



UNIVERSITÀ
DEGLI STUDI
DI PALERMO



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Ministero delle
politiche agricole
alimentari e forestali

REPUBBLICA ITALIANA



REGIONE SICILIANA
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DELL'AGRICOLTURA
DELLO SVILUPPO RURALE
E DELLA PESCA MEDITERRANEA



XXXVII CIOSTA

& CIGR Section V Conference
13-15 June 2017, Palermo, Italy



*Research and Innovation for the Sustainable and Safe Management of
Agricultural and Forestry Systems*

13-15 June, 2017

Palermo - Italy

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Welcome to XXXVII CIOSTA & CIGR Section V Conference

CIOSTA & CIGR Section V have organised the 37th International Conference: *Research and Innovation for the Sustainable and Safe Management of Agricultural and Forestry Systems* in Palermo on 13-15 June 2017.

The conference aims at promoting the exchange of knowledge on "Research and Innovation for the Sustainable and Safe management of agricultural and Forestry Systems", in order to improve human life quality.

The Conference will feature presentations and discussions in plenary, scientific and poster sessions, as well as informal meetings. It will take place at the Department of Agricultural, Food and Forest Science of the University of Palermo (Italy), which offers Bachelor, Master and PhD programs in Agricultural and Forestry Sciences.

The research areas of the Department of Agricultural, Food and Forest Science of the University of Palermo are concerned with agricultural, agro-food, forestry and environmental sciences. The Department aims at promoting, organizing and coordinating a multidisciplinary context of basic and applied research on agricultural, livestock and forestry production systems and related products in the different environments in which they are obtained.

Italy is an excellent destination for international meetings. In Sicily, the island located in the center of the Mediterranean area, you will find the regional capital Palermo, very rich in history and culture, with a population of approximately 800,000 inhabitants. The area has been under numerous dominators over the centuries, including Greeks, Carthaginians, Romans, Byzantines, Arabs, Normans, Swabians and Spanish.

I would like to sincerely thank the contribution from the authors, the reviewers and the editors. I would like also like to express my special appreciation to the Coordinator Dr. Mariangela Vallone, without her this conference could not have been organized.

On behalf of the CIOSTA2017 Committee and the Organizing Committee, I wish you all great time in Palermo and a stimulating and productive Conference.

CIOSTA2017 President

Pietro Catania



Commission Internationale de l'Organisation Scientifique du Travail en Agriculture (CIOSTA)

Founded in Paris, 1950

Main research areas:

- Work science in agriculture and forestry
- Farm and agro-food logistics
- Food processing and storage
- Safety and ergonomics in agriculture
- Landscaping
- Organic farming
- Precision agriculture
- Machinery and robotics in agriculture
- Decision support systems for farmers
- Agro-food traceability

A general assembly is held every 2 years, at Congress. President and Secretariat rotate with Congress.

Associations of specialists in 40 countries: Africa: Nigeria, South Africa, Uganda, Zimbabwe. America: Brazil, Canada, Colombia, Cuba, USA, Asia: China, Japan, India, Indonesia, Israel, Iran, Republic of Korea.

Europe: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, UK.

Past Conferences

- | | |
|---|--|
| 1950 Paris (FR) Jean Piel Desruisseaux | 1982 Reading (UK) Richard R. Menneer |
| 1951 Bad Kreuznach (DE) Gerhardt Preuschen | 1986 Stuttgart/Hohenheim (DE) Theo Bischoff |
| 1952 Brugg (CH) Oskar Howald | 1988 Bled (SLO) Lois Cetina |
| 1953 Oxford (UK) Roger A. Dudman | 1990 Helsinki (FI) Erkki H. Oksanen |
| 1954 Wageningen (NL) Hoite Postuma | 1993 Wageningen (NL) Roelof Kars Oving |
| 1955 Helsinki (FI) Martti Sipilä | 1995 Lillehammer (NO) Arne Hilmersen |
| 1956 Paris - Royaumont (F) Jean Piel Desruisseaux | 1997 Kaposvár (HU) Gyula Széles |
| 1957 Bad Kreuznach (DE) Gerhardt Preuschen | 1999 Horsens (DE) Villy Nielsen |
| 1958 Wien (AT) Franz Scheruga | 2001 Krakow (PO) Tadeusz Juliszewski |
| 1960 Lund (SE) Alrik Oerborn | 2003 Torino (IT) Pietro Piccarolo |
| 1962 Seelisberg (CH) Oskar Howald | 2005 Stuttgart/Hohenheim (DE) Siegfried Kleisinger |
| 1964 Lafayette (USA)/Lausanne (CH) Wilson H.M. Morris | 2007 Nitra (SK) Ladislav Nozdrovicky |
| 1966 Brüssel (BE) André Maton | 2009 Reggio Calabria (IT) Gennaro Giametta |
| 1968 Helsinki (FI) Martti Sipilä | 2011 Vienna (A) Josef Boxberger |
| 1970 Warszawa (PL) Ryszard Manteuffel | 2013 Billund (DK) Dionysis Bochtis |
| 1972 Wageningen (NL) Adriaan Moens | 2015 San Petersburg (RUS) Vladimir Popov |
| 1974 Pesaro (IT) Giuseppe Pellizzi | 2017 Palermo (Italy) Pietro Catania |
| 1976 Gödöllo (HU) Laszlo Udvari | |
| 1978 Ermatingen (CH) Paul Faesser | |
| 1980 Nîmes (FR) André Beauvois | |

CIOSTA2017 Secretariat & Logistic Organization



The Italian Association of Chemical Engineering

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Supported by

UNIPA – University of Palermo

MiPaf – Ministry of Agriculture and Forestry

CIGR – Commission Internationale du Génie Rural

EurAgEng – European Society of Agricultural Engineers

AIIA – Italian Association of Agricultural Engineering

Regione Siciliana – Assessorato regionale dell'agricoltura dello sviluppo rurale e della pesca mediterranea

GAL – Gruppo di Azione Locale Golfo di Castellammare

Comune di Palermo

Conference Committee

President

Prof. Pietro Catania, University of Palermo (Italy)

pietro.catania@unipa.it

Coordinator

Dr. Mariangela Vallone, University of Palermo (Italy)

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Acknowledgements

The organizers of XXXVII CIOSTA & CIGR Section V Conference 2017 express their appreciation for support given by:



Organizing Committee

Chairman: Prof. Pietro Catania

Members: Prof. Pierluigi Febo
Prof. Michele Carrara
Dr. Antonio Comparetti
Dr. Giuseppe Morello
Prof. Felice Pipitone
Dr. Santo Orlando

Coordinator: Dr. Mariangela Vallone

International Scientific Committee

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Prof. John K. Schueller (USA)
Prof. Claus Gron Soerensen, CIGR President (Denmark)
Prof. Mirko Umeda (Japan)
Prof. Giuseppe Zimbalatti (Italy)

General Information

Conference Venue

The CIOSTA2017 Conference will be held at the University of Palermo, Department of Agricultural, Food and Forest Sciences, Building 4 (Aula Magna G.P. Ballatore) and Building 19 - Viale delle Scienze 90128 - Palermo (Italy). It is convenient linked with the international airport “Falcone e Borsellino” and the central railway station.

Route from the hotels to the Conference Venue

Roundtrip transfer by bus from the city center (near Politeama theater) to the Conference venue (Building 4 and 19) will be provided by the Organizing committee on June 13 (with departures at 8:30 and 9:00 and return at 23:00, after the welcome dinner) and June 14 (with departures at 8:30 and 9:00 and return at 17:30 after the conference closing) Alternatively, you can reach the Conference Venue via the public bus line 108, from Politeama theater to Viale delle Scienze.

