MELPAT INTERNATIONAL PTY. LTD.
ABN 18 066 067 507

Tech Note

Sulphur Products - How do they work?

Background:
Sulfur has unquestionably been one of the most important and certainly one of the earliest fungicides ever used.

Development of the first fungicides was as a result of good observations rather than intent. One of the first fungicides was sea water. Wheat salvaged from the sea had little fungal infection. The observation dates back to the 17th Century.

Vines treated with Copper Sulphate for Powdery Mildew dates back to the 18th Century.

Sulfur usages as dust dates back to 1824.

Mode of Action:
Despite sulfur usage now dating back some 180 years the mode of action remains unclear. What is known is that particle size influences several aspects of both fungicidal activity, application and crop safety.

For optimal disease & pest control, sulphur products require a range of particle sizes.

Small particles are more volatile, and result in quick vapour release. As such they have an immediate effect. High temperatures will cause volatalisation, and this is compounded with conditions of high humidity, which can then lead to crop damage.

Particles below 0.5microns are extremely volatile and are the main culprits of sulphur burn or crop effect.

Volatile agent or gaseous sulfur is produced when the sulfur particles is subjected to heat. There is some debate as to whether vapour inhibits spore germination. Some researchers state a categorical “yes” other are equally emphatical and state a “no”. There tends to be more reference to vapour not having any effect on the

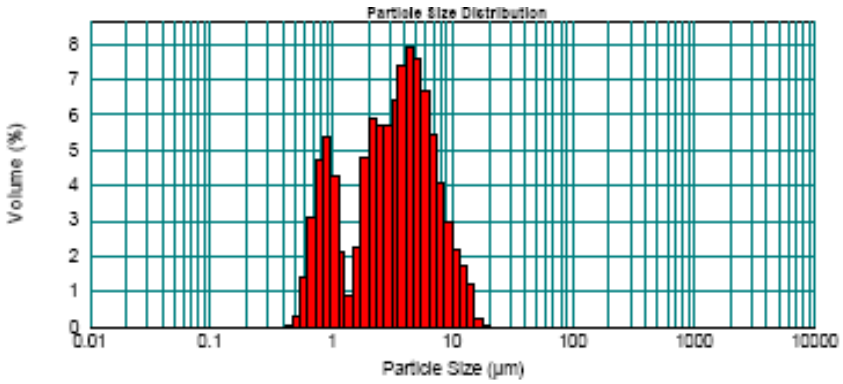
Phone: (08) 9312 3200
Mobile: 0402 310 854
Facsimile: (08) 9312 3233
Email: melpat@melpat.com.au
Website: www.melpat.com.au
4/22 Parry Avenue
Bateman
Western Australia
6150

Actual contact of the sulfur particle with the fungus is necessary before fungicidal action can occur.

Larger particles are less volatile and are released more slowly, therefore making them effective over a longer period. Particles above 40-60microns are undesirable and can lead to blockages.

We have tested a range of sulphur products that are available in the local market, and can confirm that there is a range of different qualities available.

The Particle Size Analysis for Microsul® WG Elite is as follows:



The particle size range of Microsul® WG Elite is ideal in that there are minimal “fines” (i.e. particles below 0.5microns) and also no particles large enough to block jets.

Brands containing reduced fines should be favoured over those with a higher concentration of these potentially damaging components.

Products such as sulfur and copper belong to Group M1 and M2 (respectively), and have Multisite Activity. That is that they interfere with several of the (fungus) vital life functions. For this reason resistance is less likely to develop. Group C for example has single site activity and for this reason resistance can develop readily. Disrupt the structure or physiology of the fungus.

For this reason we recommend that you consult the Croplife Resistance strategy for effective disease management.