TECHNICAL INFORMATION

Dow AgroSciences™

floriculture

MAGISTER 200 SC

ACARICIDE

USE ON ORNAMENTALS

Foreword

DowElanco has a history of meeting the demands of horticulturalists with high quality, cost effective crop protection products. Over many years growers have trusted DowElanco to help produce superior quality crops. This publication outlines development and field trials work with Magister * 200 SC, the most recent crop protection product in DowElanco's portfolio.

Introduction

Magister 200 SC is a novel acaricide discovered and developed by DowElanco, based on the active ingredient fenazaquin.
The product is formulated as a simple to measure, flexible to use, 200 g/l suspension concentrate.
Magister 200 SC gives consistent and persistent control of two spotted spider mites Tetranychus urticae on ornamentals.

Commercial significance of mites

Female mites overwinter and emerge in spring as ambient temperatures and light intensities increase. They feed on the leaves of plants, initially causing leaves to lose their vigour and appear dull. Subsequently, heavy grazing causes chlorotic mottling of leaves and may significantly reduce the plants photosynthetic efficiency.

Mite grazing damage on leaves of *Fatsia sp.*

As mite populations increase, the "webbing" and old egg cases found, especially on the undersurface of leaves, further reduce plant quality and are additional deterrents to prospective purchasers.
Mites are easily transferred from localised infestations. Unless treated early, they may spread rapidly, especially in warm conditions.

Mode of Action

Magister 200 SC is a contact acaricide giving rapid knockdown of mites and excellent residual control.
Whereas most insecticides/acaricides disrupt the nervous system, Magister 200 SC has a different mode of action. It inhibits the respiratory process which takes place inside the cells "energy centres" called mitochondria. As a consequence of this biochemical action the product has been termed a "mitochondrial electron transport inhibitor" or "METI".
Magister 200 SC activity is not markedly affected by temperature, over the range 15-30°C. Under warm conditions signs of activity may be obvious within hours. Characteristically mites are less active whilst body movements become erratic.
Magister 200 SC is neither systemic nor volatile and hence good coverage of foliage is required to achieve the very best levels of mite control.

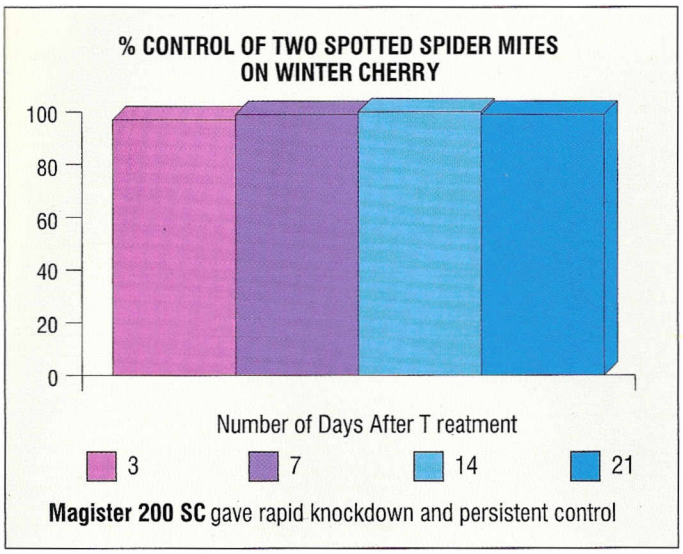
Application timing

Magister 200 SC has been tested throughout the growing season, from spring until autumn and is as effective on motile mites in the early part of the season as it is on summer populations of mites. Eggs and diapausal forms are not controlled.
Magister 200 SC should be used as part of a programmed approach to mite control, in conjunction with biological agents and/or other acaricides.
Sprays should be applied before signs of leaf damage appear and when mite infestation is approaching threshold numbers.
Schematic options for treatment timings are shown below.

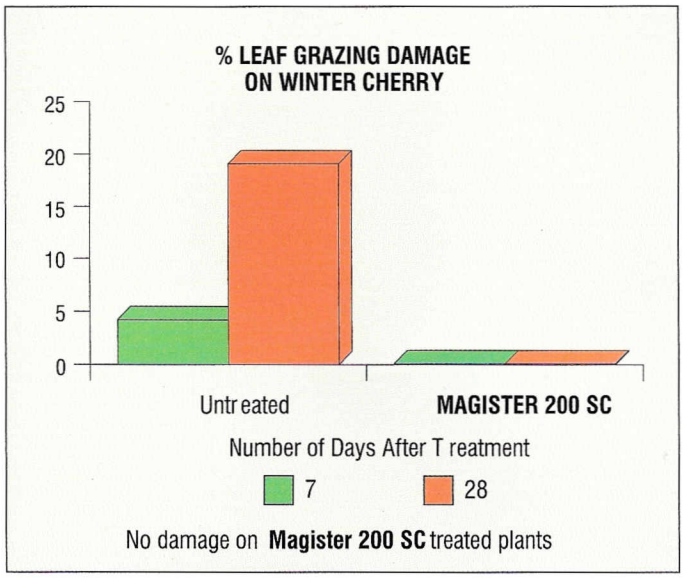
MAGISTER 200 SC application timing options

