

Danadim® Progress

High quality crop-protection



DANADIM® PROGRESS



COMPANY PROFILE

Cheminova's main activity is the development, production and marketing of plant protection products and fine chemicals. Cheminova was founded in 1938 and has since then continually developed its business to become a world-class manufacturer within the organophosphate chemistry as well as other chemistries

Cheminova has developed a wide range of plant protection products by in-house process and formulation development, and markets its products globally through own organisations in 13 key countries and through distribution partners in most other countries.

Cheminova has subsidiaries in USA, Canada, Mexico, Brazil, Argentina, UK, France, Spain, Italy, Russia, India and Taiwan, and representative offices in Ukraine and China. The company has 1,550 employees.

Cheminova supplies a wide range of plant protection products, the most important being:

- Insecticides based on the active ingredients abamectin, acephate, acrinathrin, chlorpyrifos, deltamethrin, dimethoate, gamma-cyhalothrin, imidacloprid, malathion, methyl parathion, and phosalone.
- Herbicides based on the active ingredients chlorimuron, glyphosate, imazethapyr, and metsulfuron.
- Fungicides based on the active ingredients flutriafol and tebuconazole.

Cheminova's product range also includes a number of intermediates, preservatives for the food industry and flotation agents for the mining industry.



Cheminova's manufacturing plant in Denmark



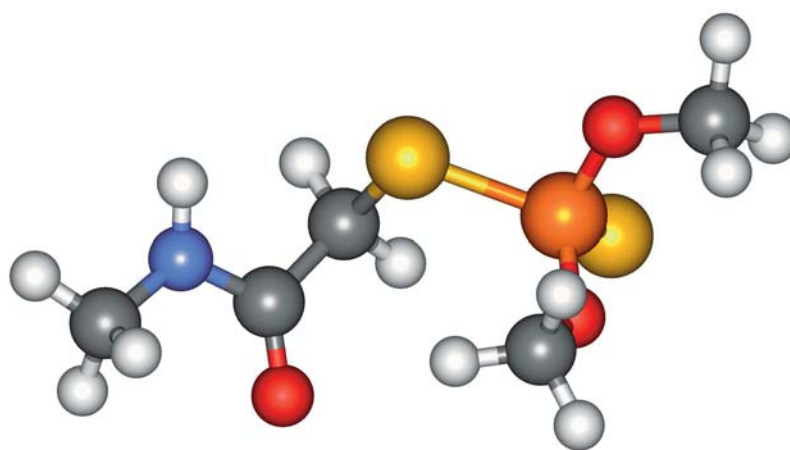
BACKGROUND

Dimethoate is one of the world's largest organophosphorous insecticides and acaricides with systemic activity. Cheminova started production of dimethoate under the trade name Danadim® in 1976, and is today the leading manufacturer. Cheminova's dimethoate plant is today the world's single largest dimethoate plant – nowhere else you will find a more dedicated production facility!

Danadim® Progress contains the active ingredient dimethoate which acts by contact and ingestion. Acting through inhibition of cholinesterase enzymes, it is used to

control a wide range of sucking and chewing pests including *Hemiptera*, *Thysanoptera*, *Coleoptera*, *Diptera*, *Lepidoptera* and *Acari* in a variety of row-crops, orchards and vegetables.

Danadim® Progress is a result of the ongoing and innovative work at Cheminova. Throughout the years Cheminova has manufactured and marketed traditional high quality dimethoate formulations and technical dimethoate. Now we are introducing a new and improved formulation based on unique patented technology.



