



Programme

Sunday 26 March

18:00-19:00 Welcome and registration at Hotel de la Bahia

Monday 27 March

8:00-9:00 Registration and poster display

9:00-9:45 Opening ceremony: greetings from international and local authorities.

9:45-10:15 Opening lecture:
CAM metabolism: advantages for a hotter and drier world
 Prof. Park Nobel - University of California Los Angeles.

SESSION 1: Genetic resources and breeding of *Opuntia*

Chair: Paolo Inglese

- 10:15-10:45 Invited speaker:
 Prof. Candelario Mondragón – Universidad Autónoma de Querétaro.
Functional properties: actual frontier of native and improved cactus pear germplasm
- 10:45-10:55 **Assessment of genetic diversity of Brazilian and Mediterranean cactus cultivars by SSR markers and morphological traits.** Nefzaoui M, Lira MA, Udupa SM, Louhaichi M, Boujghagh M, Santos DC.
- 10:55-11:05 **Assessment of four cactus (*Opuntia ficus-indica* (L.) Mill.) accessions for growth, yield and quality parameter under pot culture.** Kauthale VK, Punde KK.
- 11:05-11:15 **Morphological characterization of *Opuntia* sps. accessions for potential use as a forage crop in dry areas of Bolivia.** Lazarte L, Ramirez K.
- 11:15-12:00 **COFFEE BREAK**
- 12:00-12:10 **Genotype x environmental interactions of cactus pear (*Opuntia ficus-indica*) in the semi-arid regions of South Africa: cladode production.** Fouché HJ, Coetzer GM, Smith MF.

- 12:10-12:20 **Genotype x environmental interactions of cactus pear (*Opuntia ficus-indica*) in the semi-arid regions of South Africa: fruit production.** Coetzer GM, Fouche HJ, Smith MF.
- 12:20-12:30 **Screening of cladodes from 42 south African spineless cactus pear cultivars for human food applications.** De Wit M, Du Toit A, Fouché HJ, Hugo A, Venter SL.
- 12:30-12:40 **Evaluation of some morphological and chemical characteristics of 38 accessions of spineless cactus under Qatar environmental conditions.** Al Wawi HM, Al Yafei MS, Ouled Belgacem A.
- 12:40-12:50 **Nutritive characterization of the cladodes of sixteen cultivars of spineless cactus from different geographic origins.** Abidi S, Ben Salem H.
- 12:50-13:00 **Determination of apomixes and polyploidization in *Opuntia ficus-indica*.** Espinoza F, Muñoz C, Prat L.
- 13:00-14:30 **LUNCH**

SESSION 2: CAM plants as a source of forage and energy

Chair: José Dubeux

- 14:30-15:00 Invited speaker:
Dr. Ali Nefzaoui, International Center for Agricultural Research in the Dry Areas.
Cacti as an adaptation option for livestock feeding under changing climate in the dry areas
- 15:00-15:10 **Nutritive value of 'Raketamena' (*Opuntia stricta* [Haw.] Haw.) as a fodder in Madagascar.** Dubeux J, Schroth W, Ruiz-Moreno M, Ferreira MA.
- 15:10-15:20 **Cactus pear's potential to sustain livestock production in drought stricken areas: a case study of Oppermans community in the Free State province of South Africa.** Fouché HJ, Coetzer G, de Wit M, Mavengahama S, Venter SL.
- 15:20-15:30 **Valorization of nopal cladodes and seeds.** Varnero MT, Homer I.
- 15:30-15:40 **Energy recovery from waste and by-products of the cactus produced in Italy: preliminary work.** Danzì C, Timpanaro G, Foti VT, La Malfa S, Testa G, Cosentino SL.

