

## HOW-TO Make and Use Silver Thiosulfate Solution(STS) for Feminized Cannabis Pollen! (Featuring the Gorgeous Early Dane!)

**Want Your Female Cannabis Plant Exploding With "FEMINIZED" Pollen Like This One?!**  
See the simple steps required to produce drifts of FEMINIZED cannabis pollen!



Look at the flower clusters on her, they dumped an amazing amount of pollen for such a small plant.

### **Silver ThioSulfate Solution (STS) is Easy to Make and Apply!**

The instructions I've provided here cover mixing, diluting, spraying tips and scheduling, along with additional tips from the pros. Even the most stubborn strain will reliably respond with feminized pollen when you carefully follow this tutorial. The materials you'll need are readily available nearly anywhere.

The ingredients you'll need are available on Amazon, the instructions are straightforward for mixing and the application is quick, repetitive and simple. It's taken me quite a while to

make sure this is complete, I hope it helps you as much as it has me.

### **What About Hermaphrodites? (Hermies!!)**

Here's what I've been able to find out about STS and hermies. STS does not promote hermies and it does not eliminate hermies. Creating a stress free flowering environment for your reversed females is VERY important. Here's why.

Reversing a female with STS will produce stable feminized pollen. At least as stable as the parents are anyway. Reversing a female known to hermie with light leaks, in a room with a light leak, will create both feminized & hermie pollen. You will get female and hermie seeds. The same is true for any plant with hermie triggers that is flowered in a space which has those triggers.

The difference being, you'll be unable to tell which flowers are producing hermie pollen and which are producing valuable feminized pollen. The flowers look the same. So it's extremely important to reverse females in a space you know will not trigger hermie tendencies. It would be wonderful to work with genetics without hermie traits. I look forward to the day when this will be a commonplace event. Until then we make a great many seeds, so we can stress test females and find the ones which do not hermie.

### **ITEMS YOU WILL NEED WHEN MAKING STS:**

- Brown Glass Bottle and Sprayer Top (Pint)
- Trash Bag and Tape
- Digital or Other .xx Accurate Gram Scale
- Distilled or R/O Water
- (2)500ml Brown Glass Bottles
- 2 Glass Mixing Containers (I used Pyrex 2-cup measures)
- Dawn Ultra Dish Soap or other plain soap/surfactant
- (2)60cc Syringes
- Silver Nitrate
- Sodium Thiosulfate (Anhydrous or Pentahydrate)
- Painter's Mask
- Gloves

### **Mixing the A and B "Stock" Solutions**

STS is stored as two solutions, A & B. When kept sealed, cool and without exposure to light, they are very stable. Separately, they can be stored for months without issue. Once mixed

their life span is about 1 month, but only if kept cool, sealed and in the dark. is diluted with r/o water before spraying on plants.

This mix



### Stock Solution A

- Fill the Pyrex 2-cup measure to the 500ml line with r/o water
- Measure 0.5 (0.68 corrected) Grams of Silver Nitrate using the digital scale
- Slowly pour the silver nitrate crystals in to the 500ml of r/o water while stirring
- Stir until dissolved (15 seconds)
- Pour the solution in to the 500ml brown glass bottle and cap it tightly
- LABEL the bottle "STS PART A" in a clear and long lasting fashion
- Thoroughly wash and rinse the Pyrex measuring cup

### Stock Solution B

- Fill the Pyrex 2-cup measure to the 500ml mark with r/o water
- Measure 2.5 Grams of Sodium Thiosulfate Anhydrous OR 3.9Grams of Sodium Thiosulfate Pentahydrate
- Add the Sodium Thiosulfate to the r/o water while stirring
- Stir until completely dissolved (30-45 seconds)
- Pour the Sodium Thiosulfate solution in to a 500ml brown glass bottle and cap it tightly
- LABEL the bottle "STS PART B" in a clear and long lasting fashion
- Thoroughly wash and rinse the Pyrex measuring cup

I store these solutions in the 500ml brown glass bottles and mix fresh before diluting for spraying. It is best to keep them in the fridge.

### