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REPORT OF THE
FOURTH INTERNATIONAL CONGRESS ON CACTUS
PEAR AND COCHINEAL
AND
THE FOURTH GENERAL MEETING OF THE FAO-
INTERNATIONAL TECHNICAL COOPERATION
NETWORK ON CACTUS PEAR
(CACTUSNET-FAO)

Hammamet, Tunisia
October 23-27, 2000

1. INTRODUCTION

The IV International Congress on Cactus Pear and Cochineal and the IV General Meeting of the International Cooperation Cactus Pear Network (CACTUSNET) were held under the patronage of H.E. the Minister of Agriculture and the International Society for Horticultural Science (ISHS) in Hammamet, Tunisia from 22 to 28 October, 2000 by INRAT in collaboration with FAO, ICARDA, SPL, and IPGRI.

H.E. Ameer Horchani, Secrétaire d'Etat à l'Agriculture and H.E. the Governor of Nabeul opened the meeting. The representatives of international organizations attended the opening ceremony.

The event was attended by 135 participants from 24 countries: Algeria, Argentina, Brazil, Chile, Ecuador, Egypt, Ethiopia, France, Germany, Greece, Iraq, Italy, Jordan, Libya, Mexico, Morocco, Niger, Pakistan, Peru, Syria, Tunisia, South Africa, United Kingdom, United States of America and Uzbekistan. Many countries attended for the first time. The complete list of participants is in Annex 1.

Mr. Abdelbaki Bacha, president of UTAP, chaired the closing ceremony.

2. CONGRESS

This International Congress followed the 1996 meeting held in South Africa. It was focused on the place and role of cacti in arid environment. Indeed, the future of the arid and semi-arid zones of the World largely depends on the development of sustainable agricultural systems based on the choice of appropriate crops. The suitable ones are those that successfully cope with water shortage, high temperature and poor soils, and easy management to provide food and forage for the subsistence agriculture, in addition to valuable product and by-products. Opuntias, particularly *Opuntia ficus indica* (cactus pear) fit most of the requirements described above. They play an important ecological role in combating desertification as well as producing fruits and vegetables for human consumption, forage or fodder for livestock, biomass for energy purposes, cochineal for carmine production, and numerous by-products (beverages, vegetarian cheese, drugs, cosmetics). They also provide shelter and food for various wildlife species living in arid environments.

The programme covered 7 sessions on main topics. 43 oral scientific papers and 20 posters were presented. A field visit was organized to cactus grove area in Zelfane, Kasserine. Summary of the main technical recommendations is below.

Session 1. History, economic and agro-ecological importance.

- Strengthen research on varieties and reserve more funds within the national programmes.
- Select cultivar for cold tolerance.

- In Ethiopia and Madagascar further research is required into the conditions under which cactus becomes invasive in non-native habitats
- Importance of fuller utilization of cactus pear not only for fruit

Session 2. Genetic Resources.

- There is a need to broaden the genetic basis of cactus in countries where it was introduced in order to achieve a more effective use of the crop and in that respect there is a need to develop a full list of material held in gene banks around the world.
- There is a fundamental need to have a better characterization of the genetic resources of cactus conserved in national collections.
- Secondary centres of cactus cultivation/introduction can play an important role as source of resistance to biotic/abiotic stresses as well as a source of diversity for agro-botanic traits.
- The problem of apomixis represents still a major challenge in the breeding for fruit cactus.
- There is a need to emphasise the role of multipurpose varieties.
- The role of biotechnology in facilitating the characterization/evaluation of cactus genetic resources needs to be emphasised.
- Wild species can harbour important genes for resistance to abiotic/biotic stresses therefore research on them/their conservation should be continued.
- In order to enhance the use of cactus, most important goals in evaluation work of cactus germplasm should focus on
 - a) resistance to drought;
 - b) resistance to salinity, and
 - c) resistance to cold and to heat stresses.
- There is a need to have greater access to the results of the evaluation data carried out by research groups around the world.