Dimethoate molecule

Danadim® Progress

CHEMINOVA

DANADIM® PROGRESS

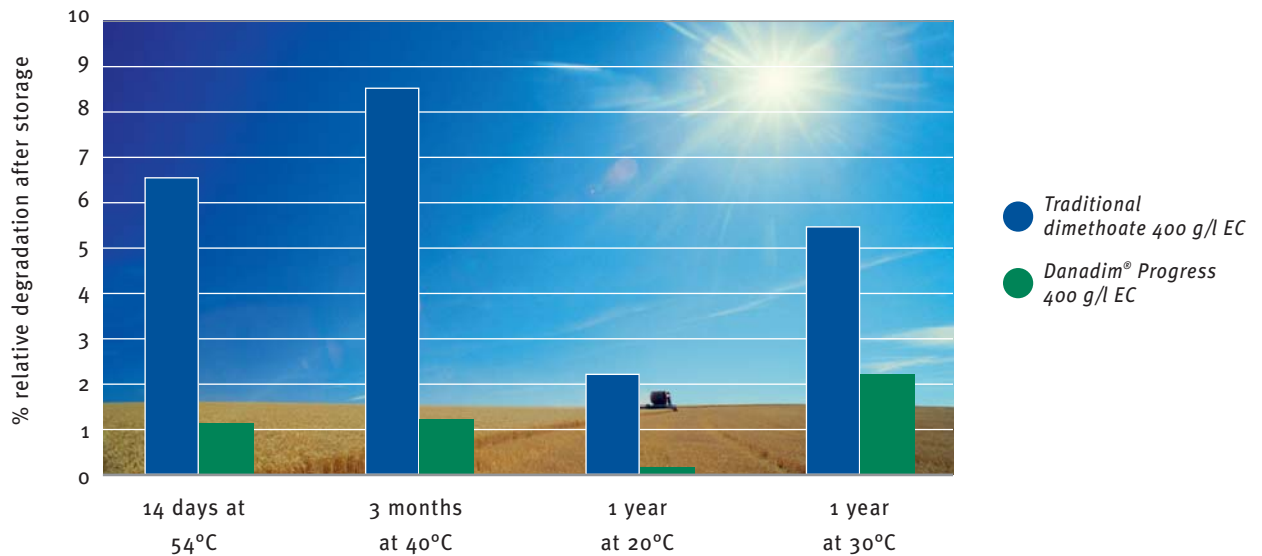
Danadim® Progress 400 g/l EC is a novel patented dimethoate formulation from Cheminova containing nonylphenol-free emulsifiers, solvents, and a unique stabiliser.

The stabilised formulation inhibits degradation of the active ingredient and the for-

mation of by-products. Such by-products reduce the activity of the active ingredient and increase mammalian toxicity, especially under warm weather conditions.

Thus Cheminova is proud to present a new Danadim® product with increased efficacy and improved toxicological profile.

TYPICAL DATA FOR DEGRADATION RATE OF TRADITIONAL DIMETHOATE AND DANADIM® PROGRESS



Danadim® Progress is for now only available as a 400 g/l EC formulation. In general, Danadim® Progress can be mixed with other insecticides and fungicides. How-

ever, it must be noted that dimethoate is incompatible with alkaline materials and sulphur based formulations.

Dimethoate formulations and mixtures available from Cheminova

Brand	Formulation Type	A.I. Content	Main Area of Use
Danadim® Progress	EC – Stabilised	400 g/l	Agriculture, foliar application
Various brands	EC mixtures	Cypermethrin 36 g/l	
	EC mixtures	Deltamethrin 25 g/l	

Danadim® Progress

TOXICITY

The toxicological profile of Danadim® Progress is given in the tables below.

MAMMALIAN TOXICITY

STUDY	DANADIM PROGRESS
Acute Oral LD ₅₀ , rat (mg/kg bw)	300 – 500
Acute Dermal LD 50, rat (mg/kg bw)	>2000
Acute Inhalation LC ₅₀ , rat (mg/l/4h)	Approx. 3
Dermal sensitisation	Sensitiser
Dermal irritation	Moderate
Eye irritation	Moderate
US EPA Classification/WHO Classification	Category II/Category II

ENVIRONMENTAL TOXICITY

TEST	TEST ANIMAL	OUTCOME
Acute toxicity	Rainbow trout	96-h LC ₅₀ = 61.3 mg/l
Acute toxicity	Daphnids (<i>Daphnia magna</i>)	48-h EC ₅₀ = 5.4 mg/l
Acute toxicity	Mallard duck	63.5 mg/kg/bw
Acute toxicity	Honey Bees (<i>Apis mellifera</i>)	24-h LD ₅₀ , topical: < 1 µg/bee

Danadim® Progress is toxic to birds, fish and aquatic invertebrates. Therefore, label recommendations regarding dosage and possible buffer zones to aquatic areas must be strictly obeyed. Danadim® Progress is highly toxic to bees and should not

be applied during flowering. The product dissipates quickly in soil and the half-life in soil (DT₅₀) is 2.0 – 4.1 days.

