HASTEN† now cross-labelled on over 50 crop protection labels.



AUSTRALIAN eco-care MADE

A HIGHLY TRUSTED AND WIDELY COMPATIBLE SPRAY ADJUVANT MADE FOR AUSSIE CONDITIONS.

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VICCHEM
The Right Chemistry

HASTEN†

SPRAY ADJUVANT

HASTEN† is a premium spray adjuvant based on renewable resources which has proven itself across the world for over 20 years.

HASTEN enhances the performance of many agrichemicals by increasing droplet adhesion and spreading, and active ingredient penetration.

HASTEN is a preferred adjuvant of many agricultural professionals and is recommended by global Life Science companies for a wide range of agrichemicals including selective herbicides, fungicides, insecticides and defoliants.



HASTEN now cross-labelled on over 50 crop protection labels.

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DEVELOPMENT / HISTORY

During the early 1990's, HASTEN was developed by VICCHEM as the first commercial spray adjuvant based on Ethylated Canola Oil. Extensive field and laboratory testing has found HASTEN consistently delivers high levels of performance relative to other oil based adjuvants. After conducting their own testing, many global Life Science companies recommend HASTEN on selected product labels as a tank mix partner.

INGREDIENTS / MANUFACTURING RELIABILITY

HASTEN's success is based on its unique formulation where Ethyl and Methyl Esters of Canola Oil are blended with carefully selected non-ionic surfactants to provide high levels of performance and crop safety. VICCHEM is the manufacturer of HASTEN which uses highly refined ingredients, mostly of natural, sustainable origin and is controlled by VICCHEM's quality system (ISO 9001:2015) to produce a reliable and consistent product. Hasten is approved by Australian Certified Organic as an Allowed Input for Organic Farming.

FUNCTIONS / BENEFITS

Certified Allowed Input
ACO CERT. NO. 11155

- **Penetration**

HASTEN's main function as an adjuvant is to assist the penetration of active ingredients into and through waxy cuticles of the target. The penetration relies on the solvency action of ethyl and methyl esters which can help transport certain pesticide active ingredients through what is otherwise a significant barrier to entry.

- **Compatibility**

Due to its non-ionic nature, HASTEN is compatible with and can be successfully used with a wide range of agrichemicals including herbicides, fungicides, insecticides and defoliants. For specific information on compatibility and use rates see product labels or contact your local representative.

- **Adhesion and spread**

HASTEN contains spreading and wetting surfactants which increase the adhesion and spreading of spray deposits. When HASTEN is added to a spray mix, it generally produces larger spray droplets than wetting agents and therefore may help to reduce driftable fines.

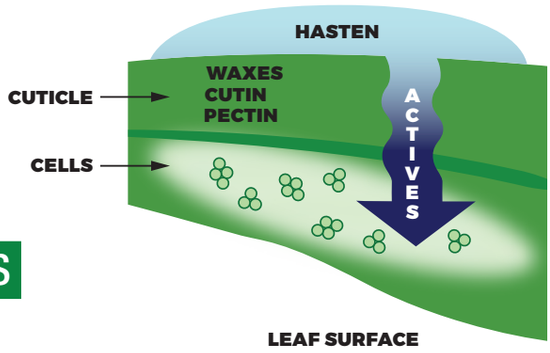
- **Safety / Environment**

HASTEN has a very low phyto-toxicity potential ensuring it sets a high standard as an in-crop adjuvant when used as directed on labels. HASTEN has been extensively field tested and safely used across many crops with a wide range of agrichemicals over 20 years. HASTEN is also generally very safe to the user and to the environment. When used as directed on labels HASTEN's long track record of being a safe product can be relied upon.

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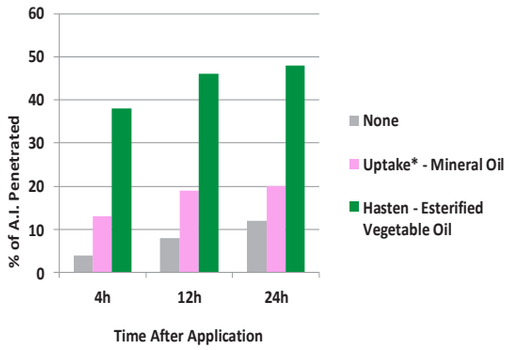
PENETRATION

HASTEN† is an excellent penetrating adjuvant. HASTEN's penetration action is called lipophilic diffusion because the Ethyl and Methyl Esters help transport actives through waxy cuticles.



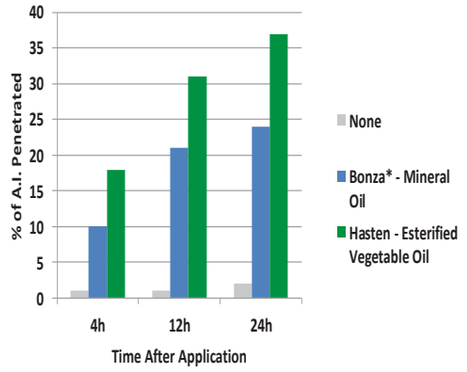
PENETRATION OF LIPOPHILIC HERBICIDES

Many lipophilic herbicides require a penetrating oil-based adjuvant like HASTEN to enable the herbicide to pass through the cuticle effectively. Laboratory studies using cuticles extracted from leaves demonstrate that the rate of penetration through the cuticle is slow and for many herbicides this process continues for days. The addition of oil-based adjuvants such as HASTEN increase the rate of active ingredient penetration into the weed.



