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Congreso Mundial de Ingenieros Agrónomos y Profesionales de la Agronomía

World Congress of Agronomists and Professionals in Agronomy

## CONCLUSIONES

### SUMMARY AND CONCLUSIONS

The 4<sup>th</sup> World Congress of Agronomists and Agronomy Professionals was held in Madrid between 28<sup>th</sup> and 31<sup>st</sup> October 2008, its theme being “The Agronomist as technical and scientific nexus for conserving the Environment on the basis of rural development and food demand”.

The Congress was organised by the National Association of Agronomists (Asociación Nacional de Ingenieros Agrónomos), the General Council of Spanish Agronomist Associations (Consejo General de Colegios de Ingenieros Agrónomos de España) and the World Association of Agronomists (Asociación Mundial de Ingenieros Agrónomos), in collaboration with the Ministry of the Environment and Rural and Marine Affairs (Ministerio de Medio Ambiente, y Medio Rural y Marino), and with the support of numerous institutions and national and international companies. The Congress was attended by over 550 registered participants and featured 19 papers, 68 oral presentations and 60 posters.

The main objective of this 4<sup>th</sup> Congress was to “analyse and discuss the achievement of food security in a context of environmental sustainability, rural development and a shortage of water and energy”, as well as the role played by agronomists and other agronomy professionals, both now and in the future.

The papers dealt with numerous aspects of the Agronomy profession related to food security, sustainability and rural development, with specific analyses relating to:

- The Agronomy profession and its professional associations.
- The Agronomist’s role in Biotechnology.
- Rural and urban constructions linked to agricultural and leisure activities.
- The world food market and the role of Agriculture in the new socioeconomic context.
- New technologies for sustainable agriculture through rational fertilization, irrigation and mechanization, exploiting the advantages offered by electronics and information technology.
- Agriculture’s role in reducing carbon dioxide emissions, with new energy crops and water recovery and treatment.
- Integration of livestock in the environment and animal health as a basis of food security.
- Integration of agriculture in land use planning, conservation and development.
- Agricultural and food industries, with special emphasis on the implementation of quality systems based on hazard analysis and critical control points.
- Dissemination and transfer of knowledge, to make farmers aware of technological advances.

As was to be expected in a field of activity as broad as that in which Agronomists and other Agronomy professionals work, the papers and presentations covered a very wide range of topics. In some cases it was difficult to fit them into the pre-established Sessions, given that the aspects they analysed related to various Sessions. Without attempting to be exhaustive, and following the numerical order of the Sessions, the following aspects of our profession were dealt with:

### **The Agronomist and Society**

- Earth banks and their management, sustainable development of poor agricultural areas, and academic and vocational training and mobility of Agronomists, a matter of concern in the EU, but also in Latin-America.

### **Urban Naturalization, Environment and Landscaping. Rural Constructions**

- New agricultural constructions, such as green façades, high roof gardens, the materials used to construct them, their energy and environmental performance, as well as others related to mountain agriculture and sports installations, with a specific analysis of those new agricultural crops more commonly known as golf courses.

### **Agriculture and Market**

- Designations of origin in the vineyard and new viticulture, organic agricultural and livestock products and their commercial labelling, meat markets and their quality, and agricultural production models for small producers.

### **Sustainability and New Technologies**

- Environmental sustainability indicators, direct sowing opportunities, irrigated land modelling and remote control irrigation, agricultural waste energy exploitation, use of fertilizers and precision agriculture, biotechnology, and how to approach social integration with the agricultural environment.

### **Stockbreeding: Production and Health**

- Milk traceability and control, Biosecurity in the design of livestock installations, avian livestock, cattle and nitrogen emissions, stockbreeding in the floodable savannahs, and the outlook for marine stockbreeding.

### **Land Use Planning, Conservation and Development**

- GPS and laser systems in land use planning and construction, methodologies for determining environmental impact and environmental management of agricultural infrastructures, solutions to protect riverbanks, and tropical forest inventory procedures.

### **Agricultural and Food Industries**

- Analysis of the innovation and competitiveness of the agro-food industry, automatic warehouse control systems, authentication of agricultural products, analysis of marketing risks and the market for products with seals of quality and of origin.

### **Dissemination and Transfer of Knowledge**

- The role of women in rural development, cooperatives, sustainability in the use of natural resources, microcredit in the agricultural sector, agricultural insurance policies, international cooperation, information networks, and knowledge management in 21<sup>st</sup> century agriculture.