Danadim® Progress is non-phytotoxic when used according to label instructions.



EFFICACY

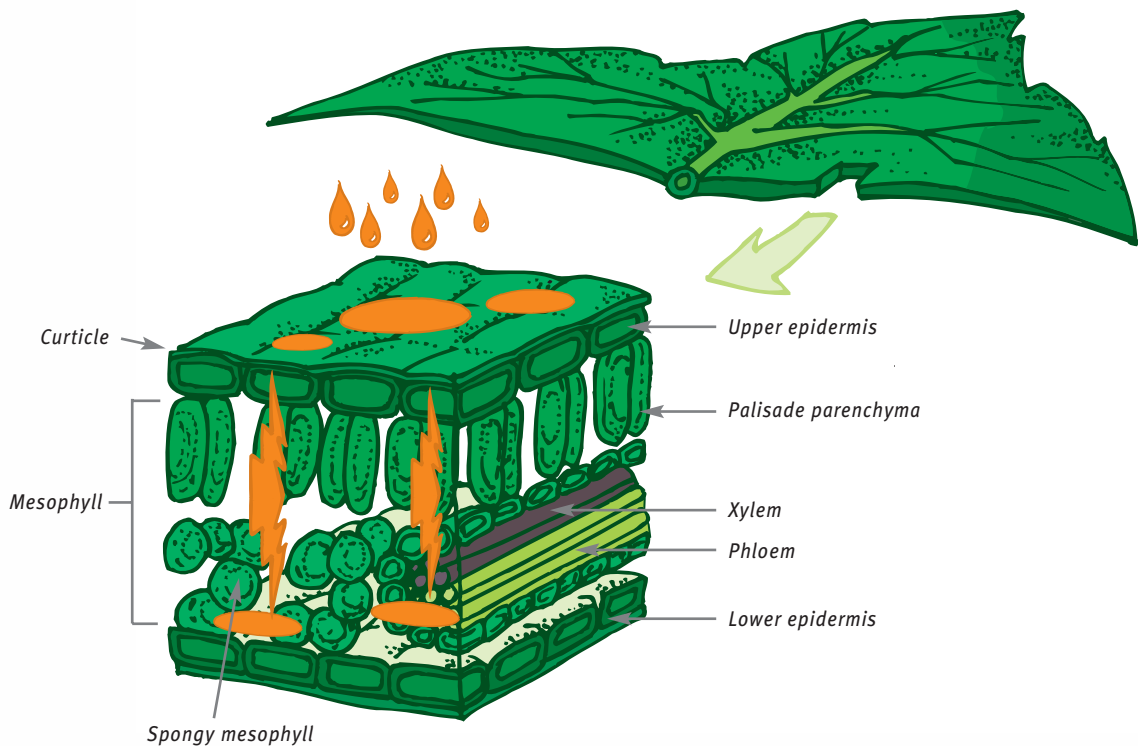
Danadim® Progress is an insecticide and acaricide with combined systemic and contact action. It is used in a wide range of crops to control chewing as well as sucking pests. It is effective shortly after application thus providing quick knockdown.

Following application, the product is quickly absorbed by plant tissues and then translocated within the plant. In this way the product can also control pests feeding on the underside of the leaf, even though the product is applied on the upper leaf surface. For instance, in densely sown cereal crops, such as barley, Danadim® Progress is particularly effective in controlling aphids feeding on both the upper as

well as the lower plant parts due to the systemic action of the product. Danadim® Progress provides residual control lasting 10 – 15 days.

Danadim® Progress is registered in orchards and vegetables and a variety of row-crops. However, the main crops are cereals, vegetables, olives and citrus.

Non-systemic insecticides like pyrethroids mainly control aphids feeding on the upper plant parts in cereals. In addition, pyrethroid resistance is a growing concern in many countries, for which reason Danadim® Progress is the ideal complement to a resistance management strategy.