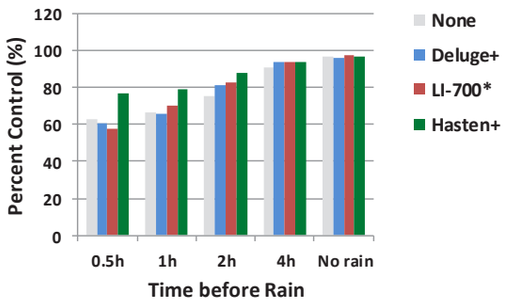
CLETHODIM (SELECT*) AND SAFLUFENACIL (SHARPEN*) PENETRATION

When applied with Clethodim (SELECT*), HASTEN promotes a rapid initial penetration which continues more slowly over 24 hours. The penetration of Clethodim with HASTEN is more than double that of the Mineral Oil adjuvant Uptake* which in turn is significantly greater than the treatment without adjuvant. Similar results can be seen for Saflufenacil which is extremely slow to penetrate without any adjuvant. In this case HASTEN provided significantly greater penetration than the Mineral Oil adjuvant Bonza*.



GLYPHOSATE RAINFASTNESS

Glasshouse studies have shown that adjuvants can improve the rainfastness of glyphosate. One study (see graph) shows that as the interval before rain shortened, glyphosate maintained greater efficacy when used with HASTEN in comparison to when no adjuvant was used or when it was used with surfactant / wetting agent adjuvants (Deluge† & LI-700*). HASTEN by helping glyphosate absorb into and penetrate the cuticle improves weed control through quicker Uptake and resisting wash-off from rain.



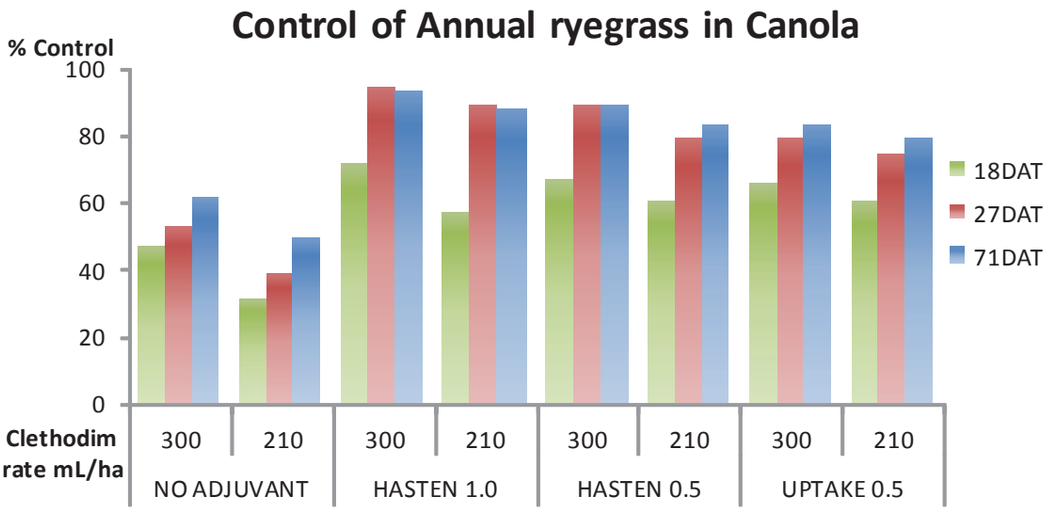
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HASTEN WITH CLETHODIM