Registration

The registration of the participants will start on Tuesday morning, June 13 from 9:00 to 13:00 (Building 4 – Aula Magna G.P. Ballatore). The registration desk will be also open on Tuesday afternoon, June 13 from 14:30 to 18:00 and on June 14 from 9:00 to 13 (Building 19).

Certificates

All participants wishing to have a certificate of participation should ask the Secretariat. The certificate will be available from Wednesday, June 14. The invoice (as receipt of your payment) will be delivered by CIOSTA2017, after the fee payment.

Information for Lectures

Opening Ceremony will be held in Aula Magna G.P. Ballatore (Building 4). Lectures will be presented in parallel sessions: Room 10, Room 11, Room 12 and Room Seminari C (Building 19). Each presentation must not exceed 15 minutes, including discussion. The speaker of each paper is invited to upload the presentation file before the session opening in Room Professori (Building 19). Speakers are also invited to reach the conference room 15 minutes before the session beginning and introduce themselves to the Chairperson.

Information for Posters

Poster Session will take place at the Congress Hall foyer (Building 19).

Posters should have the size of 80 cm x 100 cm (A0 format).

Poster stands will be available to place the materials starting from June 13, 2017 at 14:30.

If you want to keep your poster, please, remove it from stands before June 15, 2017 at 18:00.

Lunch

Self-service lunch will be served at Restaurant “Santi Romano” (Building 19), at 13:00. The lunch tickets are included in the registration fee. People who wish to buy additional tickets (20 € each) are requested to book them the day before. The ticket of the day has to be given at the restaurant entrance.

Welcome dinner, June 13, 2017

All participants are invited to the Welcome dinner, where Sicilian street food and wine will be served. The ticket lunch is included in the registration fee. People who wish to buy additional tickets (40 € each) are requested to book them at the registration desk. The ticket of the welcome dinner has to be given at the garden entrance.

Location: Building 5. Starting at 19:00. Duration 3 hours.

Social dinner, June 14, 2017

We invite conference participants to take part in the Conference Dinner, which will be held at Restaurant Villa Alliata, Via Faraone 2 – Palermo. The ticket of the Conference Dinner has to be given at the restaurant entrance. Roundtrip transfer by two bus to the Restaurant will be provided by Organizing committee from the Conference venue (Building 19) and near Politeama theater, in the center of Palermo.

Departure starting at 20:00.

Duration: 3-4 hours.

Technical tour to Tenuta Rapitalà, June 15, 2017

The technical tour will take place at the wine company Tenuta Rapitalà, (www.rapitala.it) located in the territory of Alcamo-Camporeale with the following program:

- 9:00 Departure from the Conference venue by bus (Building 4);
- 10:00 arrival at the company Tenuta Rapitalà. Welcome address by the Chairman of the company Dr. Laurent De La Gatinais;
- 10:30 visit of the vineyards with native grape varieties (Catarratto lucido, Grillo, Inzolia, Nero d'Avola) and allochthonous varieties (Chardonnay, Cabernet Sauvignon, Syrah);
- 11:30 visit of the cellar with explanation of the red and white winemaking process;
- 13:00 lunch;
- 15:30 departure by bus to Palermo with the possibility to stop at the International Airport "Falcone e Borsellino";
- 17:30 arrival in Palermo.

The cost of 60 € per person includes bus and lunch.

Tours for accompanying persons

CIOSTA2017 Organizing Committee is delighted to offer the program for accompanying persons (150 € per person). Two half-day sightseeing tours are included in the accompanying persons registration package. Accompanying person registration fee also includes welcome dinner, lunches and mid-session coffee breaks. Evidence of registration as an accompanying person must be shown.

Tuesday, June 13

Time: 14:00 – 17:30

Meeting point at the Conference venue. Walking tour.

Guided tour (in English) of the unique Arab-Norman site, part of the UNESCO World Heritage Site "Arab-Norman Palermo and the Cathedral Churches of Cefalù and Monreale", with the palace of the Normans, the Palatine Chapel (ticket 8.50 € per person, not included), i Quattro Canti, Piazza Pretoria, Martorana Church.

Wednesday, June 14

Time: 9:00 – 13:30

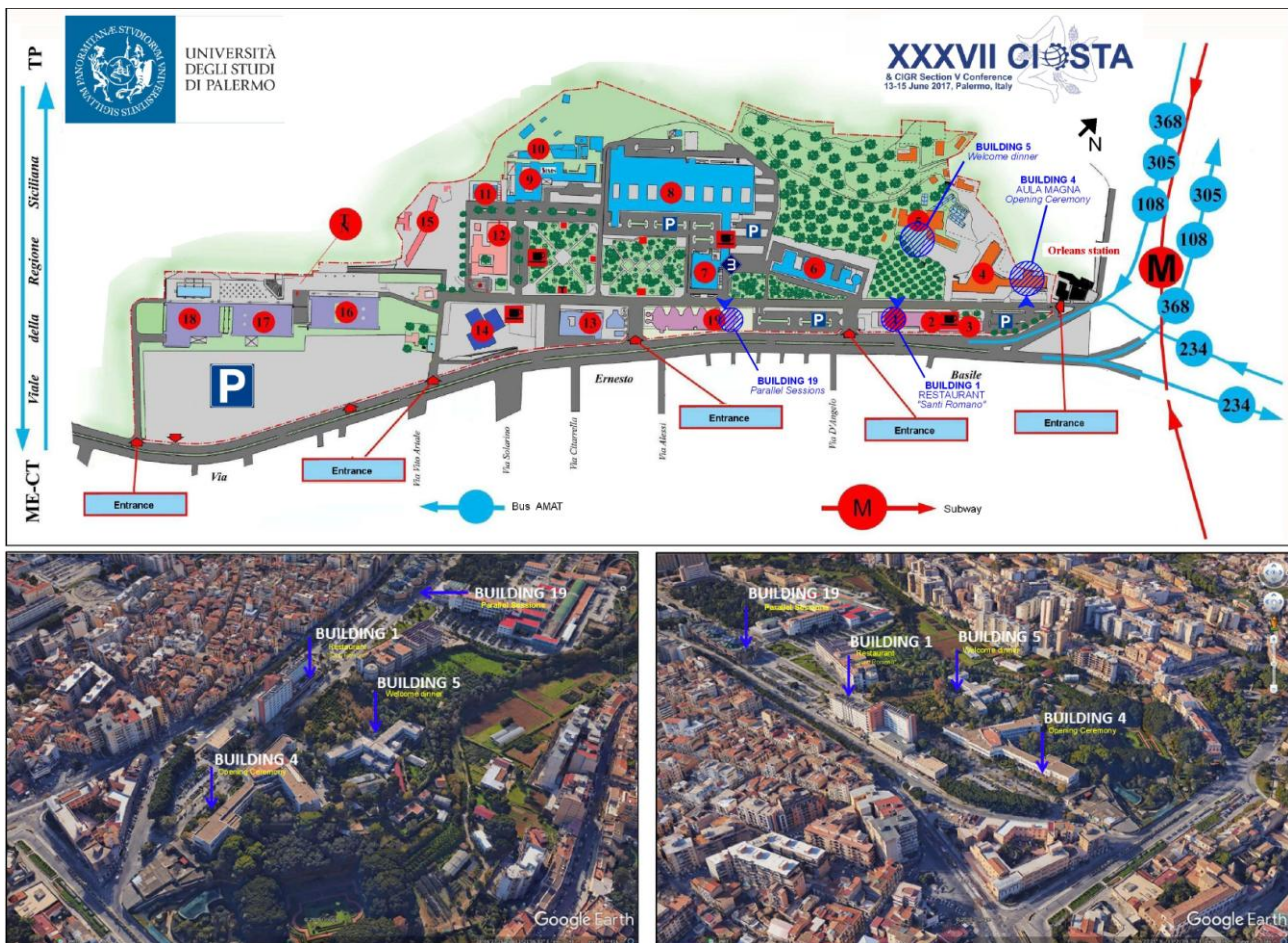
Meeting point at the Conference venue. Departure by bus to Monreale.

