

## **Prof. Dr. José Maria FERNÁNDEZ-MARTÍNEZ**

Oilseed Crops Breeder Research Geneticist

Spanish Council for Scientific Research (CSIC)

P.O.Box 4087, 14080 Córdoba, Spain

### **EDUCATION**

1970 Agronomy Engineer, University of Madrid, Spain

1974 M.S. Agronomy, University of California, Davis, CA, USA

1977 PhD Agronomy, University of Cordoba, Spain

1980 PhD Genetics, University of California, Davis, CA

### **PROFESSIONAL AND ACADEMIC APPOINTMENTS**

Research geneticist, National Institute of Agricultural Research (INIA) at Córdoba, Spain

1984-1987 Director Department of Oil Crops (INIA) ,Córdoba, Spain.

1987-1992 Professor of Research; Spanish Council for Scientific Research (CSIC)

Director Institute of Sustainable Agriculture (IAS) (CSIC)

Director Department of Breeding and Agronomy at IAS

2000-present Professor of Research, Spanish Council for Scientific Research (CSIC) at IAS, Cordoba

### **PROFESSIONAL MEMBERSHIPS**

American Society of Agronomy

EUCARPIA

International Sunflower Association

GCIRC

### **SELECTED PROFESSIONAL ADVISORY/CONSULTATION ACTIVITIES**

FAO Consultant Morocco, 1986; Project on oilseed crops

FAO Consultant Cyprus, 1988; Germplasm resources and plant protection

FAO Consultant Egypt, 1989;Project sunflower Breeding

EEC Consultant China, 1990; Implementation of a project on sunflower breeding and germplasm development.

### **SIGNIFICANT RESEARCH OUTCOMES**

Prof. Dr. José M. Fernández-Martínez has played a significant role in the development of oilseed crops cultivation in Spain, with major contributions through agronomic, physiological and genetic studies having a broad experience of more than 25 years in breeding and agronomy of oil crops, (sunflower, safflower, Brassicas and other oilseed crops). In sunflower, he has carried out relevant research activities in breeding for semiarid conditions and breeding for resistance to important biotic limiting factors, mainly Orobanche, having developed, and released in Crop Science, populations and lines with these characteristics. The most outstanding contribution of the research of Dr. Fernández-Martínez has been the development of novel oil types targeted to specific food and non-food applications. In particular, he has conducted pioneer work on the development of high oleic acid and high stearic fatty acid cultivars in sunflower adapted to the semiarid conditions of southern Spain,

covering the genetic and molecular characterization of the genes involved in the expression of the high oleic and high stearic acid traits as well as the transference of the high oleic acid and high stearic mutations to high-performance backgrounds. More recently he also participated in the development and release of sunflower lines with different tocopherol composition. In *Brassica carinata* he is co-obtenter of materials with different fatty acid composition, zero erucic, low linolenic and very high oleic content as well as very high erucic acid and co-author of studies on the genetic control of these traits.

Prof. Dr. José Fernández-Martínez has authored or co-authored more than 140 refereed papers, most of them included in journals of the Science Citation Index (SCI), 50 publications in Conference Proceedings, released more 60 cultivars and germplasm lines (sunflower, safflower and Brassicas) and participated in 12 patents in oil types in sunflower and Brassicas.

Dr. Fernández-Martínez was active expert in the development of agriculture and plant breeding within the framework of FAO and EU in several countries (Morocco, Cyprus, Egypt and China). Since its establishment in 1975, he participated in the FAO European Cooperative Research Network on Sunflower and since 1986 he was coordinator of Subsection of Genetic Studies of Physiological and Biochemical characters and member of the Editorial Board of the international sunflower journal *HELIA* since 1981. He has been also a member of the Executive Committee of the International Sunflower Association (Paris, France) from 1986 to 2000 and is member of the Group Consultative International de Recherche sur le Colza (GCIRC).

