes de espectroscopia infrarroja
Budget: \$ 3,651.000

6. Preliminary proposal: Involvement of the bacterial endophytic microbiome in the biogeographical distribution and establishment of wild cacti in deserts
NSF- Division of Environmental Biology
PI. Yoav Bashan
coPI. Luz Gonzalez de Bashan
Participantes,
Dr. Alfonso Medel y Dra. Blanca Romero. CIBNOR

Dr. Jesus Mercado-Blanco. Instituto para la Agricultura Sostenible (IAS, CSIC, Cordoba, España
 Dra Gabrielle Berg y Dr. Armin Erlacher. Institute of Environmental Biotechnology, Graz University
 of Technology, Graz, Austria (**Not financed**)

7. "The threat to the magnificent Giant Mesquite Bug and their symbiotic bacteria from higher temperatures under climate change"
 Funding agency: University de Arizona (USA)- CONACYT-CAZMEX (Mexico)
 (PI) Dr. Judith Becerra (University of Arizona) and Dr. Luz de-Bashan (CIBNOR)
 (co-PI) Dr. Yoav Bashan
(Not financed).

8. Project "Molecular and metabolic response of upland cotton (*Gossypium hirsutum* L.) to inoculation with rhizospheric and endophytic strains of the plant growth-promoting bacterium *Azospirillum brasilense* under salinity stresses"
 NSF-Plant Biotic Interactions
 PI: Prof. Yoav Bashan
 Co-PI: Prof. Luz Estela Bashan
 Co-PI: Dr. Yi Wang - Biosystems Engineering Department, Auburn University
 Postdoctoral researcher: Dr. Luisa Posada
 International collaboration
 Dr. Gracia Gomez, Northwestern Center for Biological Research, La Paz, Mexico, molecular plant physiology
 Dr. Fabricio Cassan, National University of Rio Cuarto, Argentina, molecular plant/-microbe Interaction
 Dr. Lily Pereg, University of New England, Australia, bacterial molecular biology
 Budget: \$ 915,303.00 USD

9. Project: Collaborative Research: Enhanced biological nutrient removal from wastewater by an immobilized microalga-bacteria heterotrophic system.
 NSF-CBET Environmental Engineering
 PI: Prof. Yoav Bashan
 PI Auburn University, Dr. Brendan Higgins, Department of Biosystems Engineering.
 Co-PI: Prof. Luz de-Bashan
 Budget: \$329,000 (USD).
(Not approved for administrative requirements of the program)

Personnel in 2017

*(SNI-National academic ranking according to the National Research System of Mexico; Candidate<1< 2< 3<by Merit;
 H-index and citations according to Google Scholar, December 31, 2017)*

Researchers (full time)

1. Prof. Luz Gonzalez de-Bashan (SNI level 3; **H-index-37**; Citations- 7,867; life-time average Impact factor_{64 publication}- 3.084)
2. Prof. Yoav Bashan (SNI by Merit; **H-index-74**; Citations- 20,133; last 10 years, average Impact factor_{80 publication}- 3.002)
3. Dr. Macario Bacilio

Research Associates (full time)

4. Dr. Blanca Lopez (SNI level 1, **H-index-6**; Citations- 216)
5. Dr. Melisa Lopez-Vela (SNI-Candidate)

Catedra of CONACYT (full time)

6. Dr. Paola Magallon

Post doctoral fellow (full time)

7. Dr. Oskar Palacios (full time) (SNI-Candidate; **H-index-5**; Citations- 73)

Research staff (full-time)

8. M.Sc. Manuel Moreno (**H-index-13**; Citations- 1199)
9. M.Sc Salvador Reyes

Foreign research associate

10. M.Sc. Juan Pablo Hernandez- Universidad El Bosque, Bogota, Colombia (SNI level 1, **H-index-17**; Citations- 2128)

Graduate students (Research, full time)

11. **Dr. Alejandro Figueroa. D.Sc. Graduated February 2017.** (CIIDIR-IPN), Guasave, Sinaloa, Mexico (With Prof. Luz de-Bashan).
12. cDr. Cristina Galaviz (CIBNOR since 2016) (with Dr. Francisco Magallon and Dr. Paola Magallon)
13. cDr. Jonathan Rojas (ITSON, Cd Obregon, Since 2016) (With Prof. Luz de-Bashan and Prof. Yoav Bashan, research stay to the end of 2017).
14. cMSc Dulce Espinoza (UNAM, Hermosillo) (With Dr. Blanca Lopez).
15. cDr. Edgar Amavizca (CIBNOR will start at January 2018) (With Prof. Luz de-Bashan and Prof. Yoav Bashan)
16. cMSc Violeta Iglesias (CIBNOR Since 2017) (With Prof. Luz de-Bashan).

Undergraduate student thesis (full time)

17. cLic Valeria Monroy (UABCS, La Paz since 2017) (With Dr. Oskar Palacios)

Webmasters

18. Dr. Afonso Medel (Webmaster-in-Chief).
19. M.Sc. Claudia Contreras (Assistant webmaster)

International and national collaborations in 2017

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

1. **Dr. S.R. Prabhu**, TerraBioGen Technologies. Vancouver (**Canada**). Diazotrophic bacteria. (not active in 2017)
2. **Prof. Anton Hartmann**. German Research Center for Environmental Health, München, (**Germany**). FISH and plant-bacteria interactions. (not active in 2017)
3. **Prof. Martin Heil**, CINVESTAV (Guanajuato, **Mexico**). Mutualism between microalgae and bacteria.
4. **Dr. Alberto Mendoza**- CBG-IPN, Reynosa, Tamaulipas (**Mexico**). Colonization of *Azospirillum*.

