TECHNICAL NOTES FOR

SUBDUE - QUESTIONS AND ANSWERS

SUBDUE is a systemic fungicide for the control of *Pythium* spp. & *Phytophthora* spp. root rots in outdoor and protected ornamental crops and flower bulbs.

THE CHEMICAL

WHAT IS THE ACTIVE INGREDIENT IN SUBDUE AND HOW DOES IT WORK?

The common name of the active is metalaxyl-M (mefenoxam is the name trademarked by Syngenta). It is water-soluble so when applied to the growing media it readily moves through into the root zone. It is rapidly taken up by roots and is transported upwards within the plant. It is active both within the media and the roots preventing fungal development.

WHAT ARE THE MAIN FACTORS THAT INFLUENCE THE PERSISTENCE/ EFFICACY OF THE ACTIVE INGREDIENT?

Moisture content, humidity and leaching are critical factors. Care should be taken to avoid leaching by not over-watering the growing media after application of SUBDUE. The active ingredient is not broken down by light when in water or on the media surface.

WHAT IS THE EFFECT OF pH OF WATER OR GROWING MEDIA ON THE ACTIVE INGREDIENT?

It is unaffected by pH of water or growing media within the range used for plant production.

ONCE APPLIED HOW LONG DOES THE PRODUCT REMAIN EFFECTIVE?

It varies according to conditions but in practice growers apply monthly or repeat after 3 weeks if risks are great or disease is present. Note that repeat applications are only permitted for drenches of ornamental plants produced on under protection (all other situations have a maximum of 1 application per crop).

USER INFORMATION

WHAT ARE THE SAFETY PRECAUTIONS WHEN USING THE PRODUCT?

Refer to the label for full details. Suitable protective clothing and suitable protective gloves need to be worn when handling contaminated surfaces and during drench application using hand-held equipment (additional face protection is required when handling the concentrate).

HOW QUICKLY AFTER INCORPORATION DOES TREATED MEDIA NEED TO BE USED?

It depends on conditions but on average ranges from 10-40 days. The general guideline for peat based media would be to use it within a week of treatment incorporation. Use as a drench post-potting avoids such issues.

HOW CRITICAL IS THE WATER VOLUME USED IN DRENCH APPLICATION?

It is very important to ensure that the drench liquid penetrates the container media/ root zone but not so much that it leaches out of the pot or into deeper soil layers. A general recommendation is that the drench volume should equate to 10% of the pot volume and that the solution should be applied to media that is already moist (thus avoiding it draining straight through).

WHAT ABOUT USE OF SUBDUE IN AN EBB-FLOOD IRRIGATION SYSTEM?

SUBDUE can be used in the potting media either by pre-potting incorporation or post-potting drench. It should not be applied via the irrigation water. It is appreciated that ebb-flood irrigation may reduce the concentration of chemical within the pot more quickly than overhead or drip irrigation assuming the volumes of water used in the latter methods are not excessive. Ideally irrigate ebb-flood benches prior to drench treatment application and leave for as long as possible afterwards (without drying-out or plant stress) to maximise chemical uptake by the roots prior to the next irrigation.

CAN ANY OTHER CHEMICALS BE MIXED WITH SUBDUE FOR MEDIA DRENCH TREATMENT?

SUBDUE is an emulsifiable concentrate and mixtures with other chemical formulations and feed solutions are not recommended. (Physical compatibility with products such as imidacloprid is to be examined.)

MEDIA ASPECTS

WHAT ABOUT USE OF SUBDUE IN MIXES CONTAINING A HIGH PERCENTAGE OF BARK, COIR OR PEAT FREE MATERIAL?

There is no specific information relative to different media types but the general guideline is to use the highest dose rate in all media containing more than 10% organic matter. Product efficacy relative to media type has not been specifically tested but in 4-5 years of use in Holland there have been no adverse reports.

CROP SAFETY

ARE THERE ANY CROPS THAT REACT ADVERSELY TO SUBDUE?

SUBDUE has been used successfully at the recommended rates on a wide range of species and cultivars without crop damage. However use on *Prunus*, *Viburnum*, *Hedera* and *Cordyline* is advised against. Because of the large number of species and cultivars of ornamentals grown it is advisable to confirm safety by first applying SUBDUE on a small number of plants. Consult Fargro for the latest crop safety information.

ENVIRONMENT AND IPM ASPECTS

IS SUBDUE HARMFUL TO THE ENVIRONMENT?

The active ingredient in SUBDUE has a very favourable spectrum of activity with regards to environmental behaviour and Integrated Pest Management (IPM). SUBDUE is of low acute toxicity and has only a very low toxicity against non-target organisms like birds, fishes, arthropods and soil micro-organisms. Good production practice should ensure that the SUBDUE remains within the target area.

WHAT ABOUT BENEFICIAL INSECTS AND NEMATODES THAT MAY BE PRESENT IN THE MEDIA - ARE THEY AFFECTED BY SUBDUE?

Limited evidence suggests that the active ingredient in SUBDUE is not harmful to soil dwelling-predatory mites, entomopathogenic nematodes (*Steinernema feltiae*), and microbial amendments (*Bacillus subtilis* & *Trichoderma* spp.).

PRODUCT EFFICACY

WILL SUBDUE KILL ANY OTHER FUNGI?

The active ingredient has activity against all Oomycetes of which *Pythium* spp. & *Phytophthora* spp. root rots are the main groups. It is not active against other root diseases caused by *Rhizoctonia* or *Thielaviopsis*. SUBDUE is not approved for foliar application.

WHAT ABOUT ACTIVITY AGAINST *PHYTOPHTHORA RAMORUM*?

This disease is notifiable hence fungicide programmes for its control remain under the directive of DEFRA Plant Health and Seeds Inspectorate.

RESISTANCE MANAGEMENT STRATEGY

IS IT POSSIBLE THAT SUBDUE WON'T BE EFFECTIVE AGAINST CERTAIN STRAINS OF *PYTHIUM* SPP. & *PHYTOPHTHORA* SPP.?

The active ingredient in SUBDUE belongs to the phenylamide group. Strains of *Pythium* spp and *Phytophthora* spp. may exist which are resistant to a range of fungicides including phenylamides. To minimise the risk of development of resistance the resistance management guidelines of FRAG-UK (see www.pesticides.gov.uk) should be followed.

Since the occurrence of resistance cannot be forecast, neither Syngenta Crop Protection UK Limited nor Fargro Ltd. can accept responsibility for any loss or damage to crops caused by the failure of SUBDUE to control resistant strains.

HOW CAN BEST USE BE MADE OF SUBDUE IN A FUNGICIDE PROGRAMME?

SUBDUE should be used in an integrated pesticide management programme, and where appropriate, in alternation with fungicides from other chemical groups to minimise development of insensitive strains of fungi.

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ALWAYS READ THE LABEL: USE PESTICIDES SAFELY

SUBDUE is marketed in the UK by Fargro Ltd.

SUBDUE is an emulsifiable concentrate containing 480g/l (46.2 w/w) metalaxyl-M. MAPP 12358.