POSTER SESSION 1: Genetic resources, CAM plants for forage and energy

- 15:40-16:40 Poster viewing (coffee will be served)

**SESSION 3: Towards a hotter and drier world:
ecophysiological adaptations of *Opuntia* and new CAM crops**
Chair: Giorgia Liguori

- 16:40-17:10 Invited speaker:
Prof. Ryan Stewart, Brigham Young University.
Exploring the possibility of photosynthetic plasticity in *Agave sensu lato*.
- 17:10-17:20 **Soil volume: the effect of pot size on roots and canopy growth performance of cactus pear.** Hassan S, Liguori G, Sortino G, Louhaichi M, Inglese P.
- 17:20-17:30 **Cactus pear roots turnover and total carbon sequestration rate depends on soil volume availability.** Hassan S, Liguori G, Sortino G, Louhaichi M, Inglese P, Gristina L, Novara A.
- 17:30-17:40 **Water use efficiency of cactus pear and pitahaya as compared to other arid zone adapted fruit trees.** Muñoz-Aravena V, Talamilla M, Castro P, Faúndez C, Kremer C, Franck N.
- 17:40-17:50 **Regulation of stomatal opening via phototropins – blue light receptors – in the CAM plant *Hylocereus undatus*.** Sitrit Y, Bayramoğlu B, Tel-Zur N.
- 17:50-18:00 **Influence of the nurse plant effect of *Prosopis flexuosa* DC. on nutrient contents and productivity of *Opuntia ellisiana* Griffith.** Grünwaldt J, Guevara JC, Martínez Carretero E, Grünwaldt EG.

Tuesday 28 March

SESSION 3: continued
Chair: Giorgia Liguori

- 9:00-9:30 Invited speaker:
Prof. Noemí Tel-Zur, Ben-Gurion University of the Negev.
Pitahayas – exotic species thriving in extreme desert conditions: challenges in developing a new crop.
- 9:30-9:40 **Reproductive phenology of facheiro in Agreste of Paraíba, Brazil.** Barbosa A, Andrade AP, Souza VC, Aquino IS, Medeiros RLS, Barbosa Neto MA, Anjos F.
- 9:40-9:50 **Fruit quality and flower volatiles of the columnar cacti *Cereus peruvianus* and *Cereus jamacaru*.** Lewinsohn E, Bar E, Golan E, Ninio R, Mizrahi Y, Sitrit Y.
- 9:50-10:00 **Behavior of selections of *Eulychnia acida* Phil. under irrigation conditions, after 8 years.** Salvatierra GA, Martínez L.
- 10:00-10:15 Launching of the 2nd edition of the FAO technical paper “Agroecology, cultivation and uses of cactus pear (*Opuntia* sp. pl.)”

10:15-10:40 Tribute to Dr. Enza Chessa: Universidad de La Serena Chamber Ensemble

POSTER SESSION 2: Ecophysiology and fruit production

10:40-11:20 Poster viewing (Coffee will be served)

SESSION 4: Fruit production: orchard and fruit management

Chair: Nicolás Franck

11:20-11:50 Invited speaker:

Prof. Paolo Inglese – Università degli Studi di Palermo.

Cactus fruit production: where are we and where are we going to?

11:50-12:00 **Influence of age of cladode, growth, hormone and cladode pieces on propagation of cactus pear (*Opuntia ficus-indica*).** Kauthale VK, Punde KK.

12:00-12:10 **Supplemental irrigation improves water use efficiency, yield and fruit quality of 'Roja Dalia' cactus pear.** Zegbe JA, Serna-Pérez A, Maldonado-Rodríguez MR.

12:10-12:20 **Relationships between fruit attributes and fruiting cladode dry or fresh matter in *Opuntia ficus-indica* (L.) Miller variety 'Rojo Pelón'.** López-García R, Mata-González R, Blanco-Macías F, Méndez-Gallegos SJ, Valdez-Cepeda RD.

12:20-12:30 **Climatic influences on fruit yield, quality and sensory traits: a five-year evaluation.** Coetzer G, De Wit M, Fouché HJ, Venter SL.

12:30-12:40 **Effect of fruit ripening on morphological and chemical characteristics of *Opuntia ficus-indica* from Morocco.** Oumato J, Zrira S, Boujneh M, Saidi B.

12:40-12:50 **Effect of GA3 + Ethephon on glochid removal and cactus pear fruit quality.** Corrales-García J, Cardona-Vázquez J, Lira-Sandoval JA, Colinas-León MT.

12:50-13:00 **Preferences towards cactus pear in minimum process: an approach from the consumer through graphics stimulus.** Mora M, Esparza J.

