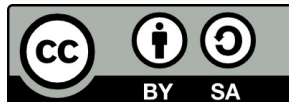


Physiological traits associated with recent advances in yield of Chinese wheat

Bangwei Zhou



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Physiological traits associated with recent advances in yield of Chinese wheat

(Rasgos fisiológicos asociados con los recientes avances en el rendimiento del trigo chino)

Memoria presentada por **Bangwei Zhou** para optar al título de Doctor por la Universitat de Barcelona. Este trabajo se enmarca dentro del programa de doctorado de Biología Vegetal de la Facultad de Biología de la Universitat de Barcelona. Este trabajo se ha realizado en el Departamento de Biología Vegetal de la Facultad de Biología de la Universitat de Barcelona bajo la dirección del Dr. **Josep Lluís Araus Ortega** y la Dra. **M. Dolors Serret Molins**.

Doctorando
Bangwei Zhou

Directores de Tesis
Dr. José Luis Araus Ortega and Dra. M. Dolors Serret Molins

OBJECTIVE

Objectives

The general objective of this thesis was to study the physiological and agronomical characteristics of wheat genotypes from Henan Province released during recent decades.

The specific objectives were to:

- I. Determine the combination of agronomic and physiological traits that contributed to raising the yield potential of winter wheats released from China's Henan Province during recent decades (Chapter 2).
- II. Evaluate the agronomical and physiological traits involved in the performance of these genotypes under the suboptimal conditions characteristic of the Mediterranean irrigated conditions of Spain (Chapter 3).
- III. Determine the role of the ear and the flag leaf as major contributors to C and N accumulation in kernels during the reproductive stage, and to evaluate the contribution of N assimilated at pre-anthesis to grain filling (Chapter 4).
- IV. Assess the potential use of digital RGB images as a low-cost and high-throughput approach to determine wheat genotypic tolerance to yellow rust under field conditions. (Chapter 5).

The present thesis is divided into six chapters. These chapters include the general introduction (chapter 1), four experimental research articles (Chapters 2, 3, 4 and 5) and a global discussion followed by the conclusions of the whole thesis (chapter 6). Each experimental chapter is based on a paper already published (Chapter 1) and three under evaluation (3 papers) to different SCI journals (Chapters 3, 4 and 5).

