

# #085

## The amount of *Leptosphaeria maculans*-contaminated dockage in canola seed shipments is not related to blackleg disease transmission in seed spillage piles.

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Canola shipments contain contaminating materials known as dockage. Chinese regulators perceive dockage to be a means of introduction of Blackleg disease into China, because *Leptosphaeria maculans* (Lm) infrequently colonizes some dockage constituents. Two decades of Canadian exports to China with maximum 2.5% (w/w) dockage have not resulted in any Lm introductions. Nevertheless, Chinese regulators have proposed that allowable dockage in canola exported to China be reduced to decrease the risk of introduction. This study's purpose was to determine whether such a reduction would effectively reduce this risk.

In a series of growth chamber bioassays, *Brassica napus* cv Westar seedlings were forced to grow through ground, sterilized canola stem material diluted with various amounts of dockage from Canadian port facilities, mimicking dockage in spillage piles. Blackleg incidence among seedlings was determined for each dockage dilution, and Lm confirmed in dockage and plants by reisolation and qPCR. Fungal diversity in dockage microbiota was characterized by metagenomic analysis using high-throughput Sanger sequencing of ITS.

Disease transmission among 80 separate port samples ranged from 4 – 80% incidence, showing that infestation levels vary between canola seed shipments. Reducing dockage content from 2.5 to 1% significantly reduced disease transmission in only 6% of these 80 samples. Across several experiments, disease transmission was very low or absent at commercially relevant dockage levels; e.g. in one experiment, none of the seedlings exposed to 0.1 – 5% dockage developed symptoms. Bioassays typically failed to detect correlation between Lm DNA content of the inocula and blackleg incidence in assayed seedlings, suggesting that Lm DNA concentration in dockage is not a good predictor of disease transmission risk. Recovery of Lm DNA from seedlings and incidence of blackleg symptoms were also not related ( $r=-0.0758$ ,  $p=0.825$ ). Of the 122 species identified in port-position dockage, *Chalastospora gossypii*, Tremellales order, and *Fusarium* spp. were the most abundant identifiable taxa (39,936, 28,168, and 26,168 raw ITS sequence reads, respectively) while *Leptosphaeria maculans* (126 reads) was only a minor microflora component. Reducing allowable dockage content would result in an insignificant decrease in the absolute amount of Lm in canola shipments.

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