13:00-14:30 **LUNCH**

WORKSHOP: Geographic distribution of *Opuntia*

Chair: Makiko Taguchi

14:30-15:30 Use of GIS for zoning of *Opuntia ficus-indica* production areas

15:30-17:30 General Meeting of FAO-ICARDA International Cooperation Network on Cactus Pear and Cochineal (CACTUSNET)

20:30 **SOCIAL DINNER**

Wednesday 29 March

8:30-19:30 Technical excursion (Elqui Valley)

Thursday 30 March

SESSION 5: Agro-industrial uses of CAM crops.

Chair: Maryna De Witt

- 9:00-9:30 Invited speaker:
Dr. Paz Robert. Universidad de Chile
Cactus pear betalains as a source for coloring foods
- 9:30-9:40 **Cactus pear mucilage: functional properties.** Du Toit A, De Wit M, Fouché HJ, Hugo A, Venter SL.
- 9:40-9:50 **Selected Characteristics of *Opuntia dillenii* Cactus Beverage and Impact of thermal and non-thermal pasteurization.** Moussa Ayoub T, Jäger H, Knorr D, El-Samahy SK, Rohn S, Kroh LW.
- 9:50-10:00 **Betalains stability in dry mixes for instant beverages.** Robert P, Vergara C, Castillo I, Cancino B, Sáenz C.
- 10:00-10:10 **Sensory characteristics and physicochemical stability of pitaya fruit (*Stenocereus queretaroensis* Weber) liquor.** Corrales-García J, Hernández-Montes A, Vargas-Cano A, Quiroz-González B.
- 10:10-10:20 **Microencapsulation of colorants from cactus fruit peel with mucilage and cellulose microfibers from cladodes.** Abraán M, Aguilar-Romero MM, Ramírez-Gómez MM, Rodarte-Gómez JJ.
- 10:20-10:30 **Sherbets from yellow-orange and purple cactus pear.** Sáenz C, Pérez T, Fabry AM, Medel M.

POSTER SESSION 3: Agro-industrial products

- 10:30-11:30 Poster viewing (Coffee will be served)

SESSION 6: Pharmaceutical uses of CAM-crops and Cochineal.

Chair: Paz Robert

- 11:30-12:00 Invited speaker:
Prof. Mónica Nazareno, Universidad Nacional de Santiago del Estero.
Recent advances in medicinal and nutraceutical properties of cactus products

- 12:00-12:10 **The wound healing effect of cactus pear oil.** Bardaa S, Khedir SB, Chabchoub N, Moalla D, Mseddi M, Rebai T, Sahnoun Z.
- 12:10-12:20 **Evaluation of analgesic, anti-inflammatory and anti-ulcerogenic activities of *Opuntia ficus-indica* F. *inermis* cladode extract in rats.** Bendhifi Zarroug M, Feriani A, Zourgui L, Salhi Hannachi A.
- 12:20-12:30 **Cactus pear and cochineals: good agricultural practices and control.** Portillo L, Viguera AL.
- 12:30-12:40 **Cochineal infestation, control measures and current status in Tigray cactus (*Opuntia ficus-indica*), Ethiopia.** Yemane K, Gebremeskel GT, Alem MT.
- 12:40-12:50 **Preparation and method of composition of herbal biopesticide for the management of cochineal insect of cactus in Tigray, Ethiopia.** Zeweld SW, Meles K.
- 12:50-13:00 **Predicting the impact of climate change on future cactus and cochineal distribution in Tigray, Ethiopia.** Abrha H.
- 13:00-14:30 **LUNCH**

POSTER SESSION 4: Pharmaceutical uses, cochineal and rural development

- 14:30-15:10 Poster viewing (Coffee will be served)

SESSION 7: Rural development and marketing.