#### **SELECTED PUBLICATIONS**

Aguera, F., F. Villalobos, F. Orgaz and J.M. Fernández Martínez. 1998. Response to divergent selection for early vigour in sunflower (*Helianthus annuus* L.). *Aust. J. Agric. Res.* 49:749-755. A.

Sukno, S., C.C. Jan, J.M. Melero Vara and J.M. Fernández-Martínez. 1998. Reproductive Behavior and Broomrape Resistance in Interspecific Hybrids of Sunflower. *Plant Breeding*. 117:279-285. A.

de Haro, A., J. Domínguez, R. García Ruiz, J. Muñoz and J.M. Fernández-Martínez. 1998. Registration of six Ethiopian Mustard Germplasm lines. *Crop Science*. 38:558-559. A.

Pérez Vich, B., L. Velasco and J.M. Fernández-Martínez. 1998. Determination of seed oil content and fatty acid composition in sunflower through the analysis of intact seeds, husked seeds, meal and oil by Near-Infrared Reflectance Spectroscopy. *J. Oil Chem. Soc.* 75:547-555. A.

Velasco L., J.M. Fernández-Martínez and A. de Haro. 1998. Increasing erucic acid content in Ethiopian mustard through mutation breeding. *Plant Breeding*. 117:85-87. A.

Velasco L., J.M. Fernández-Martínez and A. de Haro. 1998. Application of Near Infrared reflectance spectroscopy to estimate the bulk density of Ethiopian Mustard seeds. *J. Sci. Food Agric.* 77:312-318. A.

Pérez-Vich, B., R. Garcés and J.M. Fernández-Martínez. 1998. Genetic analysis of high palmitic acid content in sunflower seed oil. p:128-130. In: *Advances in Plant Lipid Research*. J. Sánchez, E. Cerdá-Olmedo and E. Martínez-Force, Editors. Published by University of Sevilla., Sevilla, Spain. I.S.B.N.: 84:472-0481-2. CL

Fernández-Martínez, J.M., B.Perez-Vich and R.Garcés. 1998. Inheritance of high stearic content in the seed oil of sunflower.p: 134-136.In:Advances in Plant Lipid Research.J.Sánchez,E.Cerdá-Olmedo and E.Martínez-Force Editors.Published by University of Sevilla,Sevilla,Spain.I.S.B.N.:84-0481-2.CL.

Velasco L.,B.Perez.Vich and J.M. Fernandez-Martinez. 1998. A rapid and simple approach to identify different sunflower oil types by means of Near-infrared Reflectance Spectroscopy.J.Amer.Oil Soc.75:1883-1888.A.

Velasco, L., J.M.Fernandez-Martinez and A. de Haro. 1999. Intraspecific breeding for reduced glucosinolate content in Ethiopian Mustard (*Brassica carinata* Brown). *Euphytica*. 106(2): 125-130. A.

Sukno,S., J.M.Melero Vara and J.M. Fernandez-Martinez. 1999. Genetic analysis for resistance to *Orobanche cernua* Loeffl) in six lines of cultivated sunflower. *Crop Science* 39(3): 674-678.A.

Sukno, S., J.Ruso, C.C. Jan, J.M. Melero Vara and J.M. Fernandez-Martinez. 1999. Interspecific hybridization between sunflower and wild perennial *Helianthus* species via embryo rescue. *Euphytica* 106(1): 69-78.A.

Velasco,L.,B.Perez Vich and J.M. Fernández-Martínez. 1999. Non-destructive screening for oleic and linoleic acid content in intact single sunflower achenes with Near Infrared Reflectance Spectroscopy.*Crop Science* 39:219-222.A

Perez Vich,B.,J.Fernández,R.Garcés and J.M. Fernández-Martínez. 1999. Inheritance of high palmitic acid content in the seed oil of sunflower mutant CAS-5.*Theoretical and Applied Genetics*.98: 496-501.A.

