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Silwet* 625 Spray Adjuvant

MARKETING BULLETIN

SPECIALTY FLUIDS - AGRICULTURE

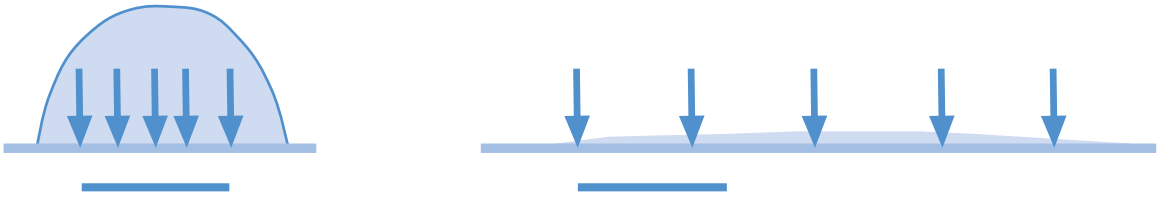
Silwet 625 spray adjuvant is a proprietary trisiloxane alkoxylate based wetting agent, used as a penetrant for herbicide applications (e.*g.* glyphosate).

Unlike traditional trisiloxane alkoxylates, which can inhibit uptake of glyphosate into grasses, Silwet 625 spray adjuvant helps overcome this problem, by enhancing performance relative to conventional tallow amine ethoxylate based spray adjuvants.

Although most trisiloxane superspreaders are excellent wetting agents (*i.e.* Silwet L-77* adjuvant), it has been demonstrated that spreading is not always beneficial to herbicide uptake and performance (Lui, Z.Q.; Zabkiewicz, J.A. 1997. Proc. 50th Plant Protection Conf.: 129-133.). Figure 1 illustrates that superspreading can reduce the concentration of herbicide per unit area. In some cases this is believed to limit herbicide uptake into grasses. Evidence suggests that cuticular penetration of herbicide is favored by organosilicone sprays that do not superspread, thereby giving a higher concentration of herbicide/unit area.

Silwet 625 spray adjuvant is designed to provide the penetration properties associated with trisiloxane alkoxylates, but limits the superspreading property to achieve the optimum balance.

Figure 1: Effect of Spreading on Herbicide Distribution on the Leaf Surface



Key Features and Typical Benefits

- Promotes rapid penetration of herbicides into grasses
- Can improve spray coverage
- Controlled spreading overcomes antagonism associated with TSAs and glyphosate on grasses
- Can reduce use levels relative to tallow amine ethoxylates
- Low use rates make Silwet 625 spray adjuvant an excellent candidate for "In-can" formulations (25 to 100 g/L formulation)

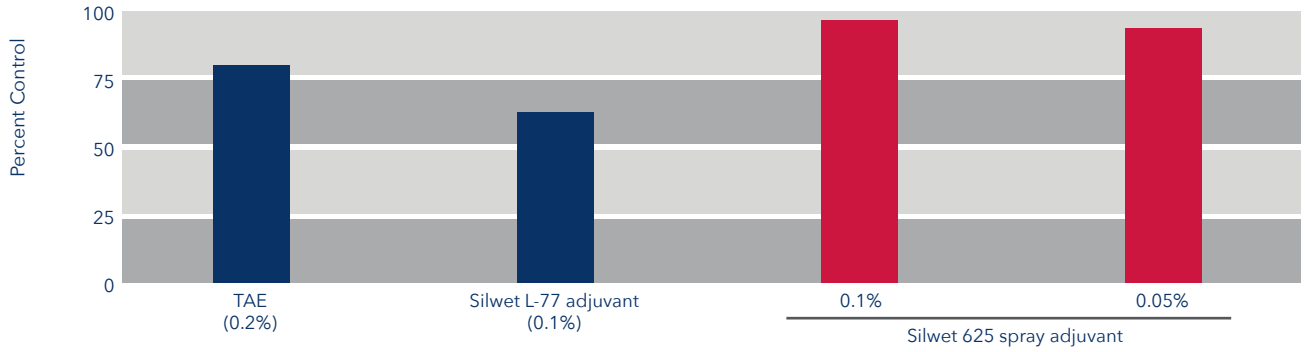
Typical Physical Properties

Property	Result
Appearance at 25°C	Clear amber liquid
Surface Tension, mN/m (0.1 wt%) [a]	33
Viscosity (cps) [b]	144
Spread Diameter, mm (0.5 wt%) [c]	7
Cloud Point (0.1 wt %), °C	≥ 100
Flashpoint, PMCC °C (°F)	82 (180)

Typical physical properties are average data and are not to be used as or to develop specifications.
(a) Surface Tension by Wilhelmy Plate Method
(b) Brookfield Viscosity: 25 °C, Spindle LV-3, 100 rpm
(c) Deionized water, 25 °C
*Silwet and Silwet L-77 are trademarks of Momentive Performance Materials Inc.

As a result of the unique composition of Silwet 625 spray adjuvant, improved efficacy may be achieved at use levels up to 4 times less than a conventional tallow amine ethoxylate. Figure 2 demonstrates that Silwet 625 spray adjuvant is an effective adjuvant for glyphosate in controlling barnyardgrass (Echinochloa crus-galli) relative to a trisiloxane alkoxylate superspreader (Silwet L-77* adjuvant), and a tallow amine ethoxylate containing 15 EO units.

Figure 2: Impact of Spray Adjuvant Type on Control of Barnyardgrass with Glyphosate[(a)] (Rain 2 HAT, Results at 14 DAT)



Note: Test data. Actual results may vary.

Potential Applications

In Agrochemical Formulations

Silwet 625 spray adjuvant may be used as a component in agrochemical formulations. Although organosilicone surfactants are subject to hydrolysis under acidic or basic conditions, optimum performance is achieved by buffering the formulation to pH 6.0 - 7.5. Additionally, it is recommended that Silwet 625 spray adjuvant be used at a concentration of at least 0.025% based on the final spray dilution. Depending on the overall use rate of the herbicide formulation, this will translate into a contained rate of 25 to 100 g Silwet 625 spray adjuvant/L formulation.

As A Tank Mix Adjuvant

Silwet 625 spray adjuvant, when used as a tank-side adjuvant may improve herbicide performance. Silwet 625 spray adjuvant is most effective as a tank-side adjuvant when spray mixtures are:

1) within a pH range of 5-8, and

2) used within 24 hours of preparation.

Typically Silwet 625 spray adjuvant is used at 0.025% to 0.1% in the spray tank.

Patent Status

Technical subject matter in this publication is described and protected by one or more of the following U.S. Patents and their foreign counterpart patents and/or patent applications: U.S. Patent No. 5,104,647. Other U.S. and foreign patents and/or patent applications not listed covering the subject matter may be relevant.

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