Guided tour (in English) of the renowned Norman-Byzantine cathedral which is part of the Arab-Norman UNESCO World Heritage Site (ticket 3.00 € per person, not included).

Back to Palermo and visit of the Capuchin Catacombs (ticket 3.00 € per person, not included).

<http://www.palermocatacombs.com>.

Conference Plan



CIOSTA2017 Conference Topics - Palermo

1. Labour, ergonomics, safety and health
2. System engineering, management and traceability
3. Field operations
4. Logistics
5. Post-harvest technology
6. Renewable energy and efficiency
7. Information systems and precision farming
8. Land and water use
9. Environment protection
10. Protected cultivation and greenhouse technology
11. Animal husbandry
12. Economics and agricultural statistics

Overview Programme

Date: Monday, 12 June 2017	
10:00 – 12:00	CIGR Presidium meeting
14:00 – 15:00	CIGR Technical Board meeting
15:00 – 18:00	CIGR Executive Board meeting

Date: Tuesday, 13 June 2017				
9:00 – 10:00	Registration			
10:00– 11:00	Opening the Conference Aula Magna G.P. Ballatore (Building 4)			
11:00– 13:00	Plenary Session Prof. Margarita Ruiz-Altisent Universidad Politécnica de Madrid (Spain) “INNOVATIVE TECHNOLOGIES IN POSTHARVEST” Prof. Manuel Pérez-Ruiz Universidad de Sevilla (Spain) “GNSS/RTK TECHNOLOGY IN AUTOMATED WEED CONTROL IN CROPPING SYSTEMS”			
13:00– 14:20	Lunch (Restaurant “Santi Romano”) Building 1			
14:30– 16:00	PARALLEL SESSIONS (Building 19)			
	Room 10	Room 11	Room 12	Room Seminari C
		Post-harvest technology Chair: Linus U. Opara	Labour, ergonomics, safety and health Chair: Tadeusz Juliszewski	Information systems and precision farming Chair: Dyonisis Bochtis
16:00– 16:30	Coffee break			
16:30– 18:00	Room 10	Room 11	Room 12	Room Seminari C
	CIGR V CIOSTA meeting Chair: Remigio Berruto	Land and water use Chair: Fedro S. Zazueta	Field operations Chair: Claus Sørensen	Economics and agricultural statistics Chair: Pietro Columba
18:00– 18:45	Poster Session			
19:00	Welcome Dinner (Building 5)			

Date: Wednesday, 14 June 2017				
9:30-11:00	PARALLEL SESSIONS (Building 19)			
	Room 10	Room 11	Room 12	Room Seminari C
	Labour, ergonomics, safety and health Chair: Elisabeth Quendler	Post-harvest technology Chair: Margarita Ruiz Altisent	Field operations Chair: Giovanni Molari	Information systems and precision farming Chair: Manuel Perez Ruiz
11:00- 11:30	Coffee break			
11:30- 13:00	Room 10	Room 11	Room 12	Room Seminari C
	Workshop: Online teaching and active learning: Flipping the classroom Authors: P. Busato, F. Zazueta, R. Berruto	System engineering, management and traceability Chair: Danilo Monarca	Labour, ergonomics, safety and health Chair: Pierluigi Febo	Renewable energy and efficiency Chair: Antonio Comparetti
13:00- 14:20	Lunch (Restaurant "Santi Romano") Building 1			
14:30- 16:00	Room 10	Room 11	Room 12	Room Seminari C
	Renewable energy and efficiency Chair: Jacopo Bacenetti	Post-harvest technology Chair: Riccardo Guidetti	Environment protection Chair: Paolo Balsari	Workshop: The European Perspective on ASABE's Global Initiative
16:00- 16:30	Coffee break			
17:00- 18:00	Conference Closing Room 11			
20:30	Social Dinner at Restaurant Villa Alliata			

Date: Thursday, 15 June 2017	
9:30- 17:30	Technical tour to Tenuta Rapitalà

CIOSTA2017 Programme

TUESDAY, June 13, 2017

Tuesday 9:00	Registration – Aula Magna G.P. Ballatore – Building 4
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	Opening Ceremony - Aula Magna G.P. Ballatore – Building 4
Tuesday 10:00	Opening and Welcome Prof. LI Shujun CIGR President Prof. Claus Sørensen EurAgEng President Prof. Remigio Berruto CIGR Section V Chair Prof. Danilo Monarca AIIA President Prof. Stefano Colazza Dean of Department of Agricultural, Food and Forest Sciences Prof. Pietro Catania CIOSTA President
Tuesday 11:00	Keynote Speakers Prof. Margarita Ruiz-Altisent Universidad Politécnica de Madrid (Spain) “INNOVATIVE TECHNOLOGIES IN POSTHARVEST” Prof. Manuel Pérez-Ruiz Universidad de Sevilla (Spain) “GNSS/RTK TECHNOLOGY IN AUTOMATED WEED CONTROL IN CROPPING SYSTEMS”

Tuesday 13:00	Lunch (Restaurant “Santi Romano”) Building 1
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	PARALLEL SESSIONS Building 19
Tuesday 14:30 – 16:00	Topic 5: Post-harvest technology 1 Room 11, Chair: Linus U. Opara
	NONDESTRUCTIVE DROPPED FRUIT IMPACT TEST FOR ASSESSING TOMATO FIRMNESS Vursavus K., Kesilmis Z., Oztekin B. CLASSIFICATION OF WINE GRAPE BASED ON DIFFERENT PHYTOSANITARY STATUS BY

	USING VISIBLE/NEAR INFRARED SPECTROSCOPY Giovenzana V., Beghi R., Brancadoro L., Guidetti R. IMPEDANCE ANALYSIS OF SWEET POTATO TUBEROUS ROOTS ACCOMPANYING HEATING Takatori E., Chosa T., Tojo S. SAFETY OPTIMIZED SHIFT-SCHEDULING SYSTEM BASED ON WIRELESS VIBRATION MONITORING FOR MECHANICAL HARVESTING OPERATIONS Aiello G., Giallanza A., Giovino I. THE ASSESSMENT OF OLIVE RIPENING USING COMPUTER VISION SYSTEM Benalia S., Bernardi B., Blasco J., Fazari A., Zimbalatti G.
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Tuesday 14:30 – 16:00	Topic 1: Labour, ergonomics, safety and health 1 Room 12, Chair: Tadeusz Juliszewski
	ONLINE CAD/CFD-BASED DESIGN TOOL TO ASSESS VENTILATION STRATEGIES TO REDUCE CONFINED-SPACE ENTRY RISK Murphy D., Manbeck H., Hofstetter D., Puri V. RECURRENT MUSCULOSKELETAL CONDITIONS AMONG FARMERS: A PATH TOWARDS DISABILITY PENSION Karttunen J., Rautiainen R. PARTICIPATORY ERGONOMIC DESIGN OF A SAFETY TRAINING TOOL FOR MIGRANT WORKERS IN AGRICULTURE Caffaro F., Bagagiolo G., Micheletti Cremasco M., Cavallo E. ERGONOMIC CHECKS IN TRACTORS THROUGH MOTION CAPTURING Schempp T., Bottinger S. CO₂ PRODUCTION BY HUMAN LABOUR IN AGRICULTURE OVER TURKEY Ertekin C. WORKING TIME REQUIREMENTS, WORKLOAD AND PHYSICAL STRAIN OF DAILY STABLE WORK ON SMALL FARMS SPECIALIZED IN SUCKLER COWS IN UPPER CARINTHIA Trieb K., Quendler E., Nimmerichter A.