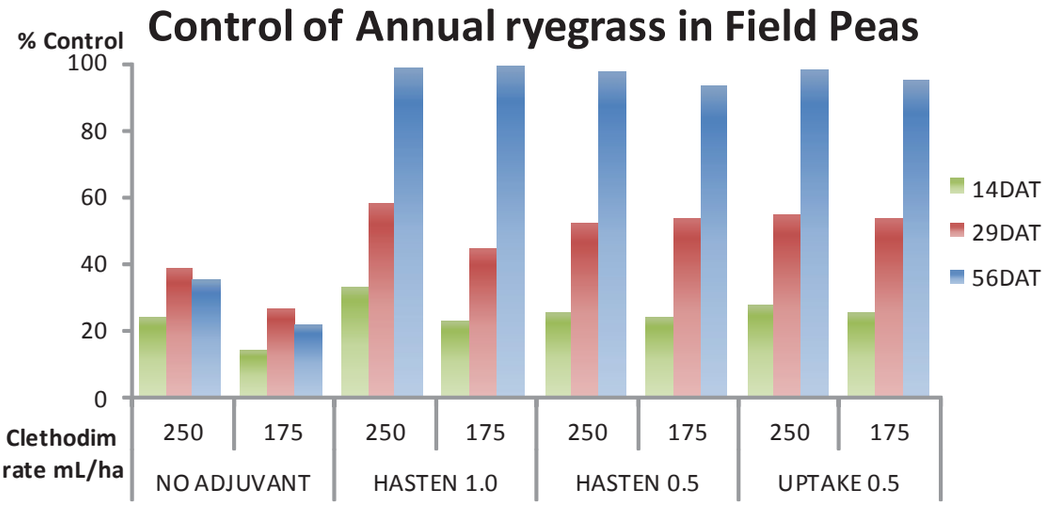
HASTEN† use at 0.5L/100L with CLETHODIM

Field trials demonstrate that the enhanced penetration of Clethodim when applied with HASTEN results in greater weed control. The two trials below clearly show that the oil adjuvants Uptake* and HASTEN significantly increase the efficacy of Clethodim and that HASTEN is effective when applied at 0.5L/100L.

Hasten & Uptake* as adjuvants with Clethodim for control of annual ryegrass in Canola.



Hasten & Uptake* as adjuvants with Clethodim for control of annual ryegrass in Field Peas.



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HASTEN WITH HERBICIDES

HASTEN† is an Australian premium Ethylated Canola oil spray adjuvant. Developed in Australia and now available in many countries around the world, HASTEN is consistently recognised as an excellent penetrating adjuvant for many selective herbicides.

- Increases penetration of herbicides through waxy weed cuticles
- Delays the dry down rate of spray droplets on weeds
- Assists in the retention of spray droplets on weed surfaces
- Increases the wetting and spreading of spray droplets on weeds
- Made from Australian Canola Oil
- High quality formulation providing easy dispersion and stable emulsion characteristics in tank mixes

PRODUCT DESCRIPTION

HASTEN is a unique spray adjuvant that has been designed to improve the efficacy of a wide range of agricultural products including; Herbicides (selective and non-selective), Insecticides, Fungicides and Defoliants.

PRODUCT PERFORMANCE

Field trials consistently show the benefit of HASTEN when used with a wide range of selective herbicides (see Table of recommended products overleaf). Many of these systemic herbicides such as clethodim and pyrasulfotole (Precept) do not easily penetrate weed cuticles and benefit from the penetrative properties of a lipophilic adjuvant like HASTEN. Hasten often outperforms other oil-based adjuvants due mainly to its superior penetration properties. HASTEN is generally safe when used as directed, see product label.

KEY BENEFITS

HASTEN has one of the widest range of cross-label recommendations of any adjuvant for use with selective herbicides. It combines superior cuticle penetration with optimised adhesion and droplet spreading.

Annual Ryegrass Control Using Clethodim 360 & Butroxydim 250 WG

% WEED CONTROL

FIELD TRIALS 2021

Crop - Lupins

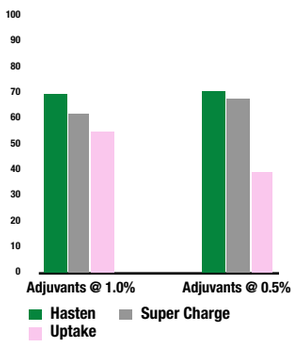
Location - Allanooka, Western Australia

Trial Date - 24th July 2021

Assessment - 26 DAT

Trial Rates - Clethodim 360 @ 330mL/ha & Butroxydim 250 @ 180 g/ha

Spray Volume - 100L/H



Wild Radish Control using Precept*

% WEED CONTROL

FIELD TRIAL

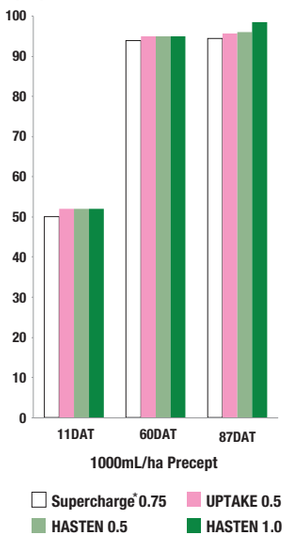
Location: Dowerin WA

Crop: Wheat

Trial Date: Winter 2012

Precept Selective Herbicide 1000ml/ha

Spray Volume: 80L/ha



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USE RATE GUIDANCE

For most herbicides applications the usage rate for HASTEN is specified as volume % in the range 0.5 - 1.0L/100L. The typical spray volume for these applications is in the range 40 - 100L/ha. Refer to herbicide product label for specific directions.

HASTEN is also compatible with products containing the following active ingredients. For guidance on use rate of HASTEN consult the agrichemical product label and/or the table below.

Butroxydim, Clopyralid, Dicamba, Fluroxypyr, Halosulfuron, Haloxyfop, Metsulfuron-methyl, Oxyfluorfen, Pinoxaden, Simazine, Synthetic Pyrethroid Insecticides, Tralkoxydim, Triclopyr.