Chair: Judith Ochoa

- 15:10-15:20 **Changing perception of small holders about cactus pear in south Asia.** Louhaichi M, Kumar S, Clifton RK, Islam M, Hassan S, Qamar IA, Sarker A.
- 15:20-15:30 **The effect of fostering partnerships on broadening the food base: the role of cactus pear, an underutilized crop with unlimited potential, the South African perspective.** Venter SL, Fouche HJ, de Wit M, Mavengahama S, Coetzer G, Swart WJ, Amonsou EO.
- 15:30-15:40 **Cactus crop (*Opuntia ficus-indica*) to rehabilitate rangelands in semi-arid regions of Tunisia.** Gouhis F, Louhaichi M, Nefzaoui A.
- 15:40-15:50 **Research and development scenario of cactus pear (*Opuntia ficus-indica*) in Tigray, Ethiopia.** Yemane KB, Gebremeskel GT, Alem MT.
- 15:50-16:00 **Potential of *Opuntia spp.* seed oil for livelihood improvement in semi-arid Madagascar.** Hänke H, Barkmann J, Müller C, Marggraf R.

- 16:00-16:30 Closing lecture:
Prof. Hichem Ben Salem, International Center for Agricultural Research in the Dry Areas.
Integration of cactus in livestock production systems and reduction of their water foot print – A climate-smart intervention.
- 16:30-16:45 Summary of activities and conclusions of the General Meeting of FAO-ICARDA International Cooperation Network on Cactus Pear and Cochineal (CACTUSNET):
Prof. Paolo Inglese, General Coordinator of CACTUSNET
- 16:45-17:15 Prizes, awards, closing speeches.

Poster sessions

Monday 27 March

POSTER SESSION 1: Genetic resources, CAM plants for forage and energy

1. **Morphological characterization of cactus pear (*Opuntia ficus-indica*) accessions from the collection held at Agadir, Morocco.** Nefzaoui M, Lira MA, Boujghagh M, Udupa SM, Louhaichi M.
2. **Multivariate analysis of phenotypic traits of forage cactus accessions in the semi-arid region of Pernambuco, Brazil.** Nefzaoui M, Lira MA, Santos DC.
3. **Quantitative and qualitative analysis of cladodes biomass from new selections of *Opuntia ficus-indica* Mill.** Mulas M, Dessena L.
4. **Problematic of breeding by hybridization in cactus pear (*Opuntia* spp): Apomixis or typical mendelian inheritance of a polyploid?** Núñez-Colín CA, Ramírez Granados JC, Gallegos-Vázquez C, Mondragón-Jacobo C.
5. **Occurrence of thorns in clones of spineless cactus 'orelha de elefante mexicana' (*Opuntia stricta* Haw.)** Santos, MVF, Souza TC, Mendoza PV, Santos DC, Silva MC, Lira MA, Cunha MV, Mello ACL, Dubeux Jr JCB.
6. **Development of a crop improvement programme for cactus pear (*Opuntia ficus-indica*) in South Africa.** Mavengahama S, Fouché HJ, Venter SL, Coetzer G, Allen A, de Wit M.
7. **Epigenetic variations in *Opuntia* species following salt stress application.** Bahia L, Ben Romdhane M, Boubakr H, Ammar B, Nefzaoui A, Ghorbel A, Zoghalmi N.
8. **Effect of continuous high temperature in sporophytic microsporogenesis initiation of *Opuntia ficus-indica*.** Bouamama-Gzara B, Chebil S, Ben Salem-Fnayou A, Borgi M, Nefzaoui A, Ghorbel A.
9. **Early adaptacion of five clones of *Opuntia* to agroclimatic diversity of northern Chile.** Muñoz-Aravena V, Talamilla M, Franck, N.
10. **Genotype x environment interactions of four clones of *Opuntia* established in Elqui and Codpa valleys, Chile.** Muñoz-Aravena, V, Arancibia-Avenidaño D, Talamilla M, Hardy Ch, Franck N.
11. **Morphometric characterization of 36 wild variants of Xoconostle (*Opuntia* spp.) from Zacatecas, Mexico.** Gallegos-Vázquez C, de Luna-Valadez JM, Valdez-Cepeda RD.
12. **Assessment of different supplemental feeding strategies including cactus (*Opuntia ficus-indica*) for higher sheep productivity in Chakwal, Pakistan.** Islam M, Razzaq A, Sawsan H, Louhaichi M, Qamar I, Rischkowsky B, Ibrahim MNM.
13. **Replacement of forage cactus 'miúda' by 'orelha de elefante mexicana' in the diet of lactating crossbred cows.** Ferreira MA, Silva RC, Santos DC, Oliveira JCV, Inácio JG, Silva JL.
14. **Morphometry of rumen and intestinal tissues of sheep with dietary levels of forage cactus and water restriction.** Cordova- Torres AV, Costa RG, Guerra RR, Araújo Filho JT, Medeiros AN, Rocha EHS.
15. **Influence of varieties of forage cactus resistant to cochineal on growth performance of goats.** Sousa FA, Silva DV, Nunes AR, Bispo SV.
16. **Morphological characterization of *Opuntia* sps. accessions for potential use as a forage crop in dry areas of Bolivia.** Lazarte L, Ramírez K.
17. **Assessing the performance of Osmanabadi goats by feeding spineless cactus under field conditions.** Aware MJ, Ghavate AM, Punde KK, Kauthale VK.

