



Regulators- Continue

Silver Thiosulfate Solution (STS)

Brief:

Silver thiosulfate is combination of sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$) and silver nitrate (AgNO_3) in solution commonly used to block the effects of ethylene in plant cell structures. Silver nitrate can be used alone but is relatively immobile within the plant thus it is combined with silver thiosulfate which moves rapidly within the stems.



Purpose:

Some plants, such as bougainvillea, are stressed when transported. Within days of shipping, the bracts begin to fall and seldom recover. A light spray mist of STS approximately 2-3 weeks prior to shipment has shown a tendency to prevent bract abscission.

STS Formula Mix

Silver nitrate.....	20ml
Sodium thiosulfate.....	80ml
STS Solution.....	.02M
Molar ratio between AgNO_3 and $\text{Na}_2\text{S}_2\text{O}_3$	1 to 4

Formula Notes

To prepare formula, follow the instructions described under "Preparation of Formula" carefully or the solution will precipitate and become useless

Preparation of Formula Mix

- Prepare stock solutions
 - Sodium Thiosulfate Stock Solution (.1M solution)

Sodium Thiosulfate.....	1.58grams
Distilled H_2O	100ml
 - Silver Nitrate Stock Solution (.1M solution)

Silver Nitrate.....	1.7grams
Distilled H_2O	100ml
- Prepare each stock solution by dissolving in distilled water free of chlorine
If not being used immediately the stock solutions can be store in the dark until needed to prepare the STS
- Prepare STS Formula
 - Pour 80 ml of sodium thiosulfate stock solution into a container
 - Slowly pour 20ml of silver nitrate stock solution in to the container holding the sodium thiosulfate. (NOTE: DO NOT DO THE OTHER WAY)
 - Stir rapidly and continuously as the two stock solutions are being mixed.
 - Some browning of the solution may occur.
 - Pour into a clean plastic container and seal



Bougainvillea

Quick Guide

4. Storage of STS Formula Mix
 - a. If not being used immediately the STS Formula can be stored in a refrigerator for up to a month
 - b. Preparation of the necessary STS just prior to use is recommended
5. Notes
 - a. Normally STS is applied as a separate treatment
 - b. Treatment of the STS can be followed with a sugar or biocide treatment

Methods of Application to Bougainvillea

1. STS formula may be sprayed on ethylene sensitive potted plants to prevent flower and bract loss during post production shipping
2. 2 to 3 weeks prior to shipping lightly spray plant and bracts
3. Allow to plant to sit in location and dry to the touch
4. A re-application should be done 1 week prior to shipping

Sources:

Cameron, Arthur C. and Michael Reid. The use of silver thiosulphate anionic complex as a foliar spray to prevent flower abscission of Zygocactus. Department of Horticulture, University of California-Davis, Hortiscience, 16 (6), 761-762, 1981

Cameron, Arthur C. and Michael Reid. Use of silver thiosulphate to prevent flower abscission from potted plants. Department of Horticulture, University of California-Davis, Scientia Horticulturae, 1983.

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