5. **Prof. Joseph Kloepper, and M.Sc. John McInroy**, Auburn University (**USA**), PGPB/PGPR.
6. **Dr. Ping Huang**, Pathway Biologic, Florida (**USA**). PGPB/PGPR.
7. **Prof. Gabriela Olmedo**, CINVESTAV (Guanajuato, **Mexico**). Mutualism between microalgae and bacteria.
8. **Dr. Fabricio Cassan**. University of Rio Cuarto, (**Argentina**). Attachment process in plant growth-promoting bacteria.
9. **Dr. Gracia Gomez** – CIBNOR (**Mexico**). Genetic manipulation of microalgae.
10. **Prof. Ann Hirsh**, University of California-Los Angeles (**USA**). Microorganisms of the desert.
11. **Dr. Choong-Min Ryu**. Korean Institute of Bioscience and Biotechnology, Daejeon, (**Korea**). Volatiles in *Azospirillum*. (not active in 2017)
12. **Dr. S. Y. Park**. Korean Institute of Bioscience and Biotechnology, Daejeon, (**Korea**). Molecular biology of desert bacilli. (not active in 2017)
13. **Prof. Rainer Borriss**. Humboldt University (**Germany**). Molecular biology of desert bacilli. (not active in 2017)
14. **Dr. Cesar Arriagada**. University of la Frontera (**Chile**). Endophytic microfungi.
15. **Dr. Lily Pereg**. University of New England, (**Australia**). Specificity and affinity of *Azospirillum* for plants. (not active in 2017)
16. **Dr. Valeska Villegas Escobar and Dr. Luisa Posada**. Universidad EAFIT, Medellín (**Colombia**). Detection of *Bacillus subtilis* by FISH.
17. **Dr. Brad Bebout**. NASA-Ames, California (**USA**). Interactions among microalgae and bacteria.
18. **Dr. Xavier Myali**. Lawrence Livermore National Laboratory, California (**USA**). Study of microalgae-bacteria interaction using nanoSIMS. (not active in 2017)
19. **Dr. Peter Weber**. Lawrence Livermore National Laboratory, California (**USA**). Study of microalgae-bacteria interaction using nanoSIMS. (not active in 2017)
20. **Dr. Octavio Perez-Garcia**. University of Auckland, (**New Zealand**). Heterotrophic and Mixotrophic growth of microalgae; metabolic modeling
21. **Dr. Volker Huss**. University of Erlangen-Nürnberg (**Germany**). Systematics of *Chlorella*. (not active in 2017)
22. **Dr. Walter Osorio**. (**Colombia**) Universidad Nacional de Colombia. PGPB and P fertilization.
23. **Dr. Cristian Agurto**. University of Concepcion. (**Chile**). Biotechnology of microalgae. (not active in 2017)
24. **Eng. Jorge Farias**. (**Chile**) University of Concepcion. Biotechnology of microalgae. (not active in 2017)
25. **Prof. Roberto Riquelme** (**Chile**) University of Concepcion. Modeling of microalgae growth. (not active in 2017)
26. **Dr. Mauricio Schoebitz** (**Chile**) University of Concepcion. Restoration of forests. (not active in 2017)
27. **Dr. Ruth Bonilla**, CORPOICA (**Colombia**). Improvement of bacterial inoculants.
28. **Dr. Oddur Vilhelmsson** (**Iceland**) University of Akurey. Endophytes from extreme environments.
29. **Prof. Gabriele Berg**, (**Austria**). Technical University of Graz. Endophytic bacteria (not active in 2017).
30. **Dr. Armin Erlacher**, (**Austria**). Technical University of Graz. FISH and 3D modeling (not active in 2017).
31. **Dr. David Blersch**, (**USA**). Auburn University. Microalgae bacteria interaction.
32. **Prof. Andres Carrano**, (**USA**). Georgia Southern University. Microalgae bacteria interaction.
33. **Dr. Yi Wang**, (**USA**). Auburn University. Inoculants of PGPB.
34. **Prof. Mark Liles** (**USA**) Auburn University. Molecular biology of Microalgae. (not active in 2017)

35. **Dr. Ali Khalvati (Turkey)**. Bosphorus University. Mycorrhizae and wastewater treatment.
36. **Dr. Robert Armon (Israel)**. Israel Institute of Technology. Microalgae and energy cells. (not active in 2017)
37. **Dr. Camilo Ramirez (Colombia)** Universidad de Antioquia. PGPB and degraded soils.
38. **Dr. Pilar Ximena Lizarazo (Colombia)** Universidad de Antioquia. PGPB and cocoa grains
39. **Dr. Jesus Mercado-Blanco (Spain)**. CSIC-Cordoba. Endophytic bacteria from the desert.
40. **Dr. Brendan Higgins, (USA)**. Auburn University. Microalgae bacteria interaction.
41. **Dr. Francisco Magallon**. CIBNOR (**Mexico**). Microbiology of microalgae.
42. **Dr. Judith Becerra (USA)** University of Arizona. Entomological microbiology
43. **Dr. Sushil adhikari (USA)** Auburn University. Biofuel and Biochar.