

Grower Summary

TF 216

Evaluation of products for
control of *Neonectria ditissima*
on apples

Annual 2015

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Use of pesticides

Only officially approved pesticides may be used in the UK. Approvals are normally granted only in relation to individual products and for specified uses. It is an offence to use non-approved products or to use approved products in a manner that does not comply with the statutory conditions of use, except where the crop or situation is the subject of an off-label extension of use.

Before using all pesticides check the approval status and conditions of use.

Read the label before use: use pesticides safely.

Further information

If you would like a copy of this report, please email the AHDB Horticulture office (hort.info@ahdb.org.uk), quoting your AHDB Horticulture number, alternatively contact AHDB Horticulture at the address below.

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Project Number: TF 216

Project Title: Evaluation of products for control of *Neonectria ditissima* on apples

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GROWER SUMMARY

Headline

- Syllit 400SC (dodine) and two experimental fungicides reduced *Neonectria* fruit rot by around 50% when applied as two sprays at petal fall and two pre-harvest.

Background and expected deliverables

Canker, caused by the fungus *Nectria galligena* (now renamed as *Neonectria ditissima*), is one of the most important diseases of apple and pear. Most of the established apple cultivars are very susceptible to the disease and the more recently introduced cultivars such as Jazz, Braeburn, Reubens, Cameo, Kanzi and Zari are also particularly susceptible. The fungus attacks trees in the orchard, causing cankers and die back of young shoots, resulting in loss of fruiting wood and increasing pruning costs. Apple canker can be particularly damaging in young orchards where, in some years, up to 10% of trees can be lost annually in the first few years of orchard establishment, as a result of trunk cankers, particularly following exceptionally wet or cold winters. *N ditissima* also causes a fruit rot that can result in significant losses as high as 10% or more in stored fruit. *Neonectria* rot, which is often at the fruit stalk end, is also difficult to spot on the grading line, but becomes obvious during marketing leading to rejection of fruit consignments.

In 2013 the incidence of canker in apple orchards was exceptionally high as a result of wet weather during leaf fall in 2011 and 2012 and above average rainfall in spring and summer 2012. Of particular significance was the high incidence of trees with systemic canker in young orchards which is most likely to have arisen from the tree nursery. This is especially important given that many growers are investing in new orchards with cultivars that are particularly susceptible and / or sensitive to canker so the problem will only get worse.

Much is known about the epidemiology of apple canker but there are still significant gaps in knowledge which will require long term research and are now being addressed in the new AHDB Horticulture project TF223 (*Integrated pest management of tree fruit pests and diseases*) which started in April 2015. However, in the short term, control of the cankers and fruit rot is still very dependent on fungicide sprays and, even when new approaches are developed and implemented, it is likely that fungicides will still play an important role in the integrated approach.

Canker is controlled in commercial farms by a combination of cultural methods to remove canker lesions and the use of protectant fungicides. Effective fungicides are currently limited. Generally, copper fungicides are used at autumn leaf fall and before budburst to protect leaf scars and bud-scale scars. Previously, products based on carbendazim were applied during the spring and summer to prevent tree and fruit infection in this period. These products are no longer approved for use. In AHDB Horticulture project TF144, potential alternative fungicides were evaluated for canker control and tebuconazole (Folicur) was identified as a possible alternative product and now has an EAMU (0115/2015) for use post-harvest during leaf fall. However, products effective against *N. ditissima* that can be used in the growing season are limited. There is now a range of fungicides from new chemical groups (SDHI group), foliar nutrients and fortifying products and biocontrol agents that could potentially be active against *N. ditissima* which are worth evaluating.

Summary of the project and main conclusions

In this project experimental fungicides, alternative chemicals and a biocontrol agent were evaluated for their efficacy in controlling *Neonectria* canker and fruit rot. Two separate trials were conducted on cv. Gala at East Malling Research in 2014.

In the fruit rot trial, six experimental fungicides, Syllit 400SC (dodine), two alternative chemicals and the biocontrol agent Serenade ASO (*Bacillus subtilis*) were compared to Bellis (pyraclostrobin + boscalid) and an untreated control for control of *Neonectria* fruit rot. Fungicides were applied twice at petal fall and twice pre-harvest, while the other products were applied every two weeks from petal fall. Fruit was harvested in September and cold-stored in controlled atmosphere conditions until March when fruit rot incidence was assessed.

Weather conditions at petal fall and pre-harvest were favourable for infection of fruit by *N. ditissima* with around 10% fruit rot in untreated plots. Two experimental products HDC F115 and HDC F119 and one existing registered product Syllit 400SC significantly reduced *Neonectria* fruit rot by up to 50%. Treatments HDC F120, CuPC33 and 42Phi Cu showed reductions in rot incidence but were not statistically significant. Treatments HDC F115, Syllit 400SC and HDC F120 also significantly reduced the incidence of brown rot. The incidence of fruit scab was significantly less on fruit treated with HDC F115, HDC F118, HDC F119, Syllit 400SC, HDC F120, HDC F121 and CuPC33 compared to the untreated control. Syllit 400SC was significantly better than all other treatments.

In the canker control trial similar products were evaluated with Folicur (tebuconazole) included as the standard. Products were applied four times at 10%, 50%, 90% and 100% leaf fall. The trial will be assessed for leaf scar cankers in June. In a separate study, sodium hypochlorite (14% chlorine) was compared to Folicur (tebuconazole) and an untreated control for its ability to suppress *N. ditissima* cankers on apple trees when applied as a drenching spray. The efficacy of the treatments was assessed by collecting canker washings and checking them under the microscope for *N. ditissima* spores. The trial was set up in January 2015. Unfortunately, none of the cankers targeted produced any spores, even the untreated ones. It appeared that many of the cankers had become inactive following prolonged dry weather at this time. The trial will be repeated in December 2015.

Financial benefits

Many new orchards are planted as intensive fruit wall systems (c. 3000 trees/ha) to maximise yield and quality and simplify management and harvesting. Establishment costs are expensive at £7/tree or £21,000/ha, so tree losses in the early years of the orchard can be particularly damaging financially. *N. ditissima* also causes a fruit rot that can result in significant losses as high as 10% or more in stored fruit. Rots often occur in the stalk end of the fruit and are difficult to detect during fruit grading and subsequently develop during marketing leading to the rejection of fruit consignments. Orchards receive routine sprays of fungicides pre and post-harvest to protect trees and fruit from *Neonectria* fungal infection at an average annual cost of around £700/ha. Effective products available for use in the growing season are limited. This project is not going to solve the 'canker problem' completely but will identify new products that could be used in the growing season to protect fruit and the tree from *Neonectria* infection. This should result in better control of the disease and reduction in losses in the orchard and in store and contribute to the wider research on canker undertaken as part of the new AHDB Horticulture tree fruit project.

The information generated from the project will be delivered to the industry through AHDB grower and through joint EMRA / AHDB Horticulture grower days. In addition there may be opportunities to view trials. If appropriate, EAMUs would be sought for effective products identified.

Action points for growers

- This project has identified potential fungicide products that could be used to control *Neonectria* fruit rot.
- However, two of the products are experimental and will require registration or EAMUs before they can be used in practice.
- The third product Syllit is registered for use on apples and pears but for dessert apples only pre-blossom and for culinary apples up to July.