

HASTEN™

SPRAY ADJUVANT

HASTEN spray adjuvant is a blend of esterified vegetable oil and non-ionic surfactants that has :

- Proven cost effective performance for over 10 years with a wide range of agricultural products,
- Excellent plant and insect penetrating and wetting properties,
- An internationally recognised tradename and reputation for reliability,
- Approval by Environmental Protection Agencies in many countries including the USA,
- Renewable material – Vegetable oil – as its base raw material,
- A high quality formulation providing easy dispersion and stable emulsion characteristics, and
- International Patents granted and pending.

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 Defoliant.

Herbicide Applications

When **HASTEN** is tank mixed with certain post-emergent herbicide 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 crystallization of herbicides as water evaporates from spray droplets. It will also increase the penetration of herbicides through a plant's epicuticular waxy surface leading to enhanced weed control. It is this dual action of surfactant and esterified oil which makes **HASTEN** a very effective adjuvant with many post-emergent Herbicides.

HASTEN is primarily used as a tank mix adjuvant, that is, the herbicide 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, weed types, spray equipment etc. **HASTEN** can also be formulated directly with Herbicide formulations where market conditions make this preferable.

Trial 1 Notes: Weed control was observed to be less effective and much slower than normal due to unseasonably dry conditions. However the benefits of using **HASTEN** were evident.

Trial 2 Notes: **HASTEN** was found to be a superior adjuvant to AGRAL 90 when used with REFINE EXTRA for the weeds shown.

Trial 3 Notes: **HASTEN** enhanced the weed control significantly when applied with TOPIK at the sub-lethal dose of 30g/ha.

TRIAL 1

Weed Control in Winter Crops - Australia 2002

Herbicide:

HUSSAR* (50g/kg Iodosulfuron) - 200g/ha

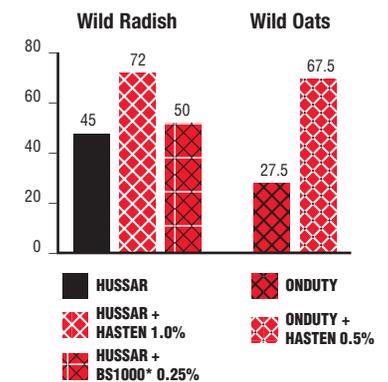
Target: Wild Radish in Triticale

ONDUTY* (525g/kg Imazapic + 175g/kg Imazapyr) - 40g/ha

Target: Wild Oats in Clearfield Canola

Spray Rate: 70L/ha

% Weed Control 42 DAT



TRIAL 2

Weed Control in Summer Wheat

- Canada 2004

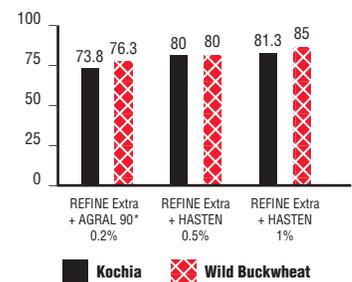
Herbicide:

REFINE* EXTRA 75% DF (Thifensulfuron 50%, Tribenuron Methyl 25%) - 15g/ha

Crop: Wheat

Spray Rate: 100 L/ha

% Weed Control



TRIAL 3

Phalaris Control in Wheat - India 2002/3

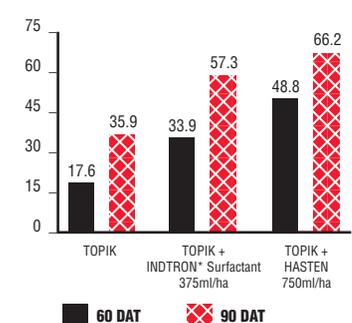
Herbicide:

TOPIK* (Clodinafop-Propargyl 15WP) - 30g a.i./ha

Crop: Wheat

Spray Rate: 375 L/ha

% Weed Control



Herbicide Applications

Testing and Evaluation

HASTEN is a non-ionic formulation which makes it compatible with most herbicides. In fact, **HASTEN** has been in use for over 10 years with many herbicides around the world and has been found to be physically compatible with major herbicide products.