Perez Vich, B.,R.Garcés and J.M. Fernández-Martínez. 1999. Genetic control of high stearic content in the seed oil of sunflower mutant CAS-3. *Theoretical and Applied Genetics* 99:663-669 A.

Velasco,L. and J.M. Fernández-Martínez. 1999. Screening for low saturated fatty acids in safflower .*Sesame and Safflower Newsletter*.14:92-96.A.

Fernández-Martínez,J.M. 1999. Development of broomrape resistant sunflower germplasm utilizing wild *Helianthus* species. p.143-148. In: Resistance to *Orobanche*: The state of the art.J.I.Cubero, M.T.Moreno,D.Rubiales and J.Sillero,Editors.Published by Junta Andalucia,ISBN 84-898002-51-3.CL.

Velasco, L., B.Perez-Vich and J.M.Fernández-Martinez. 1999. The role of induced mutagenesis in the modification of the fatty acid profile of oilseed crops. *Journal of Applied Genetics*. 40(3):185-209.R.

Pérez Vich, B.,R.Garcés and J.M.Fernández-Martínez. 2000. Epistatic interaction among loci controlling the palmitic and the stearic acid levels in the seed oil of sunflower.*Theoretical and Applied Genetics*.100:105-111.A.

Fernández-Martínez, J.M. ,J.Melero Vara, J.Muñoz Ruz, J.Ruso and J.Domínguez. 2000. Selection of wild and cultivated sunflowers for resistance to a new race of broomrape wich overcomes resistance of the Or5 gene. *Crop Science*.40:550-555.A

Perez-Vich, B., R. Garcés and J. Fernández-Martínez. 2000. Genetic relationship between loci controlling the high stearic and the high oleic traits in sunflower. *Crop Science* 40:990-995.A.

Muñoz-Ruz, J., L. Velasco and J.M. Fernández-Martínez. 2000. Registration of Dwarf safflower genetic stock Enana. *Crop Science*.40: 1207-1208.A.

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Velasco, L. and J.M. Fernández-Martínez. 2000. Tocopherol content and composition in safflower germplasm. *Sesame and Safflower Newsletter*.15: 100-103. A

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Fernández-Martínez, J.M., L. Velasco, M. del Rio, J. Domínguez and A. de Haro. 2001. Registration of Zero Erucic Ethiopian Mustard genetic Stock 25X-1. *Crop Science*. 41:282 A

de Haro A., M. del Rio, L. Velasco, J. Domínguez and J.M. Fernández-Martínez. 2001. Registration of one low, two medium, and one high erucic acid Ethiopian Mustard. *Crop Science*.41:281-282 A.

Perez-Vich, B., R. Garcés and J.M. Fernández-Martínez. 2000. Genetic control of the high saturated fatty acid content in sunflower seed oil. *HELIA*.23: 77-84 R

Melero-Vara, J.M., J. Domínguez and J.M. Fernández-Martínez. 2000. Update on Orobanche situation in Spain: Racial status and sunflower breeding for resistance. *HELIA*: 23:45-46 R

Velasco, L., B. Perez-Vich, J. Muñoz-Ruz and J.M. Fernández-Martínez. 2000. Inheritance of plant height in the dwarf safflower mutant Enana. *Plant Breeding*. 119:525-527.A

Sukno, S., J.M. Fernández-Martínez and J. Melero Vara. 2001. Temperature effects on the disease reactions of sunflower to infection by *Orobanche cernua* Loefl. *Plant Disease* 85:553-556 A.

Velasco, L., J.M. Fernández-Martínez and A. de Haro. 2001. Relationship of test weight and grain quality traits in Ethiopian mustard. *Journal of Plant Genetic and Breeding*.55:91-94 A.

Perez-Vich, B., R. Garcés and J.M. Fernández-Martínez. 2002. Inheritance of high palmitic acid and its relationship with high oleic acid content in the sunflower mutant CAS 12. *Plant Breeding* 121:49-56 A.

