

INTRODUCTION TO THE JOHANNES LINNEBORN PRIZE AND THE 2020/2021 WINNER LAUDATION

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Chairman of the Nomination Committee

The Johannes Linneborn Prize was established in 1994 on behalf of the European Commission by Dr. Wolfgang Palz to honour an European individual for an exceptional life-time contribution to the field of sustainable energy from biomass. In exceptional cases the award can be granted to a non-European. It is not a reward for scientific excellence only, but also technical and managerial merits are appreciated. This prestigious award was connected to the name of Johannes Linneborn, a German biomass pioneer and businessman, a manufacturer of more than 500,000 Imbert small-scale wood gasifiers used to fuel cars, when fossil liquid fuels were scarce. His ideal was a world in which mankind lives in harmony with nature with optimal exploiting of biomass for energy and materials.

From a long list of excellent candidates the Prize Committee selected as winner of the Linneborn Prize 2020/2021:

Dr. Juan E. Carrasco Garcia

*Head of the Biomass Division, CEDER- CIEMAT
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Madrid, Spain*

The prize is awarded to him for his consistent excellence for over 35 years in research and management of the development of renewable and sustainable energy from biomass. He realized lasting results of high significance along the entire biomass energy chain: potential identification, development of production of biomass, drying, size reduction, storage, conversion to modern liquid, gaseous and solid energy carriers and their application in furnaces and boilers. Moreover we appreciate his promotion of bioenergy, teaching of the concepts and elucidating its potential to users and public at large. He provided inspiring and effective contributions and leadership in large national and international co-operation projects and programs in these areas.

Juan Carrasco graduated on sciences at the Universidad Complutense, Madrid, section Biology in 1977. In 1988 he obtained his doctorate in biology at the same university. For the years 1978/1979 he received a grant from the Spanish ministry of foreign affairs, for his stay at the "Ludwik Hirsfeld Institute", Wroclaw Poland to study soil pathogenic micro organisms (Actinomycetes). He subsequently started his career at the Institute of Renewable Energies, CIEMAT, as a pre-doctorate fellow while in 1986 he became head of the Ethanol Fermentation group. He was also nominated head of the Biomass Division/ Program from 1987 to 1995 and later head of the Liquid Biofuels Projects and the solid Biofuels Projects. From 2010-2020 Juan Carrasco became head of the whole Biomass Unit of CIEMAT.

Over his professional life research interests and activities covered a very wide area:

1. Production of biomass resources development and valuation of energy crops, mainly different crops on marginal lands. Their energy balances, production costs and economics.

2. Bioethanol from starchy and lignocelluloses raw materials. Development and pilot plant studies based on Jerusalem artichoke tubers by acid hydrolyses. Moreover, development and pilot plant and scaling studies on the simultaneous saccharification and fermentation for ethanol production, a patented process. Furthermore evaluation of production costs of bioethanol and biodiesel.
3. Development, production and viable use of solid biofuels. Evaluation at local, regional and national level. Characterization and standardization of these fuels; bringing these to national (UNE) and international (CEN and ISO) standards. Moreover, drying of biomass (forced and natural drying) including pilot plant studies. Size reduction and storage of biomass with pilot plants studies as well. Characterization of use of solid biofuels. Determination of combustion conditions in pilot plants studies for different applications and type of combustion processes including fluid bed combustion of biomass. Special attention was focused on ashes behaviour (sintering, slag formation etc.)

Juan and his team participated in over 50 large national, mainly European and also transcontinental biomass programs and projects in different roles like main researcher, leader of the CIEMAT participation team, initiative taker or project coordinator. He was Project Coordinator of the 62 M Euro "Development and demonstration of the viability of energy production from energy crops biomass in Spain" (On Cultivos Project) from 2005-2012.

Due to his excellent scientific expertise, his close look on the applications of the technology, contacts with (agro industries), his cooperative and inspiring personality he was most welcome in international collaborations. Juan Carrasco acted in a long list of advising and steering committees in Spain in the area of biomass and in European committees. He was the bioenergy joint R&D coordinator 2014-2019 of the European Energy Research Alliance (EERA) which includes 34 R&D organizations representing 16 European countries. Juan was also national expert nominated by INIA in the Strategic Committee for Agricultural Research in Europe- Strategic Group of Sustainable Bio-resources.(SCAR-BRSG). His work has led to numerous (over 123) publications which he (co)authored in scientific journals congress proceedings, books, book chapters etc.

Dr. Carrasco is a well known speaker at biomass conferences also in many of the EUBCE conferences, an authoritative overview presenter and often requested for and participating in scientific, technical and/or organizing committees. At several occasions Juan showed himself an active and effective propagandist for sustainable use of biomass and teacher of the important possibilities to potential users among others in long series of courses which he has set up and directed. While at CIEMAT he guided and supported a long series of master programs in his field at schools and universities over many years. Among others at the Autonomous University of Madrid

and the University of Zaragoza. Also in direction of doctoral Theses: university of Valladolid (2005) and University of Madrid (2005).

Dear Dr. Carrasco, dear Juan, the Committee has selected you for the Linneborn Prize 2020-2021 because of your outstanding contributions to the field of renewable and sustainable energy from biomass, delivered over several decades and the leadership shown in its realization in Spain, in the Mediterranean world and other areas.

We are certain that the whole biomass community in Europe and worldwide will join the Linneborn Committee in their warmest congratulation.