Tuesday 14:30 – 16:00	Topic 7: Information systems and precision farming 1 Room Seminari C, Chair: Dyonisis Bochtis
	NUMERICAL EVALUATION OF A SEED DISTRIBUTOR HEAD FOR AIR SEEDERS Bourges G., Eliach J., Medina M. AUTOMATICALLY RECORDED PERFORMANCE AND BEHAVIOR PARAMETERS AS RISK FACTORS FOR LAMENESS IN DAIRY CATTLE Schindhelm K., Haidn B., Lorenzini I., Tremblay M., Dopfer D., Reese S. PERFORMANCE OPTIMIZATION OF NEURAL-NETWORK BASED COLOUR MEASUREMENT TOOLS FOR FOOD APPLICATIONS Barge P., Comba L., Gay P., Ricauda D., Tortia C., Aghilinateg N., Dalvand M.J.

	A DATABASE APPROACH FOR SIMULATING THE PRODUCED GREENHOUSE GAS EMISSIONS FROM BIOGAS PLANTS Maze M. Zerhusen B., Effenberger M. AUTOMATIC MILKING SYSTEM OCCUPATION RATE ANALYSIS AND OPTIMIZATION APPLIED TO MEDITERRANEAN BUFFALOES Sannino M., Faugno S., Crimaldi M., Ardito L., Di Francia A., Masucci F.
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Tuesday 16:00 – 16:30	Coffee Break
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Tuesday 16:30 – 18:00	Topic 8: Land and water use Room 11, Chair: Fedro S. Zazueta
	BETTER WATER USE EFFICIENCY IN VINEYARD BY USING VISIBLE AND NEAR INFRARED SPECTROSCOPY FOR GRAPEVINE WATER STATUS MONITORING Beghi R., Giovenzana V., Guidetti R. MORPHO-PHYSIOLOGIC TRAITS IN TWO SAGE TAXA GROWN UNDER DIFFERENT IRRIGATION REGIME Grisafi F., Oddo E., Maggio A., Panarisi A., Panarisi M. HEIGHT OF WATER POURING EFFECTS ON INFILTRATION RUNS CARRIED OUT IN AN INITIALLY WET SANDY-LOAM SOIL Bagarello V., Cecere N., Di Prima S., Iovino M., Giordano G. MAPPING AND ANALYSIS OF PRESSURES ON WATER RESOURCES FROM AGRICULTURE TO TARGET WATER AND AGRICULTURE POLICIES Zucaro R., Martello M., Antinoro C., Giannerini G., Ferrigno M. IMPROVEMENT OF CURRENT PERFORMANCE IN COLLECTIVE WATER DELIVERY SYSTEMS OF CALABRIA (SOUTHERN ITALY) Nicotra A.M., Zema D.A., Zimbone S.M.

Tuesday 16:30 – 18:00	Topic 3: Field operations 1 Room 12, Chair: Claus Sørensen
	INFLUENCES AND DECISION CRITERIA ON INFIELD-LOGISTICS IN GERMAN AGRICULTURAL FARMS Mederle M., Bernhardt H. TILLAGE EFFECTS ON SOME SOIL PHYSICAL PROPERTIES IN SEMI-ARID MEDITERRANEAN REGION OF TURKEY Barut Z., Celik I. A THEORETICAL STUDY OF HAULM LOSS RESULTING FROM ROTOR TOPPER OSCILLATION Bulgakov V., Adamchuk V., Arak M., Olt J. MECHANISATION OF DIFFERENT LOGGING OPERATIONS: ENVIRONMENTAL IMPACT

	ASSESSMENT USING LIFE CYCLE ASSESSMENT (LCA) APPROACH Proto A.R., Bacenetti J., Macrì G., Fiala M., Zimbalatti G. TRANSPLANTING FOR CONVERSION TO WARM SEASON TURFGRASS Fontanelli M., Frasconi C., Raffaelli M., Martelloni L., Pirchio M., Peruzzi A. CAN FLAMING BE PERFORMED AS SELECTIVE WEED CONTROL TREATMENT IN TURFGRASS? Fontanelli M., Frasconi C., Raffaelli M., Martelloni L., Abou Chehade L., Peruzzi A.
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Tuesday 16:30 – 18:00	Topic 12: Economics and agricultural statistics Room Seminari C, Chair: Pietro Columba The Italian Consumers' Preferences for Pasta: does Environment matter? Altamore L., Bacarella S., Columba P., Chironi S., Ingrassia M. TRACEABILITY AND LABELLING OF FOOD PRODUCTS FROM THE CONSUMER PERSPECTIVE Ingrassia M., Bacarella S., Columba P., Altamore L., Chironi S. THE AUSTRIAN FEMALE FARMERS' PERSPECTIVE ON PARTNER AND INTERGENERATIONAL RELATIONSHIPS Quendler E., Glatzl M., Mayr J. ANTIMICROBIAL ACTIVITY OF EXTRACTS OF PARACENTROTUS LIVIDUS, TERFEZIA CLAVERYI AND TIRMANIA PINOYI AGAINST THE MAIN DESTRUCTIVE BACTERIAL DISEASES OF TOMATO Gargano M.L., Panno S., Bella P., Arizza V., Inguglia L., Venturella G., Davino S., Catara BIOTECHNICAL CHARACTERISTICS OF ROOT SYSTEMS IN ERECT AND PROSTRATE HABIT ROSMARINUS OFFICINALIS L ACCESSIONS GROWN IN A MEDITERRANEAN CLIMATE. Tuttolomondo T., La Bella S., Leto C., Gennaro M.C., Calvo R., D'Asaro F.
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Tuesday 19:00	Welcome dinner - Building 5
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Wednesday, June 14, 2017

	PARALLEL SESSIONS Building 19
Wednesday 9:30 – 11:00	Topic 5: Post-harvest technology 2 Room 11, Chair: Margarita Ruiz Altisent MICROWAVE AND ULTRASOUND IN OLIVE OIL EXTRACTION PROCESS Leone A., Tamborrino A., Romaniello R. EFFECT OF MOISTURE CONTENT ON THE MECHANICAL AND OIL PROPERTIES OF SOURSOP SEEDS Udoh J., Olayanju T., Dairo O., Alonge A.