Session 3. Ecophysiology

- Basic biological research with emphasis on mechanisms should be integrated with uses, such as in the new book on the biology and uses of cacti edited by Prof. P.S. Nobel that is in the finalization stage.
- Protocols for tissue culture (micropropagation, meristem culture, callus and on cell suspension induction, protoplast isolation or particle bombardment on *Opuntia* have been developed. They can be use by CACTUSNET scientists.

Session 4. Fruit production and postharvest

- It is necessary to look into strategies to improve orchard management practices in general. Specific attention should be given to aspects such as: cladode fertility, reflowering response; shilling requirement, carbon competition and general practices such as the interactive between thinning, irrigation, scuzzolatura, pruning and fertilization.
- Special attention should be given to the harvesting operations as a means to reduce shilling injury and decay in storage of cactus pear. Heat treatments to prolong storage life needs to be looked into further.
- Refinement of macro-element applications for fruit production under subtropical conditions needs further investigation. Research into the effects of low pH and N sources that cause low pH are necessary.
- Post-harvest management. Mechanical damage and decay are common problems during postharvest handling of cactus pear fruit. Recommendations to solve these problems are:
 - a) to evaluate cactus pear fruit response to temperature conditioning and optimize heat treatment to each cultivar and producing area;
 - b) a careful harvest and improvement of the despinning process is recommended to reduce mechanical damage.
- Postharvest management of cactus stems. A careful harvest is recommended to reduce decay during the postharvest handling of cactus stems/cladodes. To extend postharvest life of cactus stems it is recommended to test heat treatments and modified atmospheres.

Session 5. Cochineal production, pests and diseases.

- Develop a protocol of conduct for the movement of plant material must be developed.
- Assess the risks of further dispersal of the two major cactus pests (*Cactoblastis* and *D. opuntiae*) into countries that do not yet have it.
- Determine the existence of genetic biotypes of *D. coccus* and to “preserve” the genetic sources.
- Quantify host preference of the three main *D. coccus* populations (Peru, Canary Islands and Mexico).
- Improve the list of insect pests in the major producing countries and their impact for analyses of the highly fluctuating price of cochineal and recommendations on strategies to stabilize it to acceptable levels.

Session 6.

- About agro-industrial transformation by-products: the main interest is probably focused on alimentary fibers, due to the increasing world demand, especially from industrialized countries. Other products from the cactaceae show some potential that should be more thoroughly investigated: there is a continuously increasing demand of natural medicines so cactus pear products can play a central role. Besides it a point which could be stressed with the aim of increasing the interest in cultivation of the cactaceae, is to link the absence of

some diseases (or their low incidence) with the consumption (by man and animals) or fresh fruit and by-products.

- Low cost storage must be encouraged to allow the consumption of cactus pear derivatives and eventually also their commercialization also in areas far from towns and anywhere electric commodities are lacking.
- In the areas where the production from cactus pear is mainly focused toward fruits where the problems arising from fruit waste accumulation may be of some concern, waste transformation can contribute to a financial return to producers.
- It is recommended:
 - a) to improve and increase the development of simple technologies to produce food from cactus pear and cladodes and to transfer it to the small farmers;
 - b) to increase the research about the health effect of functional components of Opuntias;
 - c) to develop new products from Opuntias (fruit and cladode) to add value to this crop.

Session 7. Forage, range land improvement and rangeland rehabilitation.

- Research on the improvement of the quality of cactus as fodder.
- Study on management and harvesting of cactus as fodder.
- Integration of cactus in livestock feeding calendar and the consequences on animal performance and farmers' income.
- Some nitrogen is important to livestock is a need for some research that can fix nitrogen in symbiosis with cactus.
- Lots of researchers have shown that fertilization and double the yields of cactus.
- Cactus and low quality forages (straw) do not cover animal requirements, There is a need to supplement animal feed with minerals and vitamins.
- To make soil rehabilitation projects sustainable it is of paramount importance to involve government institutions, technicians and farmers in all stages.
- Studies should not concentrate on cactus only, the whole system should be investigated.

General recommendations

- Information exchange.
- Copiling theses data research work that has been done and is being done.

