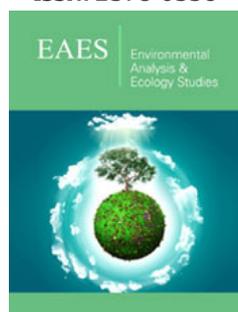


# The control of Wheat Crown Rot Based on Management of Wheat Straw in Huang-Huai-Hai Winter Wheat Region of China

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## Opinion

The Huang-Huai-Hai Plain is one of China's predominant production regions for winter wheat, accounting for about 75% of total winter wheat production in the country (China Statistical Yearbook 2020). However, Fusarium crown rot (FCR) of wheat (*Triticum aestivum* L.), caused by several Fusarium spp. including *Fusarium graminearum*, *F. culmorum*, *F. pseudograminearum*, has become an important threat to wheat in this region [1]. The outbreak of FCR lead about 8% yield losses and also lead to potential threat of mycotoxin contamination.

Different strategies have been suggested for management of FCR [2]. Use of clean seed, fungicide seed treatments, adjusting the date of seeding, proper fertilization, deep tillage to hasten infected residue decomposition, crop rotations avoiding other host crops, and planting resistance cultivars. But in Huang-Huai-Hai winter wheat region, there are no high resistant cultivar. The using of fungicide may lead environmental pollution and pathogens resistance to the chemical pesticides.

FCR is a severe soil-borne disease, in Huang-Huai-Hai Plain more and more farmers embrace straw returning, There were increasing amounts of crop residues on the soil surface. At the same time, rotary tillage is the main tillage method in straw returning, leading increase the amount of inoculum survival in crop residues, caused the disease outbreak.

In order to manage FCR and promoting sustainability and productivity with wheat. Separation of infected and physically residues from the healthy ones is an efficient and feasible method of management.

First, popularize and apply deep tillage. At present, rotary tillage is the main tillage method in straw returning wheat area of Huang-Huai-Hai winter wheat region, rotary tillage straw return leads to a large number of straw fragments accumulated in the ploughing layers and a high proportion of straws are still left over the field surface. In the wheat and corn continuous plant, the disease index of FCR in corn straw returning field was higher than that in field without corn straw returning. Deep tillage treatment may decrease pathogens amount, improved the abundance and uniformity of microorganism in soil.

Second, the multiple usage of wheat straw. Straw as one of the largest agricultural biowastes and with great potential value. Straw is a potential alternative precursor of activated carbon [3]. Straw can be used as biomass fuel due to their low cost and the ability

to avoid environmental pollution by incineration or Transforming straws into a novel type of soil amendment/additive [4].

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