

WheatBiotech Project: A biotechnological network to improve competitiveness and sustainability in the Argentinean wheat chain

Helguera Marcelo¹, Tranquilli Gabriela², Pflüger Laura³, Sacco Francisco⁶, Saione Héctor⁶, Dieguez María José⁶, Díaz-Paleo Antonio⁶, Lewi Dalia⁶, del Vas Mariana⁷, Vanzetti Leonardo¹, Truol Graciela⁹, López Lambertini Paola⁹, Bainotti Carlos¹, Jensen Carlos⁸, Carrera Alicia², Cervigni Gerardo², Roncallo Pablo², Farnochi Cecilia³, Miralles Daniel⁴, Benech-Arnold Roberto⁴, Abeledo Gabriela⁴, Appendino María Laura⁴, Echenique Viviana²

1 INTA EEA Marcos Juárez Ruta 12 Km 3 2580 Marcos Juárez Argentina, 2 CERZOS (CONICET) y Departamento de Agronomía, Universidad Nacional del Sur San Andrés 800 8000 Bahía Blanca Argentina, 3 Universidad Nacional de Río Cuarto (UNRC) Ruta Nacional 36 Km. 601 X5804BYA Río Cuarto Argentina, 4 Facultad de Agronomía, Universidad Nacional de Buenos Aires (FAUBA) Av. San Martín 4453 C1417DSE Ciudad De Buenos Aires Argentina, 5 Instituto de Recursos Biológicos INTA Las Cabañas y Los Reseros 1686 Hurlingham Argentina, 6 Instituto de Genética INTA CC25 1712 Castelar Argentina, 7 Instituto de Biotecnología INTA Dr. N. Repetto y de los Reseros 1712 Castelar Argentina, 8 Chacra Experimental Integrada Barrow INTA Ruta Nac. N° 3 Km 487 7500 Tres Arroyos Argentina, 9 IFFIVE INTA Camino 60 Cuadras, Km 5 5000 Córdoba Argentina

INTRODUCTION

Historically wheat has been one of the most important cereals in the Argentinean crops system. However, during the latest years the increase of commodities has been performed through the substitution of cereal crops (including wheat) by oleaginous crops like soybean. Such a substitution process has increased the incomes by hectares of farmers with a reduction of carbon content in soil. Extending this process in time will probably affect negatively wheat production and the sustainability of the productive environment. Under this scenario, the introduction of wheat as carbon donor in the crop rotation is critical. To get that, wheat has to be a more competitive crop in terms of yield and end-use quality. Currently, commercial wheat cultivars are developed by traditional breeding and recent advances in the fields of molecular biology, genomics, gene discovery and transformation in cereals have not been widely explored in breeding programs. All these circumstances prompted the creation of the WheatBiotech Project (WB) during 2008.

GOALS AND STRATEGY

WB is a network of research groups with expertise in DNA based technologies (genomics, molecular markers, transformation, VIGS), ecophysiology, end-use quality and phytopathology designed to develop and transfer technology to Argentinean seed companies, promoting a fluid communication between public and private sectors. The final goal of WB is to exploit biotechnological tools to improve the competitiveness and sustainability of the Argentinean wheat chain.

SPECIFIC OBJECTIVES

- (1) to characterize, evaluate and develop germplasm with increased disease resistance, yield, adaptability and end-use quality.
- (2) To develop molecular markers to introgress new traits into adapted germplasm by MAS.
- (3) To stimulate the adoption of MAS as a routine tool in breeding programs.
- (4) To develop protocols for transformation, VIGS and TILLING.
- (5) To create a web site to publicly display main activities and products.
- (6) To train students at different levels: MSc, PhD, short visits.
- (7) To promote the active interaction between different sectors of wheat chain (farmers, breeders, industry, scientists) through the organization of workshops and seminars.

WB is developed by 12 partners including 7 private breeding companies from Argentina and it has been funded (formerly as PAE37108) for 4 years starting in october 2008.

visit the WB webpage at www.criba.edu.ar/pae/