3. CACTUSNET MEETING

The Network's meeting was chaired by Paolo Inglese, Coordinator General, and E. Arias, FAO Officer. The following points were discussed:

1. Report of the Coordinator General concerning the activities carried out by the Network and the state of art.
2. Review of proposed activities.
3. Review of the network's structure (groups and working groups).
4. Election of the General Coordinator.
5. Confirmation or replacement of working group coordinators.
6. Creation of Sub-Network on Pitayas and Pitahayas.
7. Creation of a Working Group in the framework of the ISHS.
8. Use and implementation of the discussion list and network website.
9. Updating of the PPPP 132 Agro-ecology, cultivation and uses of cactus pear.
10. Translation to Arabic.
11. Financing of the network.
12. Nomination of national coordinators and adhesion to the CACTUSNET of new member countries.
13. Work plan.
14. Future Newsletters
15. V International Congress and V General Meeting of the CACTUSNET.
16. Other matters.

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Appendix 2. Congress Programme

Date	Sunday October 22	Monday October 23	Tuesday October 24	Wednesday October 25	Thursday October 26	Friday October 27	Saturday October 28
8:30-10:00	Arrival of participants	Opening session	Session 4. Fruit production & Post harvest	Field Visit	Session 7. Forage, rangeland improvement and desertification	Session 8. FAO-Cactus Net Meeting	Departure of participants
10:00-10:30		Coffee break	Coffee break		Coffee break	Coffee break	
10:30-12:30		Session 1. History, economic and agroecological importance	Session 5. Cochineal production, pests and diseases		Session 7. (contd) Forage, rangeland improvement and desertification	Session 8. FAO-Cactus Net Meeting (continued)	
12:30-14:00		Lunch	Lunch		Lunch	Lunch	
14:00-15:45	Arrival of participants And Registration	Session 2. Genetic resources	<i>Poster session 1</i>		<i>Poster session 2</i>	General discussion and recommendations	
15:45-16:15		Coffee break	Coffee break		Coffee break	Coffee break	
16:15-18:00		Session 3. Ecophysiology	Session 6. Agro-industrial transformation and medicinal uses			Genetic resources subgroup meeting	<i>Closing session</i>
20:00						Official Dinner	

Monday, October 23

8:30-10:00 **Opening Session**

10:30-12:45 **Session 1 : History, economic and agro-ecological importance**

Chairperson : M.S. Mekni

Rapporteurs : F. Basile, M.O. Brutsch

Introductory papers

10:30-10:50 **H.N. Le Houérou**

History, Potentials and Problems of Cacti in the Mediterranean Basin Arid and Semi-arid Lands

10:50-11:10 **G. Barbera**

Tree or rather a Monster Amidst Trees? Introduction, Diffusion and Uses of Cactus Pear in the Mediterranean Europe

Oral presentations

11:10-11:25 **F. Basile, V.T. Foti and G. Timpanaro**

Comparative economic analyses between conventional and eco-compatible cactus pear cultivation in Italy.

11:25-11:40 **S. F. Kerstupp, L. Scheinvar, R. B. Bottler, M. C. Pérez Amador, L. González Cruz, M. H. Montaña and J. J. Tapia**

Production and marketing of cactus fruits in “El Valle del Mezquital, Mexico”.

11:40-11:55 **M.O. Brutsch**

A comparative assessment of the status and utilization of naturalized *Opuntia ficus-indica* in the Eastern Cape Province of South Africa and in Tigray, Ethiopia.

11:55-12:10 **K. Middleton**

“Remarkable Cacti” or “Pest Pears”? Notes on the Historical Utilization and Management of a Cactus Pear in Madagascar

12:10-12:25 **M. Haile, H.G. Zimmerman and T. Belay**

Current and Potential Use of Cactus in Tigray, Northern Ethiopia

12:25-12:45 **Discussion**

Posters

- P1.1. P. Groschupf, W. Hoffmann and J. C. Soria**
Possibilities and risks of a long-term use of *Opuntia streptacantha* Lemaire. Distribution and significance for the Campesino- economy in the Mexican highland.
- P1.2. S. Selmi and A. Khalfaoui**
Cactus in Zelfene, Tunisia : An alternative for development
- P1.3. V. I. Flores Flores**
Production, gathering and marketing of Tuna and cochineal in the Andean Trapez, Ayacucho, Peru.
- P1.4. J. Andrade and J. Roman**
Cochineal, an economic alternative to small scale production systems.