The typical usage rate of HASTEN for all such applications should be approximately 0.5 - 1.0 L / ha and should not be less than 0.2 L / ha.

PRODUCT	COMPANY	HASTEN RATE PER 100L OF SPRAY VOLUME
Agixa* Rinskor*	Corteva	1 - 2L
Arvesta* Motsa*	Tomen / Arysta	1L
Atlantis*	Bayer	1L
Blazer* and other Acifluorfen products	UPL	1L
B-Power*	Syngenta	0.5 - 1L
Cheetah* Gold	Bayer	1L
Decision*	Sipcam	1L
Destiny*	Bayer	0.5 - 1L/ha
Flame* and other 240 g/L Imazapic products	BASF	1L
Frequency*	BASF	1L
Gesaprim* and other atrazine products	Syngenta	1L
Gramoxone* 360 PRO	Syngenta	0.5 - 1L
Hammer* and other Carfentrazone-ethyl products	FMC	0.5 - 1L
Hussar*	Bayer	0.5 - 1L
Intervix* & Intercept*	BASF	1L
Logran* B-Power	Syngenta	1L
Midas*	BASF	0.5L
OnDuty*	BASF	0.5L
Precept*	Bayer	0.5L
Raptor* WG and other 700g/kg Imazamox products	BASF	0.5 - 1L
Select* And other Clethodim 240EC products	Sumitomo	0.5 or 1L
Sharpen*	BASF	0.5 - 1L
Shogun*	Adama / Farmoz	0.5L
Spinnaker* And other 700g/kg Imazethapyr products	BASF	0.5L
Talinor*	Syngenta	1L
Targa* Bolt And other Quizalofop-p-ethyl 200EC products	Sipcam	1L
Terbyne* & Terbyne* Xtreme	Sipcam	0.5L
Topik* And other Clodinafop 240EC products	Syngenta	0.5L
Tordon* Regrowthmaster	Corteva	0.5L
Touchdown B-Power*	Syngenta	0.5 - 1L
Ubeniq*	Corteva	2 - 4L
Valor* and other Flumioxazin products	Sumitomo	0.5 - 1L
Velocity*	Bayer	1L

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HASTEN WITH INSECTICIDES

PRODUCT	COMPANY	HASTEN RATE PER 100L OF SPRAY VOLUME
Exirel*	FMC	0.5L/100L
Movento*	Bayer Cropscience	0.5 - 1L/ha
Skope*	Adama	1L/ha
Versys*	BASF	0.2L/100L
Minecto Forte*	Syngenta	0.2L/100L

INSECTICIDE APPLICATIONS

When HASTEN† is tank mixed with certain insecticide products and applied in the field, the non-ionic surfactants in the HASTEN formulation help to retain spray droplets and ensure coverage of plant surfaces. They also assist in the transfer of the insecticide from spray droplets onto the target insect. The esterified oil in the HASTEN formulation can retard crystallisation of insecticides as water evaporates from spray droplets. It will also increase the penetration of insecticides through insect cuticles thereby making lower doses more effective in controlling insect populations. It is this dual action of surfactant and esterified oil which makes HASTEN a very effective adjuvant with certain insecticides.

HASTEN is primarily used as a tank mix adjuvant, that is, the insecticide and HASTEN are added separately to the spray tank. This provides the greatest flexibility for matching the use rate of HASTEN with the situation at hand eg. environmental conditions, insect types, spray equipment etc. HASTEN can also be formulated directly with insecticide formulations where market conditions make this preferable.

SUGGESTIONS FOR USE

HASTEN may be used in place of non-ionic surfactants or crop oil concentrates when permitted by insecticide labels.

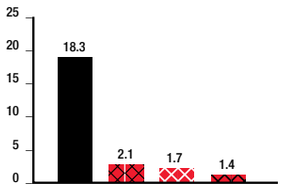
Typically, HASTEN is added to the spray tank at a concentration of 0.5-1.0% when spray volumes are between 50-100 Litres per hectare. In situations where the agricultural practice is to use a higher volume than 100 Litres per hectare, HASTEN is typically used at 0.5-1.0 Litres per hectare.

Always strictly follow label instructions before use.

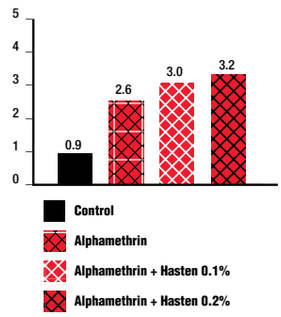
TRIAL 1
Control of Heliothis in Cotton - India 2002

Insecticide: Alphamethrin 10% EC - 25g a.i./ha
Spray Rate: 500-750L/ha
Application: 7 Applications over 34 Days

Mean % Boll Damage
11 Days after 7th application



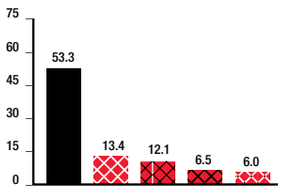
Seed Cotton Yield (Tonnes/ha)