EFFICACY

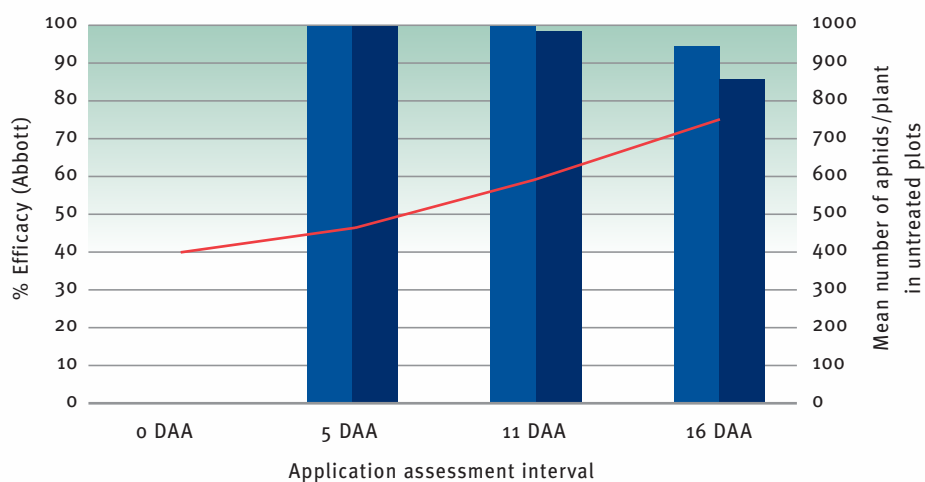
In general Danadim® Progress shows excellent efficacy against a wide range of pests in various crops. The following

efficacy data shows examples of the efficacy and long-term control Danadim® Progress provides.



BLACK BEAN APHID (*APHIS FABAE*), SUGAR BEET, ITALY 2004
Spray volume 600 L/ha

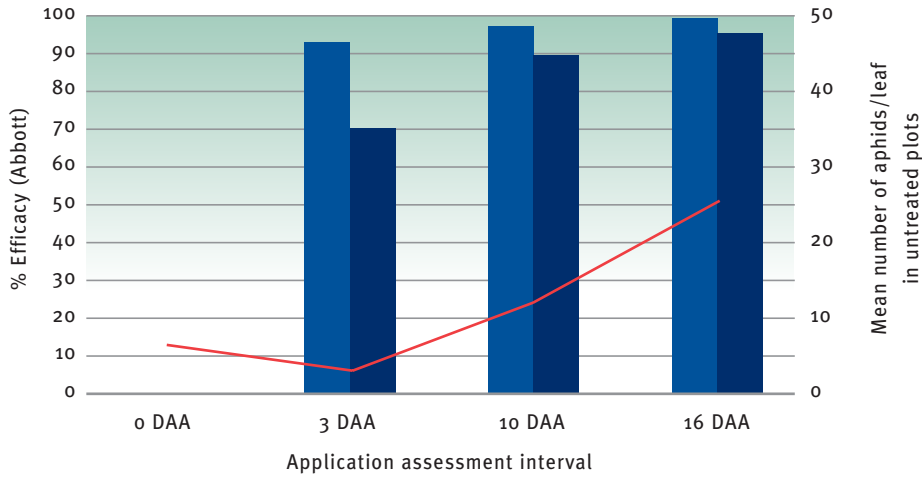
- Danadim®
400 g/L EC: 430 g a.i./ha
- Deltamethrin
15 g/L EC: 7.5 g a.i./ha
- Untreated