14 :00-16 :00 **Session 2 : Genetic resources**

Chairperson : S. Padulosi

Rapporteurs : D. Satta, R.D. Valdez-Cepeda

Introductory papers

14:00-14:20 **C. Mondragón-Jacobo and S. Pérez-González**
Genetic resources and breeding nopal for fodder production.

14:20-14:40 P. Felker, F. Alizi and C. Soulier
Genetic variability within *Opuntia ficus indica* Mill. cv. "yellow fruit without spines" in Santiago del Estero, Argentina and individual plant selection for improved yield and fruit characteristics.

Oral presentations

14:40-14:55 **M. Arba, M.C. Benismail and M. Mokhtari**
The prickly pear cactus (*Opuntia* spp., Cactaceae) in Morocco: Main species and cultivars characterization

14:55-15:10 **B. Chapman and A.H. Paterson**

Bioinformatic Approaches to Developing Molecular Tools for Cactus

15:10-15:25 **F. Gutiérrez-Acosta, R. D. Valdez-Cepeda and F. Blanco-Macias**
Multivariate Analysis of Cactus Pear (*Opuntia* spp.) Fruits from a Germplasm Collection

15:25-15:40 **C. Mondragon-Jacobo**
Verification of the apomictic origin of nopal (*Opuntia* spp. Cactaceae) seedlings of open crosses from Central Mexico.

15:40-16:00 **Discussion**

Posters

P2.1. G. Nieddu, D. Satta, L. De Pau, M. Pala and I. Chessa
Description and identification of cactus pear variety as fruit crop

P2.2. I. Uzun, A. Yalçın, H. Basim and A. Bayir
Molecular characterization of cactus pear cultivars and biotypes by RAPD

P2.3. S. F. Kerstupp, L. Scheinvar, R. B. Bottler, M. C. Pérez Amador, L.G Cruz, M.H. Montano and J.J. Tapia
Ethnobotany of *Opuntia* in three locations of Alto Mezquital de Hidalgo, México

P2.4. M. Boujghagh and I. Chajja
Genetic variation within different cactus ecotypes of Moroccan origin

16:30-18:15 Session 3. Ecophysiology

Chairperson : M. El-Mourid

Rapporteurs : P. Nobel, B. Arnholdt Schmitt

Introductory paper

16:30-17:00 **P. Nobel**
Cactus physiological ecology, emphasizing gas exchange of platyopuntia fruits

Oral presentations

- 17:00-17:15 **I. Chessa, L. De Pau, D. Satta and G. Nieddu**
Changes in the morphology and structure of *Opuntia ficus-indica* (Mill.) cladodes surface.
- 17:15-17:30 **B. Arnholdt-Schmitt, R.M. Llamoca-Zárate, J. Landsmann and F.A.P. Campos**
Prickly pear (*Opuntia ficus-indica*) protoplasts: isolation, culture and microcallus formation
- 17:30-17:45 **Y. Nasr**
The performance of *Opuntia ficus-indica* seedlings that resulted from different number of Joined mature cladodes at two planting dates
- 17:45-18:15 **Discussion**

Posters

- P3.1. R. D. Valdez-Cepeda and F. Blanco-Macias**
Fractal Geometry of Young Daughter Cladodes of *Opuntia ficus-indica* (Cactaceae)
- P3.2. R. D. Valdez-Cepeda, F. Blanco-Macias, C. Gallegos-Vázquez, G.E. Salinas-Garcia and R.E. Vázquez-Alvarado**
Freezing Tolerance of *Opuntia* spp.
- P.3.3. N. Achouri**
Plant regeneration in *Opuntia ficus-indica* (L.) Miller from cladodes tissue culture.