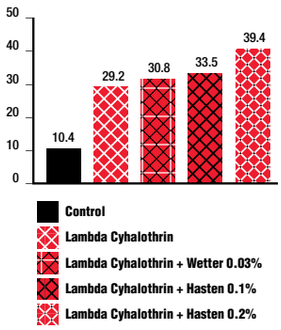
TRIAL 2
Control of Heliothis in Cotton - India 2004

Insecticide: Lambda Cyhalothrin 5% EC - 40g a.i./ha
Spray Rate: 450-700L/ha
Application: 7 Applications over 37 Days

Mean percent square damage
6 days after 4th application



Mean number of healthy green bolls/plant
5 days after 7th application





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HASTEN WITH FUNGICIDES

PRODUCT	COMPANY	HASTEN RATE PER 100L OF SPRAY VOLUME
Prosaro*	Bayer Cropscience	1L/100L
Topnotch*	Adama	0.5 - 1.0L/100L

FUNGICIDE APPLICATIONS

When HASTEN† is tank mixed with certain fungicide products and applied in the field, the non-ionic surfactants in the HASTEN formulation help to retain spray droplets and ensure coverage of plant surfaces. The esterified oil in the HASTEN formulation can retard crystallisation of water soluble fungicides as water evaporates from spray droplets. It will also increase the penetration of systemic fungicides through a plant's epicuticular waxy surface leading to enhanced fungal control. It is this dual action of surfactant and esterified oil which makes HASTEN a very effective adjuvant with certain fungicides.

HASTEN is primarily used as a tank mix adjuvant, that is, the fungicide and HASTEN are added separately to the spray tank. This provides the greatest flexibility for matching the use rate of HASTEN with the situation at hand eg. environmental conditions, type of fungal disease, spray equipment etc. HASTEN can also be formulated directly with fungicide formulations where market conditions make this preferable.

SUGGESTIONS FOR USE

HASTEN may be used in place of non-ionic surfactants or crop oil concentrates when permitted by fungicide labels.

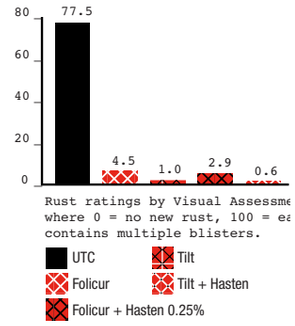
Typically, HASTEN is added to the spray tank at a concentration of 0.5-1.0% when spray volumes are between 50-100 Litres per hectare. In situations where the agricultural practice is to use a higher volume than 100 Litres per hectare, HASTEN is typically used at 0.5-1.0 Litres per hectare.

TRIAL 1

Rust Control in Perennial Ryegrass - Oregon USA

Fungicides:
TILT* (250g/L Propiconazole) - 440ml/ha
FOLICUR* (430g/L Tebuconazole) - 440ml/ha
Spray Rate: 200 L/ha
Fungicides were applied twice 25 days apart. Treatments were assessed 19 days after second application.

Assessment Rust Rating - 19 DAT

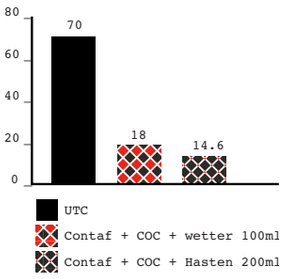


TRIAL 2

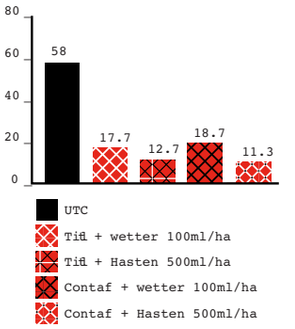
Blister Blight Control in Tea - India

Fungicides:
CONTAF* 5E (50g/L Hexaconazole) - 200ml/ha
COPPEROXYCHLORIDE (COC) - 200g/ha
TILT* 25EC (250g/L Propiconazole) - 125ml/ha
Spray Rate: 200 L/ha

2004 Season: 12 Applications over 120 days
% Blister Blight Incidence
- Average of 9 Assessments



2002 Season: 11 Applications over 126 days
% Blister Blight Incidence
- Average of 10 Assessments



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HASTEN FOR COTTON

PRODUCT	COMPANY	HASTEN RATE PER 100L OF SPRAY VOLUME
Thidiazuron and Thidiazuron + Diuron products for defoliation Dropp* Dropp Ultramax*, Echem Thi-Ultra*, Echem Thidiazuron 500*	Bayer Cropscience, Echem and others	0.5L/ha
Ethephon products for boll opening Prep* & Finish* (when used with Thidiazuron products)	Bayer Cropscience and others	0.5L/ha
Eject* and Etee* Defoliant	Sipcam	0.5L/ha

DEFOLIANT APPLICATIONS

When HASTEN† is mixed with certain Cotton defoliant products and applied in the field,the non-ionic surfactants in the HASTEN formulation help to retain spray droplets and ensure thorough coverage of plant surfaces. The esterified oil in the HASTEN formulation will retard crystallisation of water soluble defoliants as water evaporates from spray droplets. It will also increase the penetration of systemic defoliants through a plant's epicuticular waxy surface leading to enhanced defoliation. It is this dual action of surfactant and esterified oil which makes HASTEN is a very effective adjuvant with certain defoliation programs.

