

Objectives and Rationale

Wounds made when rootstock shoots are pruned back on nursery trees can get infected by canker and wood rot pathogens. These infections can develop into cankers causing dieback of young apple trees. Alternatives to current wound protectants need to be investigated to improve the protection provided on these wounds.

Methods

The evaluation of fungicides for their efficacy towards mycelial growth inhibition of three canker pathogens and one wood rot pathogen were done. The second season of the field trials and artificial inoculation trials were conducted. Field trials assessed 12 pruning wound products on three rootstock varieties (M793, MM109 and CG202) inoculated with Granny Smith in two nurseries. Potted M793 plants were used to evaluate the same pruning wound treatments protectively and curatively on rootstock wounds exposed to artificial inoculum of *Diplodia seriata*.

Key Results

The EC₅₀ ranges of imazalil were determined for isolates of *Diaporthe eres* (B), *Didymosphaeria rubi-ulmifolii*, *Diplodia seriata* and *Trametes versicolor*. Even though in vitro inhibition were found towards imazalil, did this fungicide not inhibit infections of *Diplodia seriata* on apple pruning wounds.

The second season evaluating pruning wound treatments when challenged with *Diplodia seriata* conidia were completed. The protectant trials clearly showed that carbendazim and MT1+ carbendazim are effective to protect the pruning wounds (no pathogen could be re-isolated from these wounds). ABE Tree Seal and prochloraz were also very effective in preventing infection and to a lesser extent Neocil-plus.

The curative trials showed that only carbendazim and MT1+ carbendazim was effective to inhibit the colonisation of the pathogen in the pruned wound. The three wound sealants all had pathogen infection levels equal to the water application. The results clearly demonstrates the negative effect of applying a pruning wound sealant such as ABE Tree Seal a few days after pruning.

Conclusion and Discussion

The results from the artificial inoculation trials have shown that good fungicide candidates for pruning wound protection are carbendazim and prochloraz. ABE Tree Seal performed the best of the different pruning wound sealants. It is clear that when using pruning wound protectants that they need to be applied shortly after the pruning wound was made.