Tuesday, October 23

8:30-10:30 Session 4 : Fruit production & postharvest

Chairperson : A. Mougou
Rapporteurs : J. Potgieter, T. Tissaoui

Introductory papers

- 8:30-8:50 **P. Inglese**
Status perspectives and priorities for horticultural research for *Opuntia ficus-indica* (L.) Mill fruit production.

8:50-9:10 **A. Rodriguez-Felix**
Postharvest physiology and technology of cactus pear fruits and cactus leaves.

Oral presentations

9:10-9:25 **P. Inglese, G. Gugliuzza and G. Barbera**
Effect of pruning on poliennial crop production of mature cactus pear plants

9:25-9:40 **G. Gugliuzza, P. Inglese and L. S. Pace**
Relationship between fruit thinning and irrigation in determining fruit quality

9:40-9:55 **J.P. Potgieter and J.J. Mkhari**
Effects of N, P, K and lime application on cactus pear (*Opuntia spp.*) fruit yield and quality under rainfed conditions in South Africa

9:55-10:10 *H. Berger, A. Mitrovic, L. Galletti and J. Oyarzun*
Effect of hot water and wax applications to storage life of prickly pear (*Opuntia ficus-indica* L. Mill.) fruits.

10:10-10:30 **Discussion**

Posters

P4.1. J. Corrales-García and P. González-Martínez
Pre-harvest glochids removal of cactus fruits (*Opuntia amyclaea* T.)

P4.2. H.C. Gomez V. and A.F. Flores Valdez
Induction of parthenocarpia in cactus pear

P4.3. P. Inglese, G. Gugliuzza and L. S. Pace
Variability of cladode nutrient composition in relation to crop load

P4.4. J.P. Potgieter and J.J. Mkhari
Growth and yield performance of spineless cactus pear (*Opuntia spp.*) varieties in contrasting agro-ecological zones of South Africa

P4.5. E.M. Yahia, J.C. Guevara and E. B. de la Fuente
Passive and semi-active modified atmosphere packaging of prickly pear cactus stems (*Opuntia spp.*)

P4.6. M.J. Ochoa, G. Leguizamon, S.A. Uhart

Nitrogen disponibility effect on cactus pear (*Opuntia ficus-indica* L. Mill) postharvest quality

11:00-13:00 Session 5 : Cochineal production, pests and diseases

Chairperson : H.G. Zimmermann

Rapporteurs : R. Martinez, V. Flores Flores

Introductory papers

11:00-11:20 **H.G Zimmermann and M. Perez-Sandi y Cuen**

The uses and pest status of cochineal.

11:20-11:40 **G. Granata and A. Sidoti**

Survey of diseases discovered on cactus pear in cultivation countries

Oral presentations

11:40-11:55 **L. Portillo, A.L. Viguera, S. Fausto and M. Ruiz**

Characterization of *Opuntia-ficus-indica* (L.) Miller cladodes before and after the cultivation of the cochineal insect, *Dactylopius coccus* Costa.

11:55-12:10 **H. G. Zimmermann**

The present and future pest status of cactus-feeding insects and mites

12:10-12:25 **W.J. Swart, J.E. Amadi and B.C. Viljoen**

The current status of research on diseases of *Opuntia ficus-indica* in South Africa

12:25-12:45 **Discussion**

Posters

P5.1. A. Robles-Martínez

The preference of the carmine cochineal (*Dactylopius coccus*) for different cultivars of *Opuntia ficus-indica* in Mexico.

P5.2. V.R. Swart, W.J. Swart, SvdM. Louw and W.M. Kriel

An ecological complex of parasitic fungi associated with *Drosophila* spp. that utilize *Opuntia ficus-indica* in South Africa.

P5.3. E. Lobos, J. Ochoa, and C. Soulier

Control of *Cactoblastis cactorum* Berg (*Lepidoptera* : *Pyralidae*) – Preliminary studies for chemical control.