	DESIGN MODIFICATION AND PERFORMANCE TESTING OF A BAMBARA GROUNDNUT SHELLER Alonge A., Ossom I., Bassey E. CANAPA SATIVA L. MECHANICAL OIL EXTRACTION OPTIMIZATIONS Crimaldi M., Faugno S., Sannino M., Ardito L. CALIBRATION MODEL FOR A NEAR INFRARED SPECTROSCOPY (NIRS) SYSTEM TO CONTROL FEED QUALITY OF SOY CAKE BASED ON FEED VALUE ASSESSMENTS IN-VITRO Hoffmann D., Brugger D., Windisch W., Thurner S. IMPROVEMENTS IN CITRUS PACKING LINES TO REDUCE THE MECHANICAL DAMAGE TO FRUIT Manetto G., Cerruto E., Pascuzzi S., Santoro F.
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Wednesday 9:30 – 11:00	Topic 3: Field operations 2 Room 12, Chair: Giovanni Molari A MULTI OBJECTIVE APPROACH TO SHORT FOOD SUPPLY CHAIN MANAGEMENT Aiello G., Giovino I., Vallone M., Catania P. EXPERIMENTAL EVALUATION OF THE SOIL PRESSURE DISTRIBUTION ON PLOUGH PARTS Varani M., Mattetti M., Molari G., Morelli F. IS SPREAD SPECTRUM SOUND A ROBUST LOCAL POSITIONING SYSTEM FOR A QUADCOPTER OPERATING IN A GREENHOUSE? Huang Z., Ono M., Shiigi T., Suzuki T., Habaragamuwa H., Nakanishi H., Kondo N. THE EFFECT OF DISTANCE AND FIELD AREA ON ENERGY BALANCE OF SWITCHGRASS Rodias E., Berruto R., Busato P., Bochtis D. WEB-BASED TOOL APPROACH FOR ENERGY BALANCE ESTIMATION DESIGNED FOR MULTIPLE-CROPS PRODUCTION SYSTEMS Busato P., Sopegno A., Berruto R. DETERMINATION OF THE EFFECTS OF DIFFERENT HARVESTING SYSTEMS AND BALE SHAPE ON HAY QUALITY Vurarak Y., Ince A., Bilgili M.E., Yucel H. AN AUTOMATIC MACHINE ABLE TO PERFORM VARIABLE RATE APPLICATION OF FLAME WEEDING: DESIGN AND ASSEMBLY Frasconi C., Raffaelli M., Emmi L., Fontanelli M., Martelloni L., Peruzzi A.
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Wednesday 9:30 – 11:00	Topic 7: Information systems and precision farming 1 Room Seminari C, Chair: Manuel Perez Ruiz APPLICATION OF PROXIMAL SENSING IN VITICULTURE: COMPARISON OF DIFFERENT BERRY STATE CONDITIONS Guido V., Mercenaro L., Gambella F. PLANTHOLOGY: AN APPLICATION SYSTEM FOR PLANT DISEASES MANAGEMENT
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	Davino S., Panno S., Arrigo M., La Rocca M., Caruso A.G., Lo Bosco G. INTERFERENCE ANALYSIS OF AN HEAVY LIFT MULTIROTOR DRONE FLOW FIELD AND TRANSPORTED SPRAYING SYSTEM Sarghini F., De Vivo A. CHAINSAW VIBRATIONS, A USEFUL PARAMETER FOR THE AUTOMATIC TREE VOLUME ESTIMATIONS AND PRODUCTION ASSESSMENT OF FELLING OPERATIONS Gallo R., Nalli F., Cortese L., Knollseisen D., Nogger W., Mazzetto F. NEW SOLUTIONS FOR THE AUTOMATIC EARLY DETECTION OF DISEASES IN VINEYARDS THROUGH GROUND SENSING APPROACHES INTEGRATING LIDAR AND OPTICAL SENSORS Gallo R., Ristorto G., Daglio G., Massa N., Berta G., Lazzari M., Mazzetto F.
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Wednesday 9:30 – 11:00	Topic 1: Labour, ergonomics, safety and health 2 Room 10, Chair: Elisabeth Quendler
	THE STABILITY OF SELF-PROPELLED SPRAYERS Capacci E., Franceschetti B., Ciuffoli A., Rondelli V. ANALYSIS OF A PLANNING TOOL FOR THE CALCULATION OF WORKING TIME REQUIREMENT IN AGRICULTURE Stark R., Stiefel S., Heitkaemper K. A SURVEY ON FATAL ACCIDENTS FOR OVERTURNING OF AGRICULTURAL TRACTORS IN ITALY Pessina D., Facchinetti D. REDUCING THE RISK FROM MANUAL HANDLING OF LOADS IN AGRICULTURE: PROPOSAL AND ASSESSMENT OF EASILY ACHIEVABLE PREVENTIVE MEASURES Cecchini M., Colantoni A., Monarca D., Longo L., Riccioni S. VIBRATION TRANSMISSION TO THE HAND-ARM SYSTEM BY MEANS OF PORTABLE OLIVE BEATER: THE EFFECT OF BODY MASS Romano E., Fornaciari L., Cutini M., Brambilla M., Bisaglia C. SURVEY ON THE STATUS OF ENFORCEMENT OF EUROPEAN DIRECTIVES ON HEALTH AND SAFETY AT WORK IN SOME FARMS OF CENTRAL ITALY Cecchini M., Colantoni A., Monarca D., Cossio F., Riccioni S.

Wednesday 11:00 – 11:30	Coffee Break
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Wednesday 11:30 – 13:00	Workshop: Online teaching and active learning: Flipping the classroom Room 10 - Authors: P. Busato, F. Zazueta, R. Berruto
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Wednesday 11:30 – 13:00	Topic 2: System engineering, management and traceability Room 11, Chair: Danilo Monarca
	ENERGY DEMAND AND GREENHOUSE GASES EMISSIONS IN THE LIFE CYCLE OF COFFEE HARVESTERS Mantoam E., Romanelli T., Gimenez L., Milan M. EQUIPMENT DEVELOPMENT TO MANAGE COVER CROPS FOR SMALL AND URBAN NO-TILL FARMING SYSTEMS Kornecki T., Prior S. VALIDATION AND COMPARISON OF TWO DIFFERENT PEDOMETERS THAT COULD BE USED FOR AUTOMATIC LAMENESS DETECTION IN DAIRY COWS Lorenzini I., Schindhelm K., Haidn B., Misha E. AN INNOVATIVE SMART DEVICE TO CONTROL MODIFIED ATMOSPHERE PACKAGING (MAP) OF FRUIT AND VEGETABLES Matera A., Genovese F., Altieri G., Tauriello A., Di Renzo G.C. EXAMINATION OF GRAFT SUCCESS OF GRAPEVINE AFTER INCUBATION ROOM USING THERMOGRAPHIC, ELECTRICAL AND MECHANICAL TECHNIQUES Pisciotta A., Orlando S., Di Lorenzo R., D'Acquisto L. CIRCULATORY MANAGEMENT OF NUTRITIONAL SUBSTANCE GROWING SUNFLOWER AND EXTRACTING NUTRITION BY HOT-COMPRESSED WATER TREATMENT Tojo S., Chosa T.

Wednesday 11:30 – 13:00	Topic 1: Labour, ergonomics, safety and health 3 Room 12, Chair: Pierluigi Febo
	JOB FACTORS ASSOCIATED WITH OCCUPATIONAL INJURIES AND DEATHS IN THE UNITED STATES FORESTRY INDUSTRY Rosecrance J., Lagerstrom E., Murgia L. REVISION OF THE WORKING TIME CLASSIFICATION TO OPTIMIZE WORK PROCESSES IN MODERN AGRICULTURE Reith S., Frisch J., Winkler B. A BODY IMPEDANCE-BASED SAFETY SYSTEM FOR ELECTRICAL PRUNING TOOLS Sarri D., Gemignani S., Lisci R., Vieri M. BENCHMARKING LABOUR INPUT ON IRISH DAIRY FARMS WITH USE OF A SMARTPHONE APP Deming J., Gleeson D., O'Dwyer T., Kinsella J., O'Brien B. PROPOSAL OF AN ADVANCED FACILITY TO PERFORM STATIC AND DYNAMIC TESTS OF STABILITY ON AGRICULTURAL MACHINES Bietresato M., Mazzetto F. TEMPERATURE AND POSITION EFFECT ON READABILITY OF PASSIVE UHF RFID LABELS FOR BEVERAGE PACKAGING Barge P., Comba L., Gay P., Ricauda D., Tortia C.