SUGGESTIONS FOR USE

HASTEN may be used in place of non-ionic surfactants or crop oil concentrates when permitted by defoliant labels. When using DROPP®Ultra* in Australia, use HASTEN at 0.5 Litres per hectare. We recommend that a compatibility test be conducted before using HASTEN with other defoliants on a large scale.

When using with Movento* 240SC or Scope* Insecticide, apply HASTEN at 1.0L/ha. For other situations as allowed by product labels, typically, HASTEN is added to the spray tank at a concentration of 0.5-1.0% when spray volumes are between 50-100 Litres per hectare. In situations where the agricultural practice is to use a higher volume than 100 Litres per hectare, HASTEN is typically used at 0.5-1.0 Litres per hectare.

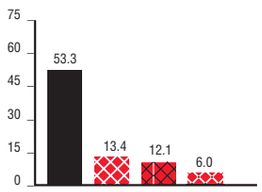
Now with Cotton seed oil

HASTEN
Investing in Australian Cotton

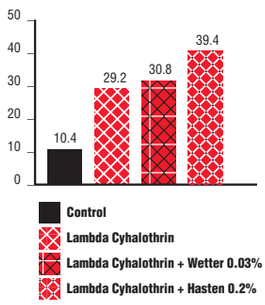
TRIAL 1
Control of Heliothis in Cotton - India 2004

Insecticide: Lambda Cyhalothrin 5% EC - 40g a.i./ha
Spray Rate: 450-700L/ha
Application: 7 Applications over 37 Days

Mean percent square damage 6 days after 4th application

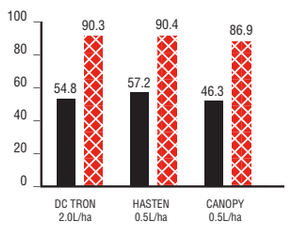


Mean number of healthy green bolls/plant 5 days after 7th application

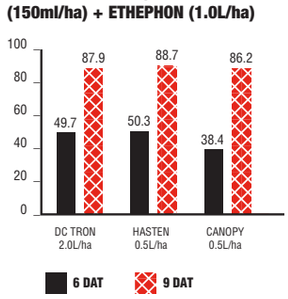


TRIAL 2
Cotton Defoliation - Queensland Australia 2004
Defoliants:
DROPP* Ultra (120g/L Thidiazuron, 60g/L Diuron)
ETHEPHON* 720 (720g/L Ethephon)
Spray Rate: 90L/ha

Applied at 67% Bolls Open % Defoliation Using DROPP Ultra (200ml/ha)



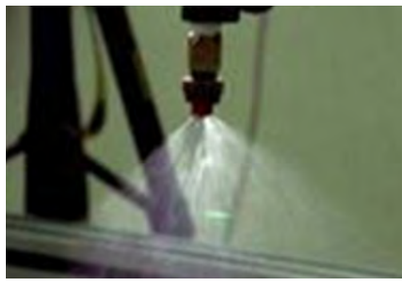
% Defoliation Using DROPP Ultra (150ml/ha) + ETHEPHON (1.0L/ha)



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ADHESION SPREAD & DRIFT

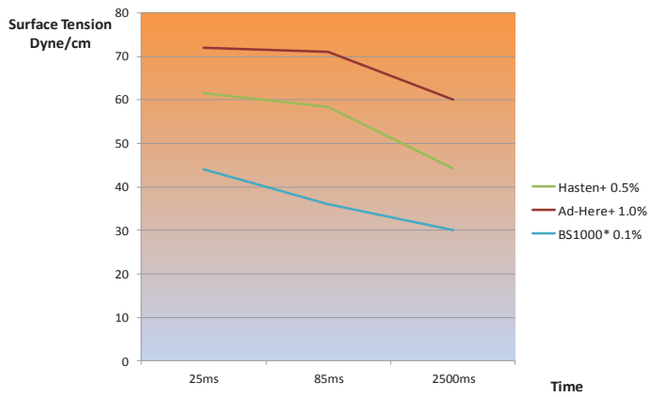
ADHESION, SPREAD & DROPLET SIZE



HASTEN† is an oil based adjuvant that utilises the functional benefits of Ethylated Canola Oil. However, HASTEN also contains spreading and wetting surfactants which increase the adhesion and spreading of spray deposits. When HASTEN is added to a spray mix, it generally produces larger droplets that may help reduce driftable fines.

ADHESION - DYNAMIC SURFACE TENSION

Dynamic Surface Tension is a measure of the speed at which the surfactants can reduce the surface tension of the spray solution. HASTEN has a moderate DST which promotes adhesion of droplets as they contact a surface hence minimising losses due to droplet bounce or run-off.