18. **Influence of feeding spineless cactus on growth performance of Osmanabadi goat kids.** Aware MJ, Ghavate AM, Punde KK, Kauthale VK.
19. **Cactus pear as possible energy source for semi-arid environments.** Danzi C.; Testa G.; Scordia D.; La Malfa S.; Timpanaro G.; Foti V.T.; Cosentino S.L.
20. **Evaluation of cactus pear silages on growing lambs.** Vazquez-Mendoza P, Miranda-Romero LA, Aranda-Osorio G, Burgueño-Ferreira JA.
21. **Cropping system and manure source affects cactus (*Nopalea cochenillifera* Salm Dyck.) productivity.** Miranda K, Dubeux Jr J, Silva M, Mello A, Santos M, Lira M, Cunha M, Ferraz I, Firemand T.
22. **Potential production of biogas from plantations of *Opuntia ficus indica* available in the chilean “Norte Chico”: an assessment.** Varnero MT, Bedregal C, Homer I.
23. **Effect of cactus addition to the diet of lactating sows on feed intake and productive behavior.** Pérez SER, Ordaz OG, Juárez CA, Ortiz RR.
24. **Ex – situ evaluation of creole tuna (*Opuntia ficus-indica*) establishment on amended mine tailings.** Varnero MT, Ramirez J, Ginocchio R, Homer I.
25. **Liver function of sheep fed cactus species resistant to *Dactylopius sp.*** Silva ANF, Silva TGP, Silva SMC, Sousa DR, Soares PC, Carvalho FFR, Batista AMV.
26. **Serum profile of macrominerals in sheep fed cactus species resistant to *Dactylopius sp.*** Silva ANF, Silva TGP, Silva SMC, Sousa DR, Carvalho FFR, Batista AMV.
27. **Increasing planting density reduces height and width of cactus.** Mello ACL, Silva RM, Souza TC, Dubeux Jr JCB, Lira MA, Silva Jr JR, Silva MC.
28. **Nutrient concentration in spineless cactus under different planting densities and harvesting management.** Mello ACL, Silva RM, Souza TC, Dubeux Jr JCB, Lira MA, Santos MVF, Santos DC, Cunha MV.
29. **Nutrient composition and *in vitro* digestibility of cactus pear cladodes (*Opuntia rastrera*) at different localities of northeast Mexico.** Fuentes RJ, Charles RAV, Ruiz ZF, Garcia ER, Lopez TR, Aguilera JL.

Tuesday 28 March

POSTER SESSION 2: Ecophysiology and fruit production

1. **Rumpa a cactus with commercial potential for gourmet market and others in the Metropolitan Region, Chile.** Salvatierra A, Mora M.
2. **Transpiration study in cactus pear (*Opuntia ficus indica*).** Ben Salem-Fnayou A, Abdellaoui I, Mliki A, Nefzaoui A, Ghorbel A.
3. **CO₂ or light: what limits carbon assimilation of growing cactus pear cladodes?** Franck, N, Alfaro F, Arancibia D, Muñoz V.
4. **Spineless cactus in the Arabian Peninsula: adaptive behaviors and production performances.** Ouled Belgacem A, Al Farsi S, Al Wawi HM, Al Yafei MS, Al-Sharari M, Al-Hamoodi A, Louhaichi M.
5. **The use of wild and cultivated cacti in northern province of Cordoba, Argentina.** Trillo C, Ahumada ML, Torrico Chalabe J, Demaio P.
6. **Anatomical investigation of emasculation and gibberellic acid effects on early seed development of *Opuntia ficus-indica* (L.) Mill.** Jedidi E, Ben Mahmoud K, Ayari O, Jemmali A.