Perez-Vich, B., J.M. Fernández-Martínez, S.J. Knapp and S.T. Berry. 2002. QTL and candidate gene mapping for increased levels of stearic and oleic acids in sunflower seed oil. *Theoretical and Applied Genetics*.104: 338-349 A

Perez-Vich, B., R. Garcés and J.M. Fernández-Martínez. 2002. Inheritance of medium stearic acid content in the seed oil of sunflower mutant CAS-4. *Crop Science*. 42:425-429.A

- Perez-Vich, B., J.M.Fernández-Martínez, M.Grondona, S.J.Knapp and S.T.Berry. 2002. Stearoyl-ACP and oleoyl-PC desaturase genes cosegregate with quantitative trait loci underlying stearic and oleic acid mutant phenotypes in sunflower. *Theoretical and Applied Genetics*.104: 338-349. A
- Velasco L. and J.M.Fernández-Martínez. 2002. Breeding oil seeds crops for improved oil quality. *Journal of Crop Production*. 5:309-344.A
- Pérez Vich, B., B. Akhtouch, J.Muñoz-Ruz, J.M.Fernández-Martínez and C.C. Jan. 2002. Inheritance of resistance to the highly virulent race "F" of *Orobanche cumana* Wallr.in a sunflower line derived from interspecific amphiploids *HELIA* 25(36):137-144.A
- Jan, C.C.and J.M. Fernández Martínez. 2002. Interspecific hybridization, gene transfer, and the development of resistance to the broomrape race F in Spain.*HELIA*. 25(36):123-136.A
- Akhtouch,B., J.Muñoz-Ruz,J.Melero-Vara, J.Fernandez-Martínez and J. Domínguez. 2002. Inheritance of resistance to race F of broomrape (*Orobanche cumana* Wallr) in sunflower lines of different origin. *Plant Breeding* .121:266-269.A
- Jan, C.C., J.M.Fernández-Martínez, J.Ruso and J.Muñoz-Ruz. 2002. Registration of four sunflower germplasm populations resistant to broomrape race F. *Crop Science*. 42:2217-2218.
- Velasco, L., J.M.Fernández-Martínez and A. de Haro. 2002. Inheritance of reduced linolenic acid content in the Ethiopian mustard mutant N2-4961.*Plant Breeding*.121: 263:265.A
- Velasco, L. and J.M.Fernández-Martínez. 2002. Progress in breeding for modified tocopherol content and composition in safflower. *Sesame and Safflower Newsletter*. 17: 98-102.A
- Velasco, L., J.M.Fernández-Martínez, R. García-Ruiz and J.Domínguez. 2002. Genetic and environmental variation for tocopherol content and composition in sunflower commercial hybrids. *Journal of Agric. Science*. 139:425-429.A
- Velasco, L., J.M.Fernández-Martínez and A. de Haro. 2003. Inheritance of increased oleic acid concentration in high-erucic acid Ethiopian mustard. *Crop Science*. 41: 106-109.A
- Velasco, L., J. Dominguez,J. Muñoz Ruz, B.Perez Vich and J.M.Fernández-Martínez. 2003. Registration of "Dw89" and "Dw 271 Parental Lines of Sunflower. *Crop Science* 43. 1140-1141. A
- del Rio, M.,A.de Haro and J.M. Fernández-Martínez. 2003. Transgressive segregation of erucic acid content in *Brassica carinata* A. Braun.*Theoretical and Applied Genetics* . 107: 643-651.A
- Velasco, L., A.Nabloussi, A.de Haro and J.M.Fernández-Martínez. 2003. Development and genetic characterization of High-Oleic, Low Linolenic acid Ethiopian mustard Germplasm. *Theoretical and Applied Genetics*. 107:823-830.A
- Font, R., M. del Rio, J.M. Fernández-Martínez and A. de Haro.2003. Acid detergent fiber analysis in oilseed Brassicas by Near-Infrared Spectroscopy. *J.Agric. Food Chem*. 51 :2917-2922.A