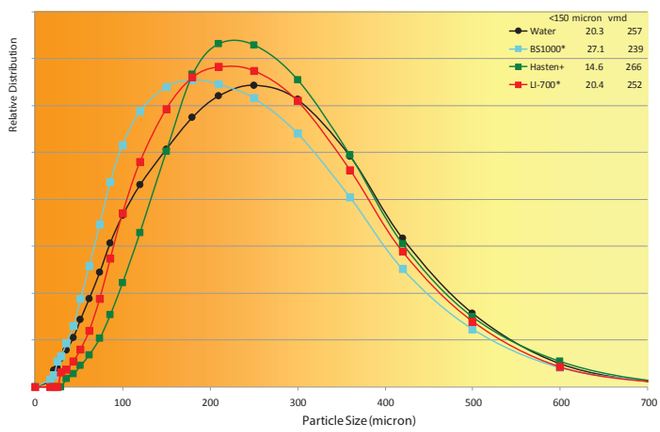


SPREADING OF THE SPRAY DEPOSIT

HASTEN often works best when droplets remain as single deposits rather than coalescing and spreading thinly over the target surface. Spray deposits have a slower evaporation rate than a thin layer and allow more time for the active ingredient in association with the non-volatlie Ethylated Canola Oil to penetrate the waxy cuticle.

DRIFT REDUCTION - DROPLET SIZE DATA

Adjuvants can influence the droplet size of agrichemical sprays. When applied through hydraulic nozzles such as XR11002, see graph, HASTEN will tend to increase the average droplet size compared with other adjuvants. This has the benefit of reducing the number of very small (<150 micron) droplets which are associated with increased drift risk.



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CROP SAFETY

HASTEN† is based on natural Canola oil and is a non-hazardous product. When used according to product labels, it is generally very safe for the user, crops and to the environment.

CROP SAFETY - PHYTOTOXICITY (FIELD)

HASTEN has been used in a very wide variety of agricultural applications and is generally considered crop safe when used as directed on labels.

HASTEN is recommended by global Life Science companies on their product labels for broadacre applications such as with selective herbicides and systemic fungicides. Very rarely, some crop yellowing or spotting is observed on crops that have been sprayed with a pesticide and HASTEN. However, these effects are usually transitory and generally have no adverse consequences.

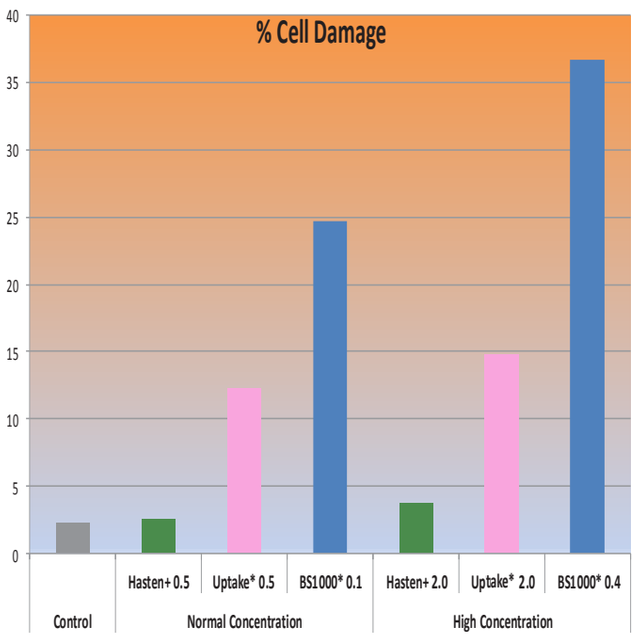
HASTEN is also applied in many horticultural situations such as with fungicides and insecticides to fruits and vegetables. Phytotoxicity risks and consequences are significantly higher in horticulture especially for sensitive crops and certain restrictions apply to successfully manage these risks.

For further information check product labels or contact your local representative or reseller.

CROP SAFETY - PHYTOTOXICITY (LAB STUDY)

Adjuvants have potential to cause phytotoxicity which may be due to them causing cellular membrane damage. This effect was evaluated for three adjuvants using change in conductivity due to ion-leakage after potato tuber discs were immersed in adjuvant solutions for 3 hours at room temperature.

Results show that HASTEN produced only a small change in conductivity compared with water alone indicating relatively less cell damage. The mineral oil based adjuvant Uptake* and the non-ionic surfactant adjuvant BS1000* both produced significantly greater change indicating more cell damage occurred.