7. **Characterization of rumba fruits (*Corryocactus brevistylus*) from northern Chile.** Sáenz C, Pinto R, Fabry AM, Carmona JC, Franck N.
8. **Predicting of stomatal conductance in *Opuntia ficus indica*.** Savé RA, Acevedo E.
9. **Relative water content as indicator of plant water status of 'roja dalia' cactus pear under irrigation regimens.** Zegbe JA, Serna-Pérez A.
10. **Palatable cacti fruits from northern Chile as an agro industrial alternative resource.** Pinto R.
11. **Fruiting cladode physical attributes of *Opuntia ficus-indica* (L.) Miller variety 'Rojo pelón' differ among years.** López-García R, Valdez-Cepeda RD, Blanco-Macías F, Méndez-Gallegos S. de J.
12. **Evaluation of *Opuntia ficus-indica* as a multi-purpose species under west Asia conditions.** Hassan S, Inglese P, Kaabneh A, Ates S, Louhaichi M.
13. **Propagation of *Opuntia ficus-indica* Mill. by cladode fragments.** Mulas M, Dessena L.
14. **Impact of cladode "acoronamiento" on cactus pear commercial orchards.** Mendoza-Orozco ME, Morales-Flores FJ, Mena-Covarrubias J, Ortega-Espinoza J, Méndez-Gallegos S. de J.
15. **Effect of fruit load on cactus pear fruit size and quality under mediterranean and tropical climatic conditions.** Franck N, Celi A.
16. **Effect of 1-MCP on cactus pear fruit at different maturity stages during storage.** Sortino G, Inglese P, Allegra A.

Thursday 30 March

POSTER SESSION 3: Agro-industrial products

1. **Elaboration of lipstick with cactus pear seed oil and cochineal carmine.** Arroyo Figueroa G, Medina Saavedra T, Rodríguez Ruiz S, Viguera AL, Herrera Méndez CH.
2. **Phenolic compounds in fruit-producing cacti.** Moussa-Ayoub TE, El-Samahy SK, Kroh LW, Rohn S.
3. **The rheological characterization of reconstituted freeze-dried mucilage for application in nutraceutical food products.** Du Toit A, De Wit M, Fouché HJ, Hugo A, Venter SL.
4. **Characterization of chilean consumers' attitudes and preferences toward different cactus pear colors.** Mora M, Matamala P, Saenz C.
5. **Gummy confections from cactus pear: chemical characteristics, texture profile and sensory quality.** Sáenz C, Fabry AM, Contador L, Franck N.
6. **Betacyanin profile of *Pilosocereus catingicola* (Gürke) Byles & Rowley subsp. *salvadorensis* (werderm.) zappi (Cactaceae).** Barbosa AS, Goodger JQD, Andrade AP, Bruno RLA, Woodrow IE, Anjos F, Aquino IS.
7. **Variability of phenolic compounds content and flavonoid in cactus pear varieties of *Opuntia* and *Nopalea* genres.** Alves FAL, Andrade AP, Bruno R, Silva V, Santos DC, Silva DS.
8. **Encapsulated cactus pigments as food colorants. stability and uses in a food model system.** Otálora MC, Carriazo JG, Iturriaga L, Osorio C, Nazareno MA.
9. **Comparative study of the encapsulation of betaxanthins (*Opuntia megacantha*) by spray drying and ionic gelation.** Otálora MC, Carriazo JG, Iturriaga L, Osorio C, Nazareno MA.
10. **Bioactive compounds from *Opuntia ficus-indica* in nanotechnology: biosynthesis of silver nanoparticles and applications.** Villalba GF, Ferreyra Maillard APV, Gallucci MN, Dalmaso PR, Nazareno MA.