Wednesday 11:30 – 13:00	Topic 6: Renewable energy and efficiency 1 Room Seminari C, Chair: Antonio Comparetti
	GREENHOUSES PLANTS AS A LANDMARK FOR RESEARCH AND INNOVATION: THE COMBINATION OF AGRICULTURAL AND ENERGY PURPOSES FOR A MORE SUSTAINABLE FUTURE IN ITALY Colantoni A., Zambon I., Sarri D., Cecchini M., Marucci A., Piacentini L., Feltrin S. DEVELOPING A NEW TECHNOLOGY FOR THE TWO PHASE METHANE FERMENTATION SLUDGE RECIRCULATION PROCESS Kuribayashi M., Tojo S., Chosa T., Murayama T., Sasaki K., Kotaka H. LIFE CYCLE ASSESSMENT OF FLAX AND CAMELINA FOR BIODIESEL PRODUCTION IN SICILY (SOUTHERN ITALY) Bacenetti J., Restuccia A., Schillaci G., Fiala M., Failla S. STUDY OF ECHOEFFICIENCY OF BIODIESEL PRODUCTION FROM THE FRUIT OF JATROPHA CURCAS PLANT Castaneda I., Acevedo P., Bojaca V. CASE STUDY OF POTENTIAL PRODUCTION OF RENEWABLE ENERGY FROM ORGANIC WASTES IN MEDITERRANEAN ISLANDS Attard G., Comparetti A., Greco C., Febo P., Orlando S. DEVELOPMENT AND EXPERIMENT OF A SMART SCALE TO IMPROVE PACKAGING OF FLOWER CUTTINGS Bechar A., Lidor G., Vitner G.

Wednesday 13:00	Lunch (Restaurant “Santi Romano”) Building 1
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	PARALLEL SESSIONS Building 19
Wednesday 14:30 – 16:00	Topic 6: Renewable energy and efficiency 2 Room 10, Chair: Jacopo Bacenetti
	ENERGY CONSUMPTION OF NURSERIES IN ANCONA DISTRICT AND INVESTIGATION ON PRODUCTION SYSTEMS Ilari A., Duca D., Toscano G., Ventura G., Foppa Pedretti E., Luciani R. PERFORMANCE ASSESSMENT OF PHOTOVOLTAIC, GROUND SOURCE HEAT PUMP AND HYDROGEN HEAT GENERATOR IN A STAND-ALONE SYSTEM FOR GREENHOUSE HEATING Anifantis A. ASSESSMENT OF CITRUS PULP AVAILABILITY FOR BIOGAS PRODUCTION BY USING A GIS-BASED MODEL: THE CASE STUDY OF AN AREA IN SOUTHERN ITALY Valenti F., Porto S.M.C., Chinnici G., Cascone G., Arcidiacono C.

	AGRONOMIC EVALUATION OF ETHIOPIAN MUSTARD (BRASSICA CARINATA A. BRAUN) GERMPLASM AND PHYSICAL-ENERGY CHARACTERIZATION OF CROP RESIDUES IN A SEMI-ARID AREA OF SICILY (ITALY) Licata M., La Bella S., Leto C., Bonsangue G., Gennaro M.C., Tuttolomondo T. ENERGY STUDY OF REACTIVE-HIDIC SIMULATION FOR ETHYL ACETATE SYNTHESIS FROM ACETIC ACID Leon-Pulido J., Sarmiento Trujillo M.P., Medellin Garzon D., Gonzalez-Delgado A.D., Peralta-Ruiz Y.Y., Duran Rincon M.A. POTENTIAL PRODUCTION OF BIOGAS AND DIGESTATE FROM PRINKLY PEAR (OPUTIA FICUS- INDICA L.) IN SICILIAN UNCULTIVATED AREAS Comparetti A., Febo P., Greco C., Mammano M.M., Orlando S.
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Wednesday 14:30 – 16:00	Topic 5: Post-harvest technology 3 Room 11, Chair: Riccardo Guidetti A DEVICE FOR THE MONITORING OF THE CAP BUOYANCY DURING THE RED GRAPES FERMENTATIONGuerrini L. Masella P., Angeloni G., Cini E., Parenti A. INFLUENCE OF THE PRESSING SYSTEM ON POMEGRANATE JUICE QUALITY De Pasquale C., Catania P., Vallone M. ASSESSING VOC EMISSION BY WOOD PELLETS USING THE PTR-TOF-MS TECHNOLOGY Costa C., Taiti C., Zanetti M., Proto A.R., D'Andrea S., Greco R., Dematte L., Mancuso S., Cavalli R. HIGH QUALITY EXTRA VIRGIN OLIVE OIL FROM OLIVES ATTACKED BY THE OLIVE FRUIT FLY, <i>BACTROCERA OLEAE</i> (ROSSI) (DIPTERA TEPHRITIDAE): WHICH IS THE TOLERABLE LIMIT? DATA FROM EXPERIMENTAL 'NOCELLARA DEL BELICE' AND 'CERASUOLA' OLIVE GROVES IN SICILY Caleca V., Antista G., Campisi G., Caruso T., Maltese M., Rizzo R. CHARACTERISTICS POSHARVEST AND PRESERVATION OF PULP OF CURUBA (<i>Passiflora mollissima</i>) Marquez Cardozo C.J., Arango Tobon J.C., Osorio J.
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Wednesday 14:30 – 16:00	Topic 9: Environment protection Room 12, Chair: Paolo Balsari A LABORATORY SYSTEM FOR NOZZLE SPRAY ANALYSIS Cerruto E., Manetto G., Longo D., Failla S., Schillaci G. SOLIDS AND PLANT NUTRIENT CONTENT, AND SETTLING CHARACTERISTICS OF MILKING CENTER WASTEWATER ON A GRAZING DAIRY Chastain J. A SYSTEM DYNAMICS MODEL TO DESIGN EFFECTIVE POLICY STRATEGIES AIMING AT FOSTERING THE ADOPTION OF CONSERVATION AGRICULTURE PRACTICES IN SICILY Varia F., Dara Guccione G., Macaluso D., Marandola D.
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	INTERNAL AND EXTERNAL CONTAMINATION OF SPRAYERS: CAUSES AND STRATEGIES TO MINIMISE NEGATIVE EFFECTS ON THE ENVIRONMENT Balsari P., Marucco P. AN APPROACH TO THE AMMONIA INVENTORY IN THE POULTRY PRODUCTION IN COLOMBIA Osorio J., Arango Tobon J.C., Zapata Marin O.L., Osorio Hernandez R., Damasceno Alves F., Rocha Oliveira K. EVALUATION OF ENVIRONMENTAL IMPACT ASSESSMENT FRAMEWORK EFFECTIVENESS Banias G., Lampridi M., Pediaditi K., Achillas Ch., Sartzetakis E., Bochtis D., Berruto R., Busato P.
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Wednesday 14:30 – 16:00	Workshop: The European Perspective on ASABE's Global Initiative Room Seminari C
	14:30 Welcome and Introductions Fedro Zazueta and Linus Opara CIGR Past and Incoming President, respectively 14:35 ASABE's Global Initiative Vision, Goals, and Outcomes Lalit Verma ASABE Past President 14:50 ASABE's Global Initiative: The European Perspective Claus Sørensen EurAgEng President and CIGR Section V Past Chair 15:00 Challenges Facing Rugged Topography Agriculture Elisabeth Quendler CIGR Section V Advisory Board Member 15:10 Precision Agriculture and the Future of Farming in Europe Pietro Catania CIOSTA President 15:20 Transforming the Workforce and Improving Competency. Remigio Berruto and Patrizia Busato CIGR Section V Chair and CIGR Section VII Advisory Board Member, respectively 15:30 Practical System Approaches to Problem Solution Tadeusz Juliszewski CIGR Past President 15:40 Discussion All participants 16:00 Adjourn