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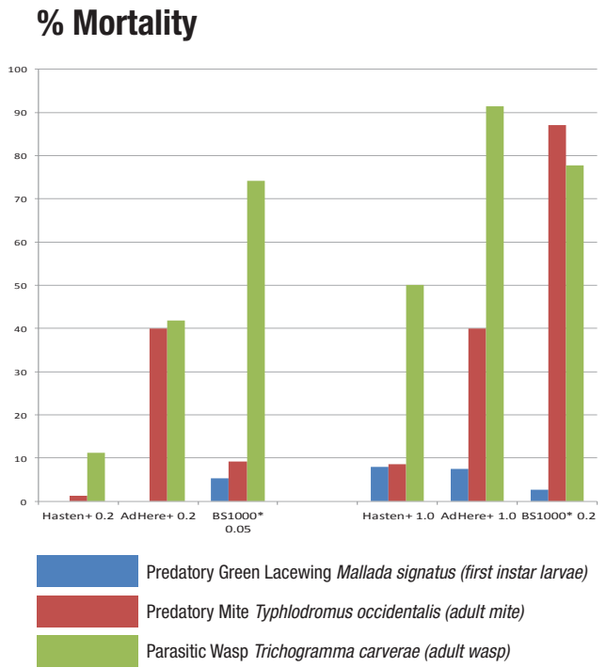


ENVIRONMENTAL SAFETY

ADJUVANT EFFECT ON BENEFICIALS

VICCHEM has undertaken a series of studies to evaluate the affect of adjuvant solutions when sprayed directly on beneficial insects and predatory mites. The results showed that adjuvants can be harmful to certain beneficial insects and mites and that higher rates of adjuvant increased toxicity. HASTEN was generally safer than other adjuvants as shown in the graph titled % Mortality





AQUATIC ORGANISMS

HASTEN has been tested for toxicity to aquatic organisms and found to be Non-toxic.

TEST	DESCRIPTION	RESULT
OECD202	Toxicity to Daphnia	>100mg/L Non-toxic
OECD203	Toxicity to Fish	>100mg/L Non-toxic



In a recent study, a solution of 1% v/v HASTEN was sprayed directly on honey bees which resulted in no mortality compared with control after 24 hours thereby demonstrating HASTEN is safe to bees.

Certified Allowed Input
ACO CERT. NO. 11155

Hasten is approved by Australian Certified Organic as an Allowed Input for Organic Farming.

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INVESTING IN PROPRIETARY RESEARCH

Victorian Chemical Company has been an Australian pioneer in spray adjuvant technology since the early 1990's. Now known as Vicchem, after its founding in 1933 it launched its first successful agricultural product Voullaires† Ee-Muls-Oyle† in 1939 that is still used in the Mildura region to this day to improve the quality of dried fruit.

This research focus became a hallmark of this family owned company which went on to launch Vicol Winter Oil in the 1980's, widely used to protect orchard trees from winter pests. In the early 1990's, VICCHEM developed HASTEN†, the first ethylated Canola oil adjuvant to be launched in Australia. Many innovative studies and field trials later - often in partnership with Australian universities - Hasten has grown to become one of the most popular spray adjuvants on the market.

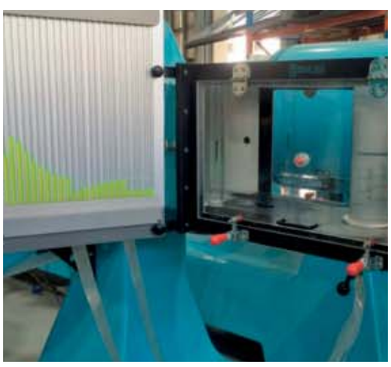
The direction of VICCHEM's research has been guided by the plant production issues faced by farmers - and the challenging environments in which many operate. This includes spray droplet size and its effect on spray drift, with many studies employing the innovative wind tunnel at the University of Queensland's Gatton campus to produce robust results and recommendations for farmers.

VICCHEM has completed toxicology studies to determine adjuvant effects on multiple crops, mites, beneficial insects and aquatic organisms, all of which have been crucial to enhancing the safety profile of Hasten.

A research partnership with Monash University in Melbourne, produced valuable data on the interactions that may take place between adjuvants and active ingredients in some of Australia's most widely used agrichemicals.

VICCHEM has pioneered unique adjuvant formulations for speciality adjuvants containing ammonium sulphate, oils and surfactants in Hot-Up† and the recently released Outright 770†. These multi-component adjuvants provide all the ingredients needed for successful summer weed control. Key features include hard water suppression, wetting and spreading properties, penetration and reduced evaporation under hot dry conditions.

A leader in adjuvant research globally, VICCHEM frequently publishes and presents its research findings at international conferences including the International Symposium for Agricultural Adjuvants.







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THE COMPANY



A primary goal of Vicchem is to provide our customers and industry partners with products and service that increase their profitability and the well being of the communities where they operate.

We have an unrelenting commitment to; integrity in our relationships; the health and safety of people; care for the environment and innovation, development and continuous improvement which is the foundation of our quality system ISO 9001:2015.

VICCHEM has also achieved HACCP and GMP accreditation.

We look forward to working with you in the days ahead for our mutual prosperity.

Andrew Killick Managing Director

VICCHEM
The Right Chemistry



























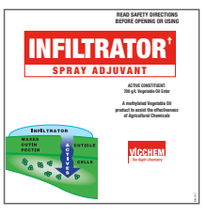






















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VICCHEM WAREHOUSE LOCATIONS



AVAILABLE FROM YOUR LOCAL RURAL RETAILER

For further information visit VICCHEM.COM or call 03 9301 7000 or your VICCHEM Territory Manager

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