HASTEN has been tested and evaluated by universities, lifescience companies, research organizations and independent researchers for many years. It has been established that **HASTEN** is a very effective adjuvant for improving the performance of herbicides and in many situations will outperform both emulsified petroleum and vegetable oil based products. It has also been observed that **HASTEN** is capable of increasing the activity of certain herbicides which may result in crop injury. Therefore in all new situations it is important to test **HASTEN** with the herbicide in a small area prior to applying it on a commercial scale.

Commercial Use

HASTEN is successfully used by farmers in many different countries around the world with a diverse range of agricultural products including herbicides. In Australia, **HASTEN** was commercialized in 1996 and is now recognised as a leading adjuvant by farmers, distributors and lifescience companies. After extensive testing many lifescience companies, including BASF, BAYER, DOW, DUPONT, SUMITOMO and SYNGENTA have endorsed and recommend the use of **HASTEN** on some of their herbicide labels. A list covering the use of these herbicides in Australia is provided as Table 1.

Suggestions for Use

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

The Company

Victorian Chemical Company is committed to providing quality products and professional and friendly service, that our customers can confidently rely on to add value to their businesses. In order to achieve this goal we will continue to develop, our understanding of our customer's requirements, the operations of our company and our technical expertise.

General Information

The information contained in this bulletin is of a general nature. Further information is available regarding **HASTEN'S** use with Insecticides, Fungicides and Defoliants. Please visit our web site at www.vicchem.com to access Label and MSDS information.

General Specifications

| | |
|-------------------------|---------------------|
| Appearance | Bright Clear Liquid |
| Specific Gravity (20°C) | 0.9 g/ml |
| Colour | 10 Gardner Max |

TRIAL 4

Fallow Weed Control - Qld Australia 2002/3

HASTEN can be used successfully in GLYPHOSATE mixes especially where the mixing partner is usually recommended for use with **HASTEN**. The following examples come from larger studies undertaken by Conservation Farmers Inc. and published in *The 2nd Fallow Weed Management Guide*.

- GLYPHOSATE CT 1.5L + ALLY* 5g + **HASTEN** 1%
92% Control of volunteer Mungbeans, Turnip weed and Pigweed
- GLYPHOSATE CT 1.5L + LONTREL* 100ml + **HASTEN** 1%
86.3% Control of volunteer Mungbeans, Turnip weed and Pigweed
- GLYPHOSATE CT 1.2L + PLEDGE* 100ml + **HASTEN** 0.5%
99% Control of Cowvine and 92.5% control of Polymeria

TABLE 1

| Product | Company | Rate HASTEN per 100L Spray Volume | Product | Company | Rate HASTEN per 100L Spray Volume |
|---------------|----------|-----------------------------------|---------------|-----------|-----------------------------------|
| Select* | Sumitomo | 1.0L | Raptor* WG | BASF | 0.5L |
| Topik* | Syngenta | 0.5L | Logan* BPower | Syngenta | 0.5L |
| Spinnaker* | BASF | 0.5L | Motsa* | Sumitomo | 1.0L |
| Correct* | Bayer | 0.5L | Targa* Bolt | Du Pont | 1.0L |
| OnDuty* | BASF | 0.5L | Aramo* | BASF | 1.0L |
| Shogun* | Syngenta | 0.5L | Decision* | Bayer | 1.0L |
| Hussar* | Bayer | 1.0L | Hammer* | Crop Care | 0.5 - 1.0L |
| Midas* | BASF | 0.5L | Clearsol* | BASF | 0.5L |
| Lightning* | BASF | 1.0L | Atlantis* | Bayer | 1.0L |
| Gesaprim* | Syngenta | 0.5 - 1.0L | Tordon* DSH | Dow | 0.5L |
| Blazer* | BASF | 1.0L | Intervix* | BASF | 1.0L |
| Flame* 240g/l | BASF | 1.0L | | | |

Always strictly follow label instructions before use

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