14:15-15:45 **Poster session 1**
Discussion of posters related to sessions 1, 2, 3, 4 and 5

Chairperson G. Barbera
Facilitator P. Nobel

16:15-18:00 Session 6: Agro-industrial transformation and medicinal uses

Chairperson : E. Arias
Rapporteurs : R.B. Lo Curto, F. Salvo

Introductory paper

16:15-16:40 **C. Sáenz**
Cactus pear fruits and cladodes: a source of functional components for foods

Oral presentations

16:40-16:55 **J. Corrales-García and C.A. Flores Valdez**
Cactus pear pads and fruit industrialization

16:55-17:10 **A.P. Mnkeni and M.O. Brutsch**
A simple solar drier and fruit-processing procedure for producing an edible, dried product of high quality from the peel of *Opuntia ficus-indica* fruit in the Eastern Cape Province of South Africa.

17:10-17:25 **M. Boujnah and M. Moudden**
Research summary on the use of Cactus in human food

17:25-17:40 **M.M. Tripodo, R.B. Lo Curto, G. Mandalari and M.R. Zappia**
Opuntia ficus indica wastes utilization

17:40-18:00 **Discussion**

Posters

P6.1. A. Robles Martínez

Growing evaluation of prickly pear cactus (nopalito) under microtunnel conditions in Ojocaliente, Zacateca, Mexico (1998-1999)

- P6.2. C. Sáenz, A.M. Estévez, M. Fontanot and N. Pak**
Oat cookies enriched with nopal flour as dietary fiber source: physical and chemical characteristics.
- P6.3. F. Blanco-Macias, R.D. Valdez-Cepeda and R.R. Ruiz-Garduño**
Intensive Production of Nopalitos Under Plastic Tunnels
- P6.4. F. Salvo, E.M. Galati, S. Lo Curto and M.M. Tripodo**
Chemical characterization of *Opuntia ficus-indica* seed oil.
- P6.5. A. Trovato, M.R. Mondello, M.T. Montforte, A. Rossitto and E.M. Galati**
Biological activities of *Opuntia ficus indica* (L.) Mill. (Cactaceae) cladodes.

Wednesday October 25 : Field visit (Central Tunisia)

Thursday, October 26

8:30-10:00 Session 7 : Forage, rangeland improvement and desertification

Chairperson : C. Mondragon
Rapporteurs : F. Tegegne, J. M.Fuentes

Introductory paper

8:30-9:00 A. Nefzaoui and H. Ben Salem
Cacti : efficient tool for rangeland rehabilitation, drought management and to combat desertification

Oral presentations

9:00-9:15 **H. Ben Salem, A. Nefzaoui and L. Ben Salem**
Nitrogen supplementation improves the nutritive value of *Opuntia ficus-indica* var. inermis-based diets and sheep growth

9:15-9:30 **F. Tegegne**
In vivo assessment of the nutritional value of cactus pear as a ruminant feed.

9:30-9:45 **J.J. Lopez, J.M. Fuentes, R.L. Perez, C.V. Rodríguez, F.J. Ibarra, de la**

R.B. Ortiz, M.H. Ponce and M.E. MurilloCactus (*Opuntia rastrera* Weber) utilization by goats

9:45-10:00 **S.M. Murillo, J.M. Fuentes, E.F. Borrego , S.H. Díaz, B.A. López, H.A. Flores, de la R.B. Ortiz and H.S. Rodríguez**
Cactus (*Opuntia spp.*) Biomass Production with Several Additives and its Chemical Characteristics

10:00-10:20 **Discussion**

10:20-10:45 **Coffee break**

10:45-12:30 Session 7 : Forage, rangeland improvement and desertification (continued)

Chairperson : H.N. Le Houérou

Rapporteurs : J. Jandrade, A. Arif

Oral presentations

10:45-11:00 **C.A. Flores Valdez and P. J. Ponce**
Recuperation of soil and vegetation and opuntia forage production in the Mixteca region of Oaxaca state, Mexico.