Danadim® Progress

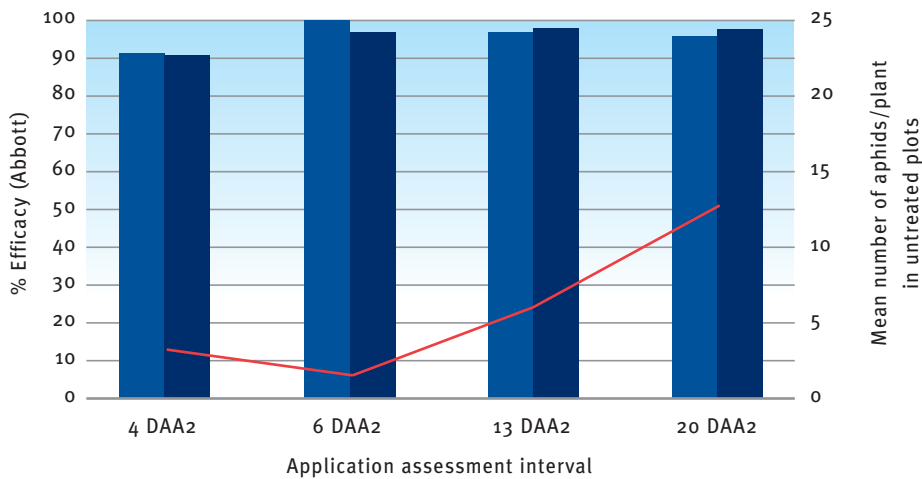
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BLACK BEAN APHID (*APHIS FABAE*), BEAN 'ETNA', ITALY 2004
 Spray volume 1000 L/ha



- Danadim®
400 g/L EC: 428 g a.i./ha
- Imidacloprid
200 g/L SL: 100 g a.i./ha
- Untreated

**CABBAGE APHID (*BREVICORYNE BRASSICAE*),
 WHITE CABBAGE 'COMBINOR', GERMANY 2002**
 Spray volume 600 L/ha



- Danadim®
400 g/L EC: 240 g a.i./ha
- Oxydemeton-methyl
265 g/L EC: 159 g ai/ha
- Untreated

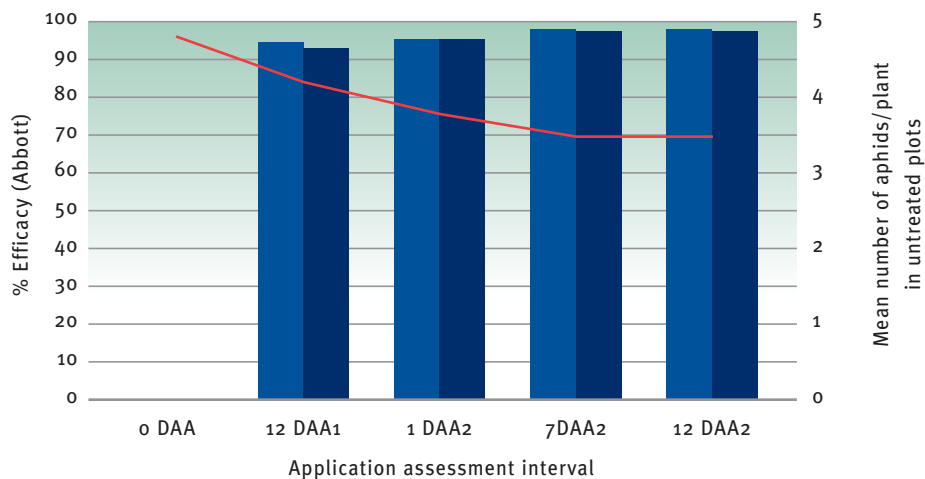
Danadim® Progress



APHIDS (*AULA COMTHUM SOLARI*, *MACROSIPHUM EUPHORBIA*, *MYZUS PERSICAE*), LETTUCE, GERMANY 2002

Spray volume 600 L/ha

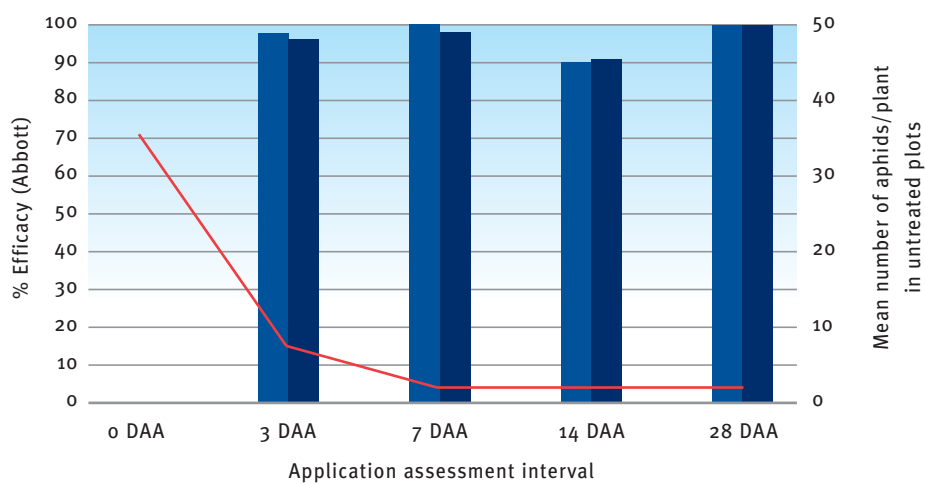
- Danadim®
400 g/L EC: 240 g a.i./ha
- Oxydemeton-methyl
265 g/L EC: 159 g ai/ha
- Untreated