Wednesday 16:00 – 16:30	Coffee Break
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Wednesday 16:30 – 17:30	Conference Closing - Building 19 Room 11
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Wednesday 20:30	Social Dinner Location: Villa Alliata - via Faraone, 2 Palermo
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POSTER SESSION

Building 19

Tuesday - 14:30 – 18:45

Wednesday - 9:30 -13:00; 14:00 – 16:30

Topic 1: Labour, ergonomics, safety and health

1. [ASSESSING PERCEPTIONS AND ALERTS OF TRACTOR INSTABILITY](#)
Ochoa Lleras N., Brennan S., Murphy D., Klena J., Garvey P., Sommer J.
2. [ENERGY ANALYSIS OF AGRICULTURAL LABOR](#)
Kasumov N., Mozhaev E., Kasumova S., Slesarenko S., Kasumova N.
3. [CREATION OF CALCULATION MODELS FOR ESTIMATION OF LABOUR REQUIREMENT FOR BARN DRIED HAY PRODUCTION AND ITS FEEDING ON DAIRY FARMS](#)
Macuhova J., Jakschitz-Wild S., Haidn B., Thurner S.
4. [INNOVATIVE MECHATRONIC SOLUTIONS FOR DECOUPLING IN AGRICULTURAL MACHINERY](#)
Rimediotti M., Sarri D., Cavallo E., Lombardo S., Lisci R., Vieri M.
5. [A MULTI-YEAR ANALYSIS OF TRAFFIC ACCIDENTS INVOLVING AGRICULTURAL TRACTORS](#)
Arnal P., Lopez-Maestresalas A., Arazuri S., Mangado J.M., Jaren C.
6. [ERGONOMIC ASPECTS OF SCARIFICATION OF OAK SEEDS](#)
Juliszewski T., Kiełbasa P., Tylek P., Walczyk J.
7. [NOISE RISK ASSESSMENT IN A MODERN OLIVE OIL MILL](#)
Vallone M., Morello G., Catania P.
8. [AN APPLICATION OF MORPHOMETRY TO ARTIFICIAL SYSTEMS: THE EVOLUTIONARY STUDY OF FARM TRACTORS](#)
Bietresato M., Bisaglia C., Merola M., Brambilla M., Cutini M., Mazzetto F.
9. [A STUDY OF A BAROMETRIC METHODOLOGY FOR ASSESSING THE AGRICULTURAL AND FORESTRY MACHINE'S SEAT COMFORT](#)
Pirozzi M., Rapisarda V., Ferri M., Calcante A., Oberti R., Romano E.
10. [HAND-HELD OLIVE BEATERS: ANALYSIS OF THE UPPER LIMB DISORDERS AND HAND-ARM VIBRATION RISKS](#)
Calvo A., Romano E., Schillaci G., Preti C., Deboli R.

Topic 3: Field operations

11. [EVALUATION OF ENERGY REQUIREMENTS OF TILLAGE METHODS FOR CEREALS CULTIVATION IN CENTRAL ITALY](#)
Fanigliulo R., Biocca M., Pochi D.
12. [Effect of organic fertilization on capsaicin content in Trinidad Scorpion \(Capsicum Chinese\) peppers: preliminary results](#)
Pampuro N., Tebaldo V., Fabbri D., Calza P., Faga M., Cavallo E.
13. [MECHANICAL THINNER OF APRICOT FRUITLET](#)
Assirelli A., Cacchi M., Sirri S., Caracciolo G., Giovannini D., Faugno S.
14. [TWO STEPS ARUNDO DONAX L HARVESTING IN SOUTH ITALY](#)
Faugno S., Quaquarelli I., Civitarese V., Crimaldi M., Sannino M., Ricciardiello G., Caracciolo G., Assirelli A.
15. [CHIP QUALITY AS A FUNCTION OF HARVESTING METHODOLOGY](#)
Faugno S., Civitarese V., Assirelli A., Sperandio G., Saulino L., Crimaldi M., Sannino M.
16. [ACCELERATION ASSESSMENT DURING MECHANICAL HARVEST OF GRAPES USING A NON COMMERCIAL INSTRUMENTED SPHERE](#)
Vallone M., Alleri M., Bono F., Catania P.

Topic 4: Logistics

17. [COMPARISON BETWEEN HELICOPTER AND CABLE CRANE IN LOGGING OPERATION](#)
Manzone M., Balsari P.

Topic 5: Post-harvest technology

18. [EFFECTS ON MUST QUALITY PRODUCED FROM SANGIOVESE AND CABERNET GRAPE FROZEN/WITHERED USING A FORCED AIR PLANT](#)
Matera A., Genovese F., Altieri G., Tauriello A., Di Renzo G.C.
19. [PREDICTION OF MAIN POTATO COMPOUNDS BY NIRS](#)
Lopez-Maestresalas A., Perez C., Tierno R., Arazuri S., Ruiz de Galarreta J.I., Jaren C.
20. [QUALITY CHANGES OF TROPICAL AND SUBTROPICAL FRESH-CUT FRUITS MIX IN MODIFIED ATMOSPHERE PACKAGING](#)
Sortino G., Caviglia V., Liguori G., De Pasquale C., Gianguzzi G., Farina V.
21. [POSTHARVEST APPLICATION OF SULPHUR DIOXIDE FUMIGATION TO IMPROVE QUALITY AND STORAGE ABILITY OF "RED GLOBE" GRAPE CULTIVAR DURING LONG COLD STORAGE](#)
Sortino G., Allegra A., Passafiume R., Gianguzzi G., Gullo G., Gallotta A.
22. [Shelf-life and quality of fresh-cut peach cv 'Ruby Rich' at different maturity stage](#)
Sortino G., Gallotta A., Farina V., Allegra A.
23. [EFFECTS OF RAPID REFRIGERATION AND MAP ON LITCHI \(LITCHI CHINENSIS SONN.\) FRUIT QUALITY TRAIT](#)
Farina V., Sortino G., Saletta F., Passafiume R., Giuffre D., Gianguzzi G., Inglese P., Liguori G.
24. [CONSUMER ASSESSMENT ON SENSORY ATTRIBUTES OF FRESH TABLE GRAPES CV 'ITALIA' AND 'RED GLOBE' AFTER LONG COLD STORAGE TREATMENT](#)
Chironi S., Sortino G., Allegra A., Saletta F., Caviglia V., Ingrassia M.
25. [INFLUENCE OF O₂ ON EXTRA VIRGIN OLIVE OIL FATTY ACIDS COMPOSITION DURING MALAXATION](#)
Catania P., Febo P., Vallone M., De Pasquale C.

