

# ONION NECK ROT - SEED INFECTION AND PATHOGENS

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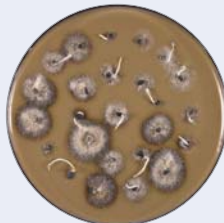
## Background

- Neck rot causes significant losses in stored onions with infection levels as high as 48% reported.
- It can be caused by several species of *Botrytis*: *B. aclada*, *B. allii* and *B. byssoidea*.
- *B. byssoidea* is thought to be less important.
- Prior to 2003, *B. allii* and *aclada* were lumped together as one species (*B. allii*), so most previous work does not discriminate between the two species.
- The pathogens can be seed-borne, so using clean seed and/or seed treatment with fungicides has been important for its control.
- In 2015 AHDB-Horticulture commissioned Plant Health Solutions to examine the prevalence of the different pathogens in commercial onion seed in the UK.

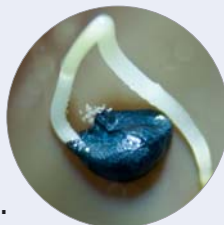


## Seed testing

- Thirty bulb onion seed lots from six companies, including all of the most popular varieties, were tested.
- Seed was untreated, or treated with a range of standard commercial fungicides.
- Seeds were plated directly on a semi-selective agar medium.
- Fungicide treated seed was tested after 'washing' for 10 min.
- Neck rot was detected in eight (27%) of the seed lots.
- Six of the positive seed lots had been treated/washed (inf. levels 0.25 to 33%).
- Two of the positive lots were untreated (inf. levels 2 and 59%).



*B. allii/aclada* growing out of infested onion seeds.



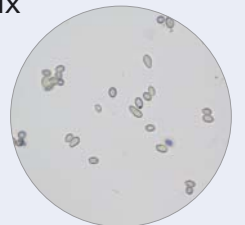
Close-up of *B. allii/aclada* growing out of treated/washed onion seed.

## Species Identification

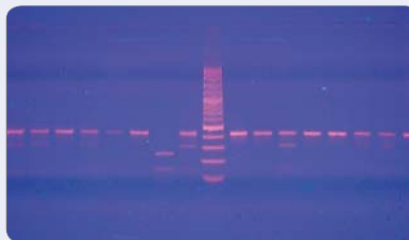
- Neck rot isolates were sub-cultured from individual seeds, spore size measured, and tested by PCR/digestion.
- Results from the different methods were in agreement and further supported by sequencing data.
- *B. aclada* was detected in six seed lots.
- *B. allii* was detected in six seed lots.
- Both species were detected in four seed lots.



*B. allii* produces larger conidia...



*B. aclada* produces smaller conidia...



A 423-bp DNA fragment was amplified and then digested with an enzyme (ApoI).

## Conclusions

- The majority of onion seed lots appeared to be free from the neck rot pathogens.
- Both *B. aclada* and *B. allii* are present in commercial UK seed lots.
- There seems to be little difference in the prevalence of the two species.
- Fungicide treatments should not be relied upon to eliminate neck rot.



**PLANT HEALTH SOLUTIONS**



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