Time of Year	Winter	Spring	Summer	Autumn	Winter
Population structure	Dormant overwintered female mites	Females, Eggs, Larvae	Mixed summer population	Mixed autumn population	Declining summer and autumn forms, increasing diapausal mites
Application Timing Options	Too early to treat	MAGISTER 200 SC Either spray **MAGISTER 200 SC** early to stop populations developing	MAGISTER 200 SC or spray **MAGISTER 200 SC** mid season to control populations	MAGISTER 200 SC or spray **MAGISTER 200 SC** prior to diapause to reduce following seasons infestation	Too late to treat

Treatment applied at various timings during the season, has consistently proved the recommended rate of Magister 200 SC gives excellent control of two spotted spider mite motiles for up to 21 days, similar to or significantly better than UK market standards. The following charts summarise characteristic results on mite infested crops achieved with Magister 200 SC. The results confirm rapid knockdown, persistent control and an absence of grazing damage on treated plants.



Magister 200 SC gave rapid knockdown and persistent control



No damage on **Magister 200 SC** treated plants

Good leaf coverage is essential, particularly on bushy, compact plants. Magister 200 SC should be used as an integral part of the season long mite control programme.

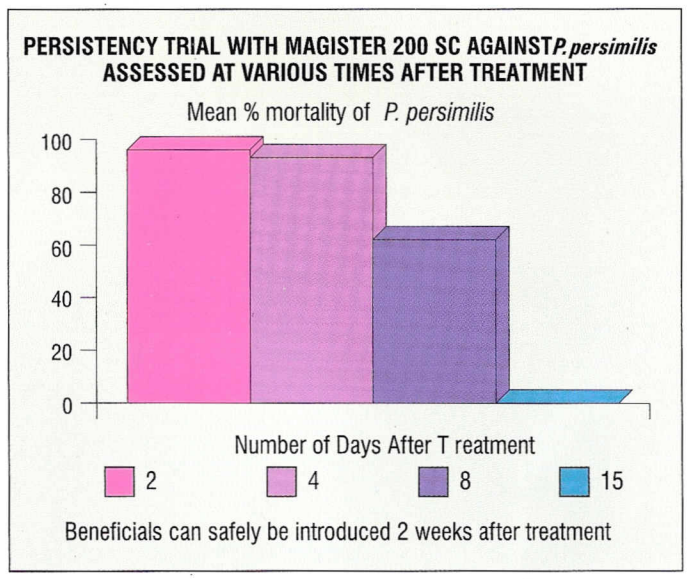
Effect on Beneficials

In contact tests, Magister 200 SC was applied at recommended rates and volumes, to plants carrying established populations of the predatory mites *Phytoseiulus persimilis or Amblyseius cucumeris*. Commercially unacceptable levels of mortality were recorded.

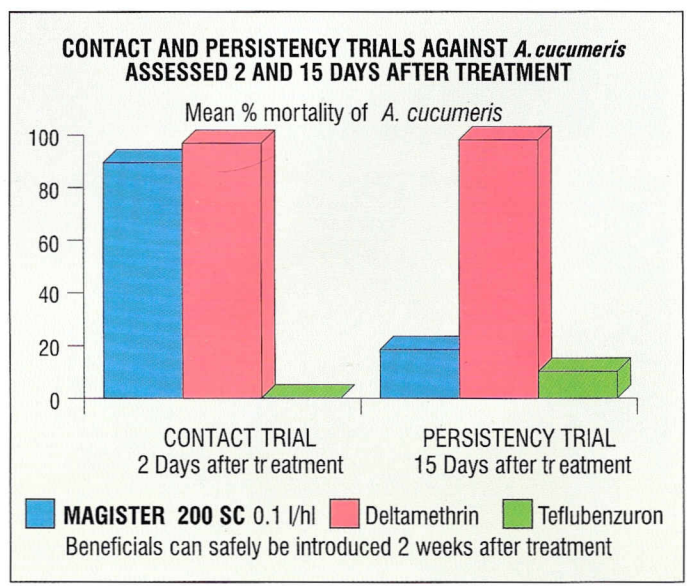
However in persistency tests, where motile mites were introduced at various times after treatment onto Magister 200 SC treated leaf surfaces, initially high mortality declined to insignificant levels two weeks after treatment.

Predatory mites.

Charts summarising the results from these experiments follow. They confirm that beneficials can safely be introduced 14 days after application, allowing Magister 200 SC to be incorporated into biological control programmes.



Beneficials can safely be introduced 2 weeks after treatment



Beneficials can safely be introduced 2 weeks after treatment

CROP SAFETY

Selectivity assessments have been made on a wide range of hardy ornamental nursery stock, bedding plants, cut flowers, patio and house plants. Species tested have included carnations "in flower", sensitive varieties such as Poinsettia's and Kalanchoe and plants with thin cuticles ie. ferns. No damage has been recorded in any of the tests*, despite Magister 200 SC having been trialled at twice the recommended concentration. In view of the large number of species and cultivars grown, test Magister 200 SC for crop safety on a small number of plants before overall application. A list of the species safely tested follows.