Topic 6: Renewable energy and efficiency

26. [CONCEPTUAL DESIGN AND FUNCTIONAL MODELLING OF A PORTABLE THERMOPHILIC BIODIGESTOR FOR A HIGH DRY MATTER FEEDSTOCK](#)
Rossel-Kipping E., Ortiz-Laurel H., Gonzalez-Medina E., Amante-Orozco A.
27. [INCREASING THE VALUE OF SPENT GRAINS FROM CRAFT MICROBREWERIES FOR ENERGY PURPOSES](#)
Sperandio G., Amoriello T., Carbone K., Fedrizzi M., Pagano M.
28. [STUDY AND ANALYSIS OF A COGENERATION SYSTEM WITH MICROTURBINES IN A FOOD FARMING OF DRY PASTA](#)
Perone C., Catalano F., Tamborrino A., Bianchi B., Ayr U.
29. [EFFECT OF FEEDSTOCK AND TEMPERATURE ON THE DISTRIBUTION OF HEAVY METALS IN CHAR FROM SLOW STEAM PYROLYSIS OF CONTAMINATED BIOMASSES](#)
Giudicianni P., Pindozi S., Grottola C.M., Stanzione F., Fagnano S., Fagnano M., Fiorentino N., Ragucci R.
30. [EFFECTS OF COMPRESSING PRESSURE ON BRIQUETTES MADE FROM WOODY BIOMASS](#)
Cavallo E., Pampuro N.
31. [ENERGY PRODUCTION BY SMALL HYDRO POWER PLANTS IN COLLECTIVE IRRIGATION SYSTEMS OF CALABRIA \(SOUTHERN ITALY\)](#)
Zema D.A., Nicotra A.M., Tamburino V., Zimbone S.M.
32. [LIGNOCELLULOSIC BIOMASS FROM FAST-GROWING SPECIES IN COLOMBIA AND THEIR USE AS BIORESOURCES TO BIOFUELS PRODUCTION](#)
Hernández M., Cabeza I., Romero J., Jaime C.

Topic 7: Information systems and precision farming

33. [LOOKING FOR THE IDEAL CONDITIONS FOR CORN KERNEL IMAGE ACQUISITION](#)
Jia Y.
34. [CHALLENGE TO APPLY THE BIOSPECKLE LASER TECHNIQUE IN THE FIELD](#)
Braga R.
35. [AN IOT-BASED WIRELESS IMAGING AND SENSOR NODE SYSTEM FOR REMOTE GREENHOUSE PEST MONITORING](#)
Rustia D.J.A. Lin T.T.
36. [ANALYSIS OF PRELIMINARY DESIGN REQUIREMENTS OF AN HEAVY LIFT MULTIROTOR DRONE FOR AGRICULTURAL USE](#)
Sarghini F., De Vivo A.
37. [STRUCTURE OF THE PRECISION AGRICULTURE RESEARCH IN ITALY FROM 2000 TO 2016: A TERM MAPPING APPROACH](#)
Costa C., Biocca M., Pallottino F., Nardi P., Figorilli S.
38. [MISSION PLANNING FOR THE ESTIMATION OF THE FIELD COVERAGE OF UNMANNED AERIAL SYSTEMS IN MONITORING MISSION IN PRECISION FARMING](#)
Ristorto G., D'Incalci P., Gallo R., Mazzetto F., Guglieri G.
39. [A MOBILE LABORATORY FOR ORCHARD HEALTH STATUS MONITORING IN PRECISION FARMING](#)
Ristorto G., Gallo R., Gasparetto A., Scalera L., Vidoni R., Mazzetto F.
40. [AUTOMATIC FILLING OF THE REGISTER OF FIELD ACTIVITIES, FROM CHALLENGE INTO REALITY](#)
Mazzetto F., Gallo R., Importuni P., Petrera S., Sacco P.

Topic 8: Land and water use

41. [AGRO-INDUSTRIAL TREATED WASTEWATER REUSE FOR CROP IRRIGATION: IMPLICATION IN SOIL FERTILITY](#)
Tarantino E., Disciglio G., Gatta G., Libutti A., Frabboni L., Gagliardi A., Tarantino A.
42. [IMPACTS OF RAINWATER HARVESTING AND RAINWATER MANAGEMENT ON UPSTREAM – DOWNSTREAM AGRICULTURAL ECOSYSTEM SERVICES IN TWO CATCHMENTS OF SOUTHERN TIGRAY, ETHIOPIA](#)
Castelli G., Minelli A., Tefera M., Sebatleab M., Embaye T.G. Bresci E., Yazew E.
43. [ORGANIC MATTER, IRRIGATION AND SOIL MULCHING IN THE NUTRITIONAL STATUS AND PRODUCTION OF OKRA](#)
Chaves L., Mesquita E., Ferreira D., Mesquita Sobrinho S.
44. [POTENTIAL OF THERMAL IMAGES AND SIMULATION MODELS TO ASSESS WATER AND SALT STRESS: APPLICATION TO POTATO \(SOLANUM TUBEROSUM L.\) IN CENTRAL TUNISIA](#)
Ghazouani H., Capodici F., Ciruolo G., Maltese A., Rallo G., Provenzano G.
45. [CHARACTERIZATION OF FLOW LINES GENERATED BY PRESSURIZED SAND FILTER UNDERDRAINS](#)
Mesquita M., Testezlaf R., Pociano De Deus F., Machado Da Rosa L.
46. [YEAR-ROUND VARIABILITY OF FIELD-SATURATED HYDRAULIC CONDUCTIVITY AND RUNOFF IN TILLED AND GRASSED VINEYARDS](#)
Capello G., Biddoccu M., Ferraris S., Pitacco A., Cavallo E.

Topic 9: Environment protection

47. [BENTONITE APPLICATION IN THE REMEDIATION OF ZINC CONTAMINATION SOIL](#)
Chaves L., Tito G., de Brito Chaves I.
48. [REDUCING FOOD WASTE THROUGH RETAIL INFLUENCE ON CONSUMER BUYING BEHAVIOUR](#)
Topolansky F., Von Dewitz P., Gonzalez M.
49. [PREVENTION OF WATER CONTAMINATION FROM PESTICIDES: THE TOPPS PROJECT ACTIVITIES](#)
Marucco P., Balsari P., Roettele M.
50. [ENVIRONMENTAL ASSESSMENT OF FLAX STRAW PRODUCTION FOR NON-WOOD PULP MILLS](#)

Ramirez-Cando L., Spugnoli P., Matteo R., Bagatta M., Tavarini S., Foschi L., Lazzeri L.

Topic 10: Protected cultivation and greenhouse technology

51. [EXPERIMENTAL STUDY OF A MECHANICAL VENTILATION SYSTEM IN A GREENHOUSE](#)
Perone C., Fucci F., La Fianza G., Brunetti L., Giametta F., Catalano P., Bianchi B.
52. [INNOVATIVE TECHNIQUES TO REDUCE CHILLING INJURIES IN MANGO \(MANGIFERA INDICA L.\) TREES UNDER MEDITERRANEAN CLIMATE](#)
Farina V., Tripodo L., Gianguzzi G., Sortino G., Giuffre D., Lo Cicero U., Candia R., Collura A.

Topic 11: Animal husbandry

53. [EFFECTS OF POWER CUTS ON DAIRY CATTLE BEHAVIOUR](#)
Graeff A., Misthilger B., Hoeld M., Woerz S., Stumpfenhausen J., Bernhardt H.
54. [EFFECT OF FEEDING SUNFLOWER MEAL ON THE PERFORMANCE AND CARCASS CHARACTERISTICS OF BROILER CHICKENS](#)
Sangsoponjit S., Suphalucksana W.
55. [USING LEUCAENA TO IMPROVE THE QUALITY OF PINEAPPLE PLANT SILAGE](#)
Suphalucksana W., Sangsoponjit S., Srikijkasemwat K.

Topic 12: Economics and agricultural statistics

56. [ECONOMIC AND TECHNICAL FEATURES OF DIFFERENT LEVELS OF MECHANIZATION IN OLIVE HARVESTING](#)
Sperandio G., Biocca M., Fedrizzi M., Toscano P.
57. [HIERARCHIZATION OF THE ITALIAN REGION ON THE STRENGTH OF THE AGRICULTURAL MECHANIZATION THROUGH CLUSTERING ANALYSIS](#)
Mongelli L., Pascuzzi S.