

**EUCARPIA INTERNATIONAL SYMPOSIUM ON PROTEIN CROPS**  
**Pontevedra, Spain. 5-7 May 2015**

**"PLANT PROTEINS FOR THE FUTURE"**

*First announcement*

Because of the high protein content of their seeds, grain legumes, pseudocereals and other minor crops, are attractive candidates for lowering the deficiency in plant protein production worldwide. However, little improvement in farming practices has been achieved over the last few decades to enhance production of important protein crops. Special attention has to be paid to the limiting factors affecting yield, with water deficiency and other abiotic stresses being among the key factors, in order to obtain more stable and more reliable and sustainable crop production. Several protein crops are crucial elements for current global agriculture and livestock, human and animal nutrition and health and the environment.

Legumes contribute to the sustainable improvement of the environment when grown in agricultural rotations due to their ability of biological nitrogen fixation and their effects on the soil and play a key role in the diversification and sustainable intensification of agriculture, particularly in light of new and urgent challenges such as climate change. In addition, the decrease of legume cropping in many countries needs urgently to be reversed as costs for nitrogen fertilizer are increasing with rising energy costs, leading to high production costs for farmers, and substantial greenhouse gas emission linked to the use of nitrogen fertilizer. Soybean, peanut, common bean, pea, lupins, chickpea, faba bean, grass pea, cowpea, pigeon pea, etc. are currently the most important legumes for human consumption and animal feed.

Amaranth and quinoa are considered as "pseudocereals" and both are also good sources of proteins. Amaranth seeds contain lysine, an essential amino acid, limited in other grains or plant sources and are limited in some essential amino acids, such as leucine and threonine. Amaranth seeds are therefore promising complement to common grains such as wheat germ, oats, corn because these common grains are abundant sources of essential amino acids found to be limited in amaranth. Amaranth may be a promising source of protein to those who are gluten sensitive, and compares well in nutrient content with gluten-free vegetarian options such as buckwheat, corn, millet, wild rice, oats and quinoa. Quinoa is appreciated for its nutritional value (this crop has been called a "superfood") with a protein content very high for a pseudocereal (14%) and its nutritional evaluations indicate that it is a source of complete protein. Yield, however, varied considerably among years and locations, because the establishments of the crop, weed control, harvest, and post-harvest techniques have not yet been optimized.

Other minor protein crops deserve also attention. Flax/linseed seeds contain high levels of dietary fiber as well as protein, an abundance of micronutrients and omega-3 fatty acids. Studies have shown that flax seeds may lower cholesterol levels, although with differing results in terms of gender. Initial studies suggest that flax seeds taken in the diet may benefit individuals with certain types of breast and prostate cancers. Hemp is a commonly used term for high growing varieties of the *Cannabis* plant and proteins are one of the other major seed components (33%), with an amino acid profile close to "complete" when compared to more common sources of proteins. Hemp protein contains all 21 known amino acids, including the 9 essential ones. Caraway, also known as meridian fennel is a biennial plant in the family Apiaceae. The caraway seeds are rich in proteins and they include about 12 non-essential amino acids and the 9 essential ones.

## ORGANIZATION

The Protein Crops Working Group of the European Association for Research on Plant Breeding (EUCARPIA), and the Misión Biológica de Galicia (MBG) of the Spanish National Research Council (CSIC) organize this Symposium in Pontevedra, Spain, with the cooperation of some scientific organizations.

## COORDINATOR

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## ORGANIZING COMMITTEE

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## VENUE

Pontevedra is a small city (population: 80000) in the Northwestern Spanish Atlantic coast, with a humid temperate climate. In the last 10 years, average mean temperature in May was 16.5 °C and average rainfall in this month was 104 mm.

The Symposium will be held at the Lyceum Casino (LC) main building, located in the Pontevedra Old Town ([www.casinopontevedra.com](http://www.casinopontevedra.com)).

## WEBSITE

[www.symposiumproteincrops.org](http://www.symposiumproteincrops.org)



## ORGANIZERS AND CONTRIBUTORS

- European Association for Research on Plant Breeding (EUCARPIA): [www.eucarpia.org](http://www.eucarpia.org)
- Phytopatological Station do Areiro-Provincial Chamber of Pontevedra (EFA-DEPO): [www.efa-dip.org](http://www.efa-dip.org)
- Spanish Association for Legumes (AEL): [www.leguminosas.es](http://www.leguminosas.es)
- Misión Biológica de Galicia, Spanish National Research Council (MBG-CSIC): [www.mbg.csic.es](http://www.mbg.csic.es)
- Delegation in Galicia, Spanish National Research Council (DLGGA-CSIC): [www.delegacion.galicia.csic.es](http://www.delegacion.galicia.csic.es)
- Department of Crop Production, University of Santiago de Compostela (DPP-USC): [www.usc.es/en/departamentos/prodvexg/index.html](http://www.usc.es/en/departamentos/prodvexg/index.html)
- Spanish Society of Nitrogen Fixation (SEFIN): [www.ugr.es/~sefin/](http://www.ugr.es/~sefin/)
- Science Society of Galicia (SCG): [scg.org.es](http://scg.org.es)

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