Genus	Common and/or specific name
Asparagus plumosus	Asparagus Fern
Asparagus falcatus	Sickle thorn
Adiantum fitz lutzii	Maidenhair fern
Agrianthemum frutescens cryaster	Chrysanthemum
Anthurium scherzerianum	Flamingo Flower
Araucaria exelsa	Norfolk island pine
Ardisia crenata	Coral berry
Artemiscus maritimus	Golden Coin
Asplenium nidus	Birds nest fern
Azalia indica	Indian azalea
Begonia elatior	
Begonia rex	Tiger Begonia
Begonia semperflorens	bedding begonia
Bougainvillea glabra	Paper flower
Camellia sp.	
Capsicum anuum	Ornamental pepper
Caryopteris clandonensis	Heavenly Blue
Carysothemis sp.	
Choisya ternata	Sundance
Chlorophytum comosum	Spider plant
Chrysanthemum morifolium	Chrysanthemum
Citrus sinensis	Sweet orange
Clerodendron thompsoniae	
Coffea arabica ÒNanaÓ	Coffea plant
Codieaum veriegatum	Croton
Cordyline fruticosa	Cordyline
Cordyline terminalis	
Cyclamen persicum	Alpine violet
Drascaena marginata	Dragon Tree
Elaeagnus pungens	
Erica carnea	Sam Doncaster
Eucalyptus gunnii	
Euphorbia pulcherrima	Poinsettia
Fatsia japonica	
Ficus radicans	Variegata
Ficus benjamina	Weeping fig
Fuchsia sp.	Display
Gardenia jasminoides	Gardenia
Gynura sarmentosa	
Hedera helix	Ivy
Helichrysum petiolatum	straw flower
Hibiscus rosa-sinensis	Chinese Rose
Hydrangea macrophylla	Hydrangea
Hypoestese phylostachia	Freckle Face
Impatiens hawkery hybrid	Busy Lizzie
Kalancho' blossfeldiana	Kalanchoe
Kumquat nagami	
Lantana hybrid	
Lavatera olbia	Mallow
Lonicera periclymenum	Serotina
Lysimachia lysii	
Maranta leuconeura	Rabbit tracks
Mesembryanthemum criniflorum	Cape Daisy
Molinia recurvata	beaucarnea
Nephrolepis exaltata	Ladder fern
Oralia	
Pieris japonica	Variegata
Picea glauca	Conica
Pelargonium sp.	Geranium
Pentas sp.	
Pilea cadierei	
Plumbago auriculata	Cape leadwort
Polygonum sp.	Victory Carpet
Primula acaulis	Polyanthus
Punica granatum	pomegranate
Pteris tremula	Ribbon fern
Pyracantha coccinea	
Rhododrendron simsii	
Saintpaulia ionantha	African violet
Shamadoria elegans	Parlour Palm
Skimmia japonica	Rubella
Solanum capsicastrum	Winter Cherry
Spathiphyllum floribunda	Sail plant
Stephanotis floribunda	Madagascar Jasmine
Stranvaesia davidiana	
Strobilanthes sp.	
Tilandsia lindenii	Bromeliad
Tolmiea menziesii	Piggy back plant
Tradescantia albiflora	Wandering Jew
Vibernum tinus	variegatum
Viola hederacae	Trailing viola
Viola sp.	F1 winter pansy

Tank mix partners

The following products are recommended in two way tank mixtures with Magister 200 SC.

Product or Active ingredient	MAFF Number
Dursban 4	07815
Mildothane Liquid	05244
Rubigan	05489
Approved formulations of;	
captan	05826
lindane	06670
mancozeb	04251
myclobutanil	03921
pirimicarb	00106
pirimiphos-methyl	00284
trichlorfon	00711

Satisfactory two way physical compatibility tests have been undertaken with approved formulations of;

active ingredient	MAFF Number
carbendazim	00217
chlorothalonil	05637
iprodione	06328
prochloraz	03416
propiconazole	02138

Application details Ornamentals

Magister 200 SC is recommended for use at a rate of;

50 ml in 100 lts of water, (500ml/hectare base on 1,000 lts of water per hectare)

It is important to use sufficient water volume to achieve good coverage of both upper and lower leaf surfaces.

Anti resistance strategy

Mites are renowned for developing resistance to acaricides. An international initiative has been started through the Insecticide Resistance Action Committee (IRAC) to address this issue and reduce the chances of resistance developing to METI products. It is proposed that no more than one application of any product in this group be applied to a crop in any one calendar year, either separately or in mixture.

MAGISTER 200 SC BENEFITS

- Fast acting and persistent control
- Consistent performance
- Control of all motile stages of two spotted spider mite
- May be used in IPM programmes
- Extensive list of tank mix partners
- Safe to very wide range of ornamental species
- No odour