11. **Effect of fermentation on the bioactive compound composition and antioxidant potential of *Opuntia* sp. fruit juices.** Allendez G, López Alzogaray MS, Nazareno MA.
12. **The nopal as a gelling agent in confectionery products (gummies).** Escobar A, Figueroa MJ, Sandoval RP, Ramírez MM, Abraján MA, Pérez LE.
13. **Selected characteristics of *Opuntia dillenii* cactus beverage and impact of thermal and non-thermal pasteurization.** Moussa Ayoub TE, Jäger H, Knorr D, El-Samahy SK, Rohn S, Kroh LW.
14. **Coloring foods from yellow-orange cactus pear.** Carmona JC, Sáenz C, Fabry AM.
15. **Improvement of oxidative stress tolerance in *Saccharomyces cerevisiae* by fermented cactus pear juice supplementation.** Torres S, Verón H, Isla MI, Dantur KI, Fernández Espinar MT, Gil JV.

POSTER SESSION 4: Pharmaceutical uses, cochineal and rural development

1. **Rearing cochineal (*Dactylopius coccus* Costa) under covered structural tubing conditions in Mexico.** Ortega-Espinoza J, Méndez-Gallegos S de J, Blanco-Macías F.
2. **Incidence of cochineal insects in cactus pear genotypes in the semiarid region of Pernambuco.** Ferraz APF, Lira MA, Silva MC, Cunha MV, Santos MVF, Silva PSF, Santos DC.
3. **Comparison production of cochineal in two companies in the state of Guanajuato, Mexico.** Arroyo Figueroa G, Dzul Cauich JG, Vigil Flores JS, Paloalto Hernández DI, Vargas Rodríguez L.
4. ***Exochomus childreni* Mulsant (coleoptera: Coccinellidae) predator of *Dactylopius opuntiae* (Cockerell) (Hemiptera: Dactylopiidae).** Viguera AL, Portillo L.
5. **Protective effect of cactus cladode extract against chlorpyrifos-induced immunotoxicity, oxidative stress and genotoxicity in rats.** Smida A, Ncibi S, Taleb J, Ben Saad A, Zourgui L.
6. **Cactus pear research production, impact and trends in mainstream journals.** Bravo-Vinaja A, Méndez-Gallegos S de J.

Programme timetable

SUNDAY 26 MARCH	MONDAY 27 MARCH	TUESDAY 28 MARCH	WEDNESDAY 29 MARCH	THURSDAY 30 MARCH
	Registration (8:00-9:00)			
	Opening ceremony (9:00-9:45)	S3: Invited talk (9:00-9:30)		S5: Invited talk (9:00-9:30)
	Opening lecture (9:45-10:15)	S3: Oral pres (9:30-10:00)		S5: Oral pres (9:30-10:30)
	S1: Invited talk (10:15-10:45)	Book launching (10:00-10:15)		
	S1: Oral pres (10:45-11:15)	Tribute E Chessa (10:15-10:40)		Poster Session 3 (10:30-11:30)
	Coffe break (11:15-12:00)	Poster Session 2 (10:40-11:20)		S6: Invited talk (11:30-12:00)
	S1: Oral pres (12:00-13:00)	S4: Invited talk (11:20-11:50)		S6: Oral pres (12:00-13:00)
	Lunch (13:00-14:30)	S4: Oral pres (11:50-13:00)		
	S2: Invited talk (14:30-15:00)	Lunch (13:00-14:30)	Technical excursion (8:30-19:30)	Lunch (13:00-14:30)
	S2: Oral pres (15:00-15:40)	GIS Workshop (14:30-15:30)		Poster Session 4 (14:30-15:10)
	Poster Session 1 (15:40-16:40)			S7: Oral pres (15:10-16:00)
	S3: Invited talk (16:40-17:10)	Cactus net general meeting (15:30-17:30)		Closing lecture (16:00-16:30)
	S3: Oral pres (17:10-18:00)			Cactusnet report (16:30-16:45)
				Closing ceremony (16:45-17:15)
Welcome and registration (18:00-19:00)				
		Social dinner (20:30)		