

Le Corps professoral de
Gembloux Agro-Bio Tech - Université de Liège vous prie
de lui faire l'honneur d'assister à la défense publique de la dissertation originale que

Madame RONG Wei,

Titulaire d'un diplôme de *master of science in the speciality of genetics,*

présentera en vue de l'obtention du grade et du diplôme de

DOCTEUR EN SCIENCES AGRONOMIQUES ET INGENIERIE BIOLOGIQUE,
le 20 septembre 2018, à 10h30 précises (personne ne sera admis après cette heure),
en l'auditorium PhV (Physiologie Végétale, bât. 48),
Avenue Maréchal Juin à 5030 GEMBLoux.

Cette dissertation originale a pour titre :

« Transcriptome Analysis of the Interaction Mechanisms between Barley Yellow
Dwarf Virus and two Wheat Cultivars ».

Le jury est composé comme suit :

Président : Prof. B. BODSON, Professeur ordinaire,

Membres : Prof. S. MASSART (Promoteur), Prof. Z. ZHANG (Promoteur - CAAS, Chine), Prof.
H. VANDERSCHUREN (Copromoteur), Prof. F. FRANCIS, Prof. X. WEI (CAAS, Chine), Prof.
X. YE (CAAS, Chine).

Summary

Common wheat (*Triticum aestivum* L.), which is one of the most important staple food cultivated around the world, its production is essential for global food security. However, barely yellow dwarf virus (BYDV), as a visual disease affecting cereal crops (including wheat) and grasses worldwide.

According to the specificity of their aphid vectors and sequences of the virus, BYDVs has been divided into ten distinct species, including BYDV-PAV, PAS, MAV, kerII, kerIII, RPV, RPS, RMV, GPV, and SGV. Among them, BYDV-GAV is the predominant strain of wheat YDV throughout the northern and northwestern regions of China. Infection of BYDVs results in wheat showing the symptoms of leaf yellowing and plant dwarfism and leading to yield loss ultimately.

To date, no effective BYDV-resistance genes have been identified in the primary or secondary gene pools of wheat, only several groups have been identified more than ten resistant wild relatives in the tertiary gene pool like *Thinopyrum intermedium*, which possesses resistance to BYDV. Moreover, the mechanism underlying the yellow dwarf symptom formation in BYDV-susceptible wheat cultivars have not been reported yet.

In recent years, microarray technology has been used to investigate seedling defense mechanisms in plants and the mechanism underlying leaf yellowing symptom caused by different virus infections. Moreover, Affymetrix GeneChip Wheat Genome Array represents over 55,000 wheat transcripts from all chromosomes and ancestral genomes. By analyzing the transcriptome data we built, we get better understanding on both BYDV-resistant mechanism and YDV symptom formation mechanisms.