

# The effect of mandipropamid on infection of potato leaves by *Phytophthora infestans*: an SEM study

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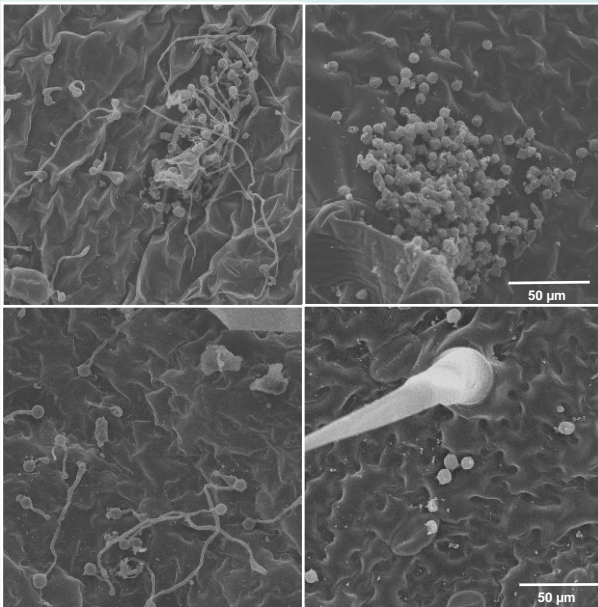
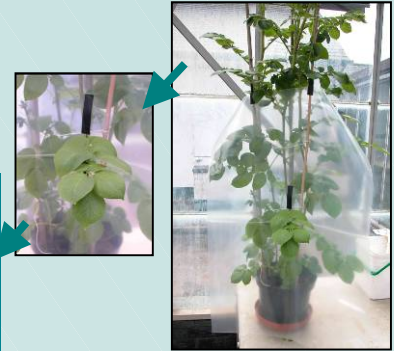
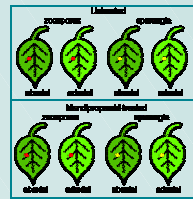
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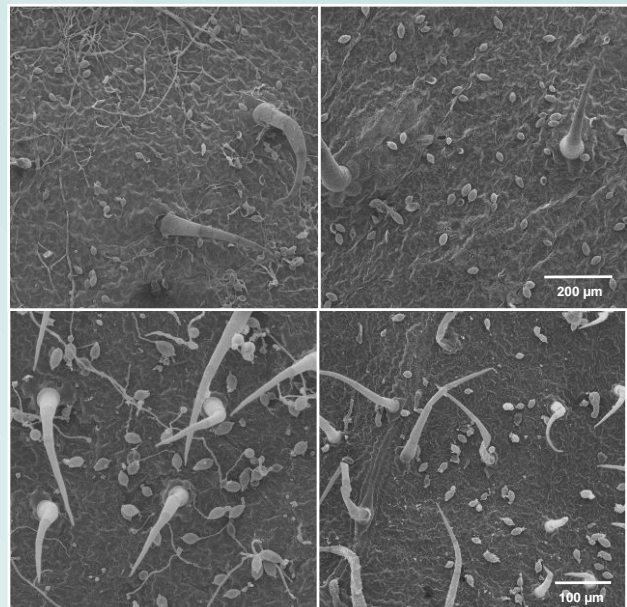
Mandipropamid is a new Syngenta fungicide specifically active against oomycetes, which is believed to inhibit cell wall assembly. After foliar application, mandipropamid binds to leaf surface wax and moves into plant tissue. Its activity against *Phytophthora infestans* on potato leaves was studied using scanning electron microscopy.

Samples were prepared as follows:

- Glasshouse-grown potato plants cv. Up-to-date (8 wk-old, c. 1 m tall)
- Attached leaflets individually sprayed with mandipropamid (100 mg/l) or water
- 24 h later, leaflets excised, placed in humid boxes abaxial or adaxial side up
- Each leaflet inoculated with 20  $\mu$ l zoospore or sporangial suspension of known *P. infestans* genotype
- Zoospore-inoculated leaflets incubated at 15°C, 24 h  
Sporangia-inoculated leaflets incubated at 22°C, 48 h
- Samples chemically fixed, serially dehydrated in ethanol, critical point dried and sputter-coated with platinum
- Viewed on a FEI Quanta 200 Scanning Electron Microscope

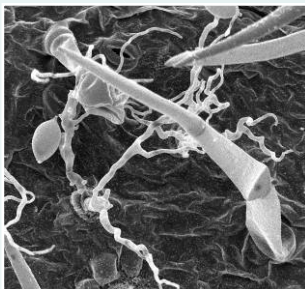


Zoospore inoculation, untreated (left) and mandipropamid-treated (right), 24 h after inoculation, adaxial (above) and abaxial (below) surfaces

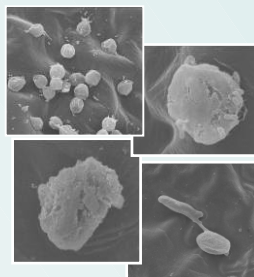


Sporangial inoculation, untreated (left) and mandipropamid-treated (right), 48 h after inoculation, adaxial (above) and abaxial (below) surfaces

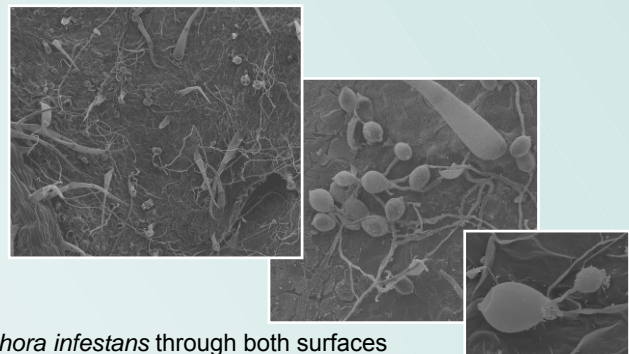
Untreated, 120 h after inoculation, sporangiophores emerging through stomata on abaxial surface



Effects of mandipropamid treatment on zoospores, 24 h after inoculation



Translaminar test: mandipropamid applied to adaxial surface only, abaxial surface inoculated with sporangia 24 h later. After 48 h, sporangia are germinating: inhibition occurs post-penetration



## Conclusions

- Mandipropamid inhibits infection of potato leaves by *Phytophthora infestans* through both surfaces
- Where mandipropamid is present on the surface, germination of zoospores and sporangia is prevented
- Zoospores fail to develop walls during encystment and disintegrate, sporangia fail to germinate
- In translaminar activity, mandipropamid causes inhibition post-infection

## Acknowledgements

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