

## SYNOPSIS ON THE AIA SYMPOSIUM "THE SCIENCE OF ACOUSTICS SERVING THE FOOD, THE NUTRITION AND THE ENVIRONMENT"

As part of the Universal Exhibition EXPO Milan 2015, "Nutrire il pianeta, Energia per la vita" - "Feeding the Planet, Energy for Life", with 140 countries and international organizations involved and 20 million visitors, the Acoustical Society of Italy (AIA) has organized a symposium on the topic "The science of acoustics serving the food, the nutrition and the environment - From protection systems to innovative technologies for agriculture and fishing". Over 100 people attended the event on September 25th, 2015; more than half of them were not acousticians or AIA affiliates. The symposium was sponsored by ICA (international Commission on Acoustics) and EAA (European Acoustics Association).

Not everyone knows that the science of acoustics range in very large fields. They deal not only with the often difficult relationship between noise and environment, but also with many other aspects, such as the protection and enhancement of the territory, the hydro-geological disasters, the prevention and risk assessment for workers, the management of natural resources, the use of new technologies in the food industry, etc...

The fifteen reports presented at the Seminar have highlighted the main aspects of each subject.

- The knowledge of the very elements characterizing the soundscape is a prerequisite for the protection and conservation of the soundscape itself, in terms of social, historical, natural and cultural identity (Giovanni Brambilla, CNR, Rome). A concrete example of research in this area is the recording and analysis of birds' singing in urban parks (Giovanni Zambon, University of Milano-Bicocca).
- Wind is an important source of renewable energy; its use, however, requires an in-depth and broad study of wind farms impact on the environment and people (Massimiliano Masullo, University of Naples). In order to manage and reduce the environmental impact, new technological solutions for turbines have been developed (Gianni Cesini, University of Marche).
- Hydro-geological instability is one of the main issues in Italy. The use of vibration sensors to be applied on the ground can be a valuable aid for landslide monitoring and for the control of the related risk (Massimo Arattano, CNR, Turin).
- Noise generated by human activities seriously interferes with communication between birds, so creating problems to their social relations concerning territoriality and reproduction (Natale Emilio Baldaccini, University of Pisa).
- In the marine environment, the large-scale use of artificial sound sources causes many problems (Michael Taroudakis, University of Crete, Greece). Noise generated by vessel traffic, in particular, causes a significant impact on cetaceans (Gaetano Licitra, ARPAT, Lucca). The identification and management of fish can be advantageously achieved with modern technology based on ultrasounds (Victor Espinosa, University of Valencia, Spain).
- The risks generated by noise on vessels, and by vibration and noise on tractors, are particularly relevant, not only in regard to the high number of exposed individuals,

but also considering that the related exposure levels are equal to or higher than those typical for industry workers (Alessandro Peretti, Advanced Course of Occupational Medicine, Padua).

- Vegetation can be a valuable tool for urban noise control (Jian Kang, University of Sheffield, UK). On the other hand, acoustic materials with high insulating and absorbing characteristics can be of vegetable origin (Francesco Asdrubali, University of Perugia).
- Ultrasounds are widely used in the food industry, allowing assessing the physic and chemical characteristics of the products, to change their characteristics and to increase the efficiency of production procedures (Rugiada Cuccaro, INRIM, Turin).
- Not only the taste, smell, sight and touch, but also hearing contributes to the multisensory perception of food and drinks (Massimiliano Zampini, University of Trento).