# Protecting vital crops in China

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Evidence of disease in oilseed rape crops across China and how it may spread has been mapped by researchers led by the University of Hertfordshire - providing new strategic information on crop protection to the Chinese government.

Oilseed rape is prone to phoma stem canker, also known as blackleg disease, caused by two *Leptosphaeria* species. The more damaging pathogen *Leptosphaeria maculans (L. maculans)* has been spreading globally in oilseed rape crops over the last thirty years causing widespread losses with serious economic consequences. In China, phoma stem canker on oilseed rape has not generally been a serious problem because only the less damaging *Leptosphaeria biglobosa (L. biglobosa)* has been found there. However, as China began to import millions of tons of oilseed rape to crush for cooking oil, the route opened for *L.maculans* to spread via contaminated seed between countries. This put China, the world's biggest producer of rapeseed, at risk of this highly infectious crop pathogen.

Bruce Fitt, professor of plant pathology at the University of Hertfordshire, said: "Phoma stem canker is responsible for losses worth more than £1,200 million in oilseed rape crops across the world. Given the fragile state of the world's economy and concern over food shortages, we need to protect our arable crops from disease. In China this is of particular concern as food supplies are already tight for their population of 1.35 billion people – the largest population in the world. Ensuring that they have enough food is one of the most important goals for the Chinese government."

A widespread survey, by Chinese collaborators of winter oilseed rape crops in central China and spring oilseed crops in north China, found no evidence of *L. maculans.* However, the survey did confirm that the less damaging *L. biglobosa* is widespread across China – and in other countries this has shown to be a precursor to the spread of the more destructive *L. maculans*.

The researchers modelled the potential spread of the destructive *L. maculans* pathogen across the oilseed rape crops in China - with predicted rates of spread of up to seventy kilometers per year and having a devastating effect on oilseed rape production.

Professor Fitt continued: "Reducing the risk of phoma stem canker in oilseed rape crops in China is a priority for Chinese government and industry. There is a pressing need to decrease the amounts of crop debris, a potent source of pathogen inoculum, in seed imports. And a number of the recommendations about preventing severe epidemics of phoma stem canker have already been taken up."

Short term strategies for the Chinese government include training farmers to recognise the symptoms of the disease, to import oilseed rape through Chinese ports in regions where little oilseed rape is grown, to test for the pathogen on imported seed, and importing rapeseed oil rather than importing the seed and crushing this locally. Longer-term strategies focus on introducing genes to the Chinese oilseed rape plants to build disease resistance.

**More information:** X. Zhang, R. P. White, E. Demir, M. Jedryczka, R. M. Lange, M. Islam, Z. Q. Li, Y. J. Huang, A. M. Hall, G. Zhou, Z. Wang, X. Cai, P. Skelsey, B. D. L. Fitt, Leptosphaeria spp., phoma stem canker and potential spread of L. maculans on oilseed rape crops in China, *Plant Pathology*. DOI: 10.1111/ppa.12146

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