



TECH NOTE SERIES



ECOSPREAD®

SUPER SPREADER SURFACTANT

ECOSPREAD® - 100% Polyether Modified Trisiloxane
Super Spreader & Super Penetrant
An innovative and well proven surfactant
BioGro® certified for use in organic production

FEATURES

ECOSPREAD® is a BioGro® certified non ionic surfactant from the organomodified trisiloxanes chemical class. These are the only agricultural adjuvants that can produce a phenomenon known as "super spreading" i.e. the rapid coverage of hydrophobic surfaces such as leaves at concentrations of 0.1% or less. Aqueous solutions containing ECOSPREAD® have zero contact angle - in contrast to water treated with conventional surfactants such as nonylphenol ethoxylates.



Super spreading is a consequence of lowering surface tension dramatically i.e. below 25 mN/m. Hence agricultural sprays containing ECOSPREAD® can deliver crop protection products and foliar fertiliser more effectively by:

- complete wetting of treated vegetation (wetting action)
- allowing the spray to reach locations that are conventionally not accessible (targeting effect)
- better uptake through the waxy layer of leaves (cuticular penetration), entering stomata pores (stomatal flooding)

Stomatal Flooding

Stomata are microscopic pores in the leaf's surface that exchange water vapour, oxygen and

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TECH NOTE SERIES

carbon dioxide with the atmosphere. If spray solutions enter these minute openings, direct access is gained to the plant's intercellular structure. Once inside the sub-stomal cavity, the active ingredient is quickly absorbed by the spongy mesophyll and translocated throughout the plant, resulting in faster and more positive results.

Cuticular Penetration

The function of waxy cuticle layer is to prevent water loss from the leaf surface, It's impervious nature also inhibits entry of pesticides into the leaf. Silicone surfactants can enhance the passage of pesticides through the cuticle without damaging it.

BENEFITS

The outstanding physical chemical properties of ECOSPREAD[®] result in unique modes of action which in turn provide benefits to the farmer because:

- ECOSPREAD[®] allows a larger amount of active ingredient to enter the plant
→ the active works even under difficult conditions
- ECOSPREAD[®] provides rainfastness to agricultural sprays
→ rain an hour after application can be tolerated with no need for re-spray
- ECOSPREAD[®] permits the reduction of spray volumes by up to 30%
→ saving time, money and environmental resources

In many field trials on a wide range of crops, independent institutes and extension services have successfully tested ECOSPREAD[®] with:

- herbicides
- fungicides
- insecticides and acaricides
- plant growth regulators
- micronutrients
- and as a soil wetting agent and dew control agent



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ADVANTAGES

ECOSPREAD® safeguards the performance of pesticides and foliar fertilisers under unfavourable conditions:

- By delivering the active even under hot and dry conditions
- When weeds species are mature and hardened
- When crops are covered by dust from the field
- After a cold period when the waxy layer of plants is thicker
- When plants have a limited surface e.g. spikes
- When complete coverage is necessary e.g. rose petals
- It helps dissolve solid formulations e.g. WDG's and WP's

Therefore ECOSPREAD® offers a broad application range. It has no significant influence on spray droplet sizes.

USE RATES

For tank mixtures, pesticides manufacturers may suggest a rate of a non-ionic surfactant to be used with their product. Follow the corresponding label recommendations. Otherwise ECOSPREAD® should be applied at the rates listed.

| PRODUCT | CROP | ml/100 litres | RATE % dilution | minimum ml/ha | CRITICAL COMMENT |
|--------------------------------------|------------------------------------|---------------|-----------------|---------------|---|
| Herbicides | - | 15 | 0.015% | 200 | Add 15 ml/100 litres of spray mix (0.015%) but not less than 200 ml/ha |
| Insecticides & Fungicides | Row crops (including cereal crops) | 10 | 0.010% | 100 | Add 10 ml/100 litres of spray mix (0.01%) but not less than 100 ml/ha |
| | Fruit trees and Vines | 15 | 0.015% | 200 | Add 15 ml/100 litres of spray mix (0.015%) but not less than 200 ml/ha |
| | Vegetable crops | 15 | 0.015% | 200 | Add 15 ml/100 litres of spray mix (0.015%) but not less than 200 ml/ha |
| | Ornamentals | 10 | 0.010% | 100 | Add 10 ml/100 litres of spray mix (0.01%) but not less than 100 ml/ha |
| Growth Regulators | All | 15 | 0.015% | 200 | Add 15 ml/100 litres of spray mix (0.015%) but not less than 200 ml/ha |
| Foliar Fertilisers | All | 10 | 0.010% | 100 | Add 10 ml/100 litres of spray mix (0.01%) but not less than 100 ml/ha |



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TECH NOTE SERIES

These dosage rates account for various water volumes in order to minimise the risk of run off. To be in line with regulatory compliances, please observe the local label whether a maximum concentration must not be exceeded. Before the actual spray application with ECOSPREAD[®] with a pesticide or fertiliser, it is recommended to test the tank mix prepared on a small test spot to check for any undesired results.

ECOSPREAD[®] ANALYSIS

| PHYSICAL PROPERTIES | |
|--------------------------------|--------------------------|
| Viscosity at 25°C | 40 - 90 mPas |
| Density at 20°C | 1.00 - 1.02 g/ml |
| Type | 100% non-ionic |
| Flash point | > 100°C |
| Pour point | < -10°C |
| Surface Tension at 22°C (0,1%) | approx. 22 mN/m |
| Appearance | liquid |
| Colour | colourless to pale straw |

| SOLUBILITY at 10% | |
|----------------------|---------|
| Water | soluble |
| Butanol | soluble |
| NMP | soluble |
| Cyclohexanone | soluble |
| Rapeseed methylester | soluble |
| Sunflower oil | soluble |
| Solvesso 150 | soluble |

Storage Stability

ECOSPREAD[®] is stable in sealed containers for 4 years. ECOSPREAD[®] is not sensitive to freezing.