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- Agronomists and other Agronomy professionals have played a very important role in the development of agriculture and agroindustry. Thanks to their professional performance, they have enabled the agricultural sector to innovate and meet the changing needs of Humankind while protecting the environment at the same time.
- The Professional Associations of Agronomists must ensure the capacity, professionalism and commitment of their members as a guarantee for the society that uses their services, controlling the training of the professionals admitted to these associations, and offering continuing training programmes that upgrade their knowledge.
- Urban Naturalization, as a means of integrating nature into city environments, is one of the most effective tools for improving the quality of life. The engineers, architects and graduates involved in this field should take into consideration a wide range of factors, which include the environment, landscaping, energy efficiency, atmospheric and noise pollution, and the regeneration of local flora and fauna, among others.
- Agronomists' and other Agronomy professionals' knowledge of the natural environment and the rural environment makes it essential for them to participate in the design and construction of agricultural and livestock buildings that meet crop production and transformation requirements and the needs of the animals that occupy them, while also respecting the cultural heritage.
- The design and construction of sports installations broadens the Agronomist's sphere of activity, especially those in which it is necessary to introduce plant cover, such as golf courses, with an intangible output, but with a high economic return, similar to that of traditional intensive crops. Thus, it is becoming a complementary activity for an environmentally-integrated agricultural sector.
- The causes of prevalence of demand over supply of products of agricultural origin will continue in the short and medium term. This situation should not be permanent. With the help of technological advances, agriculture will be able to meet this rising demand and supply low-cost foods for the world's growing urban population.
- In order for sufficient food to reach the inhabitants of developing countries, it is necessary not only to open up the worldwide trade of agricultural products, which is contributing to the production of "exportable raw materials", but also to eliminate the barriers that prevent them from reaching the most disadvantaged sectors of society, such as corruption and the lack of legal security, administrative inefficiency, and the mistaken ideas of economic policy that affect food production.
- The output and productivity of peasant farmers needs to be increased in many regions, by improving their production, storage and crop transformation systems, but without altering their essence, based on local knowledge, low use of external supplies and the contribution of personal work as a fundamental tool for dignifying human life and preventing mass migration to the poor suburbs of large cities.
- Food markets are not just supply and demand figures; it is human beings who form the backbone of these markets, due to their participation as producers,



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transformers, marketers and consumers. Given that the right to food is the principal human right, Agronomists have an extremely important social and professional responsibility to meet these requirements.

- Specific ignorance of the possible solutions and proximate effects of the climate change process, which could affect food production, makes it necessary to accumulate more information in order to be able to act responsibly.
- New technologies applied to the mechanization and automation of farming and irrigation processes, fertilization, the handling of soils and the genetic improvement of plants contribute to a more sustainable agricultural production and should not be hampered.
- The integration of the latest advances with tried and tested systems reduces the impact of each unit of food produced, obtained at affordable prices, so that they can reach the least advantaged sectors.
- The need to find alternative sources of energy to fossil fuels and the pressing need to reduce levels of greenhouse gases in the atmosphere make Agroenergy a reality.
- The rapid increases in milk production in the double-purpose cattle farms of the Tropics, using biotechnological tools for improvement, are of particular importance due to falling milk supply in the international market and the shortage of milk for the population of tropical areas.
- Some man-made ecosystems, such as pasture, manage to improve the natural environment from which they come. Maintaining them requires continual human intervention, taking advantage of agricultural, livestock and forest resources, which guarantees biodiversity and its stability over time. The fighting bull forms an essential part of this and offers economic profitability in certain areas of this agrosystem.
- Land Use Planning is a Public Administration function aimed at achieving the sustainable and balanced development of society by providing for harmonic, functional and balanced land use systems capable of offering the population a satisfactory quality of life, which requires the active participation of multidisciplinary teams in which Agronomy professionals play a predominant role.
- As countries undergo economic development, the urban population engaged in industry and services increases while the rural population decreases. Modern agriculture no longer focuses on the production of raw materials, but on the production of food. Agronomists participate actively throughout the food chain.
- Negotiating power in the food chain has shifted from farmers to industrialists and from the latter to distributors. The need to create value in the chain should tally with the distribution of the value created. Nevertheless, the strong segmentation of producers and industrialists, as opposed to the increasing concentration of distributors, should be complemented with contractual relations based on mutual trust and collaboration, thus permitting innovation and making it possible to meet the consumer's needs in terms of quality, price and sustainability.
- One of the main milestones in the Food Chain has been the introduction of the



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HACCP quality system (Hazard Analysis and Critical Control Points), among others, which determines the critical control points in any productive process, or even in a process of monitoring environmental impact.

- Food security is based on correct traceability (from the farm to the table), with coordination between the links in the chain of value.
- Biosecurity on livestock farms largely depends on the technical design and execution of the installations, this being the best way to prevent zoonoses from developing and affecting humans.
- The activity of specific and multidisciplinary teams helps solve the problems posed by modern agriculture, creating research centre networks that permit progress in situations with limited resources. Technology transfer -making technology accessible to users- is essential for allowing them to use it, and therefore applied research centres must be linked to the extension centres for the agricultural sector.
- Innovation processes, which should be implemented in the very near future in order to ensure efficient agro-food systems, require technology transfer systems that manage the knowledge produced by research centres and make it available to the experts who have to apply it.
- This is the case of the Knowledge Platform for the Rural and Marine Environment which has been set up by the Spanish Government's Ministry of the Environment and Rural and Marine Affairs.
- Studies and assessments of the impact of agricultural research on poverty reduction and the improvement of food supplies in urban centres are powerful tools that convey a positive image of the organisations responsible for agricultural research and extension, and they also serve to justify the allocation of the public resources that these organisations need, while at the same time quantitatively showing the return on investments.

### ***Final comment***

For a long time Agronomists seem to have been the "invisible engineers", inasmuch as Society is not familiar with the work that we do. Whereas buildings are automatically associated with architects, bridges with civil engineers... cereal fields, vineyards, olive groves, orchards, gardens, food industries, etc. go unnoticed and are rarely, if ever, associated with the Agronomist.

This has been a great opportunity to reach out to Society and let it know that we are responsible for ensuring that it receives safe and healthy food in sufficient quantities and renewable raw materials at affordable prices, as well as for protecting the environment that guarantees Humankind a sustainable future.

Many thanks to all the people who have helped us organise and hold this Congress.

**Thank you very much for participating in this 4<sup>th</sup> World Congress**