11:00-11:15 **Q. T. Lopez and C.A. Flores Valdez**
Reforestation with Opuntia and exclusion to grazing for rangelands recovery in northern Mexico

11:15-11:30 **C.A. Flores Valdez and Q. T. López**
Evaluation of Opuntia plantation, legumes survival and growth, and recovering of native vegetation during a five-year exclusion to grazing in an area of the Mixteca of Puebla State.

11:30-11:45 **M. Mazhar, A. Arif and A. Chryâa**
Cactus pear protects soil and livestock in Rhamna region{PRIVATE }

11:45-12:00 **S. Schlieff, H. Jacob and W. Hoffmann**
Importance of *Opuntia ficus-indica* (L.) Mill. for the arid and semiarid regions of Morocco

12:00-12:30 **Discussion**

Posters

- P7.1. H. Ben Salem, A. Nefzaoui and L. Ben Salem**
Opuntia ficus-indica var. *inermis* and *Atriplex nummularia* L.: two complementary fodder shrubs for sheep and goats
- P7.2. S. Shouki and L. Ben Salem**
 The use of spineless cactus to rehabilitate private rangelands: the OEP's participatory approach.
- P7.3. F. Tegegne**
 The assessment of the nutritive value of cactus pear (*Opuntia ficus-indica*) as a potential ruminant feed
- P7.4. M. Curek and N. Ozen**
 Feed and feeding value of cactus
- P7.5. J.M. Fuentes, J.J. Lopez, de la R.B. Ortiz and M.E. Murillo**
 Utilization of cactus (*Opuntia spp.*) as Forage in Northern Mexico.
- P7.6. S.M. Murillo, J.M. Fuentes, E.F. Borrego, S.H. Díaz, B.A. López, H.A. Flores, de la R.B. Ortiz and H.S. Rodríguez**
In situ degradation of prickly pear (*Opuntia spp*) biomass treated with yeast and ammonium sulfate
- P7.7. G.A. Rodriguez**
 The prickly pear species utilized with forage in the Coahuila state, Mexico.
- 14:00-15:45 **Poster session 2**
Discussion of posters related to sessions 6 & 7
- Chairperson** C. Saenz
Facilitator P. Felker
- 16:15-18:00 **Genetic resources subgroup meeting**
- Chairperson** S. Padulosi
Facilitators C. Mondragon, P. Inglese

Friday October 27

8:30-12:30 **IVth General Meeting of the FAO International Network for Technical Cooperation on Cactus Pear (CACTUSNET-FAO)**

Facilitators E. Arias and P. Inglese

14:00-15:45 **General discussion and recommendations**

16:15-18:00 **Closing session**

Appendix 3

CACTUSNET STRUCTURE

General Coordinator

Dr Ali Nefzaoui.

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Regional Coordinators

South America :	Dr Judith Ochoa De Cornelli, Universidad Nacional de Santiago del Estero, Argentina.
North America:	Dr Jesus Fuentes, Universidad Autonoma Agraria Antonio Narro, Saltillo. Mexico.
Mediterranean Basin:	Dr Filadelfio Basile, Università di Catania, Italy
Subsharian Africa:	Dr W. Swart, University of Cape Town, South Africa.
West Asia:	Brig. M.S.U. Chema, DG ABAD, Rawalpindi, Pakistan

Working groups and Coordinators

Agro-industry and Post-harvest Physiology:	Dr Carmen Saenz, Universidad de Chile, Santiago, Chile.
Cochineal:	Dr Liberato Portillo, Universidad de Guadalajara, Mexico
Fruit Production	Dr Avinom Nerd, University Ben Gurion of the Negev, Isreal
Socio-economics and rural development:	Dr Mayra Perez, Fundacion, MacArture, Mexico
Forage and Rangeland	Dr Hichem Ben Salem, INRAT, Tunisia
Biology	Dr Park S. Nobel, University of California Los Angeles, U.S.A.
Plant Genetic Resources Collection, Conservation and Evaluation:	Dr Candelario Mondragon, INIFAP, Mexico
Pests and Diseases:	Dr Helmut Zimmerman, University of Pretoria, South Africa
Nopalitos Production:	Dr Claudio Flores, CIESTAAM, Mexico