GREEN APPLE APHID (*APHIS POMI*), STRAWBERRIES, GERMANY 2002

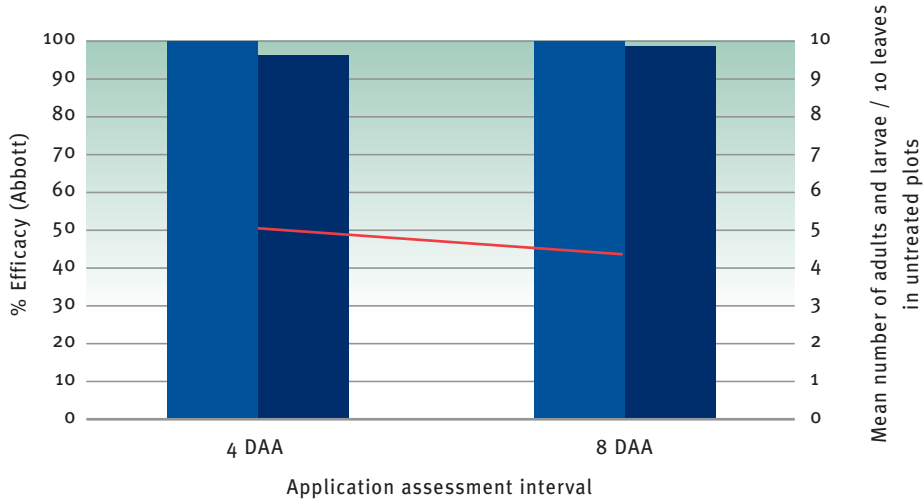
Spray volume 600 L/ha

- Danadim®
400 g/L EC: 400 g a.i./ha
- Oxydemeton-methyl
265 g/L EC: 531 g ai /ha
- Untreated



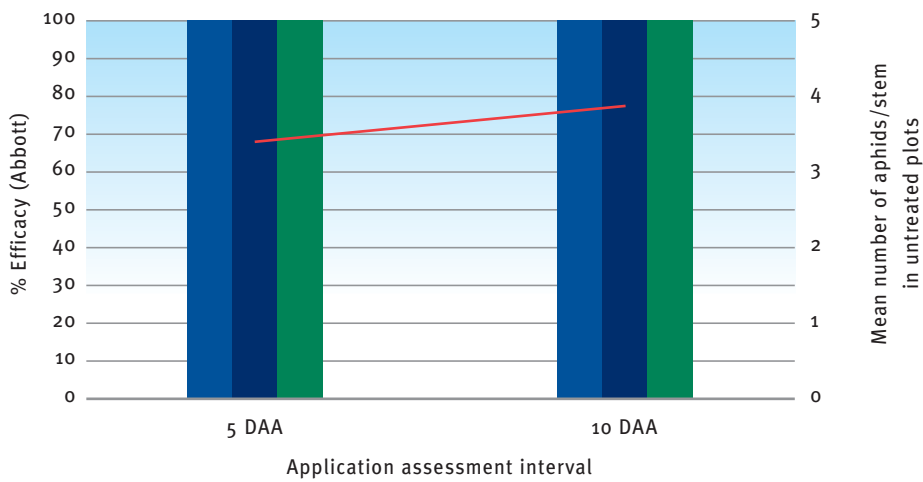
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LEAF BEETLES (*OULEMA SP.*), WHEAT, GERMANY 2002
 Spray volume 360 L/ha



- Danadim®
400 g/L: 240 g a.i./ha
- Lambda-cyhalothrin
100 g/L CS: 7.5 g a.i./ha
- Untreated

OAT APHID (*RHOPALOSIPHUM PADI*), SPRING WHEAT, LITHUANIA 2001
 Spray volume 300 L/ha



- Danadim®
400 g/L EC: 400 g a.i./ha
- Danadim®
400 g/L EC: 500 g a.i./ha
- Alpha-cypermethrin
10% EC: 15.0 g ai /ha
- Untreated

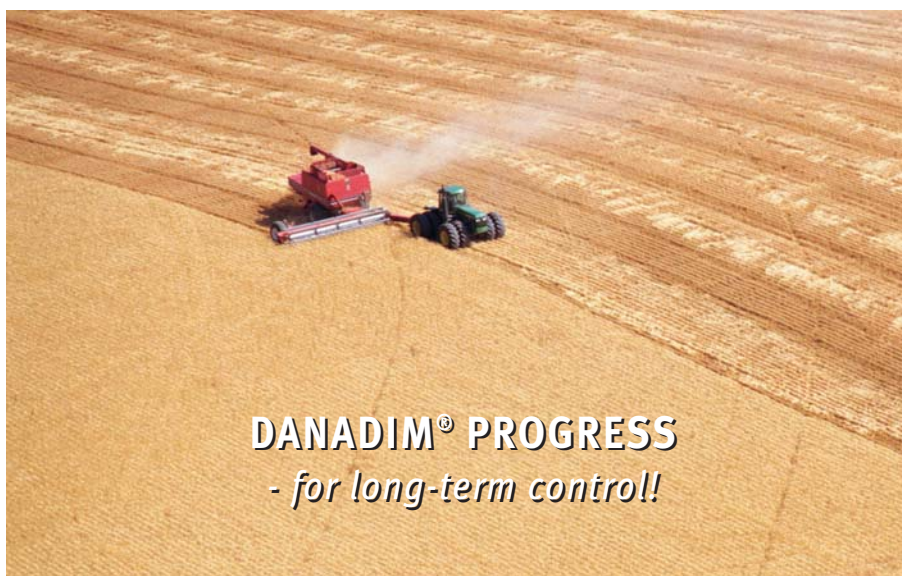
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GLOBAL USE OF DANADIM® PROGRESS

EXAMPLES OF MAIN CROPS AND PESTS

CROPS	PESTS
Cereals	Aphids, Thrips
Cotton	Thrips, Aphids, Tobacco whitefly, Mites, Lygus bugs
Rice	Planthoppers and Leafhoppers, Lygus bugs, <i>Helopeltis</i> , Thrips, Spider mites, Whiteflies
Pulses (soybean, beans)	Mites, Aphids, Bean beetles, Leafhoppers, Leaf miners, Capsid bugs, Bean fly
Rape-seed	Aphids, Lygus bugs
Beetroot	Thrips, Aphids, Craneflies
Alfalfa	Aphids, Leafhoppers, Lygus bugs
Olives	Olive moth, Olive fruit fly, Bark beetles
Vegetables	Aphids, Leafhoppers, Leaf miners, Bugs, Sawflies, Flea beetles, Lepidopteran and Dipteran larvae, Whitefly
Carrots	Carrot fly, Aphids
Citrus	Aphids, Thrips, Mites, Mediterranean Fruit Fly, scales
Pome fruit	Aphids, Psyllids, Codling moth, Sawfly, Weevils, Mites, Fruit flies
Coffee	Aphids, Fruit flies, Root flies, Leaf miners, Scale insects, Spider mites, Thrips, White flies
Tea	Aphids, Lygus bugs, <i>Helopeltis</i> , Tea greenfly, Thrips, Tea mites, Tea seed bugs
Tobacco	Thrips, Aphids, Whiteflies, Miners
Ornamentals	Aphids, Leaf miners, Thrips
Stables, Pigsties, Poultry farms	Flies

Guidelines only, label recommendations should always be observed before treatment.



Danadim® Progress

NOVA

MAIN BENEFITS OF DANADIM® PROGRESS

- Improved shelf-life
- Slow degradation of active ingredient even under hot climatic conditions
- Improved tox profile
- Fewer impurities and more dimethoate
- Less solvent
- Reduced odour
- Nonylphenol free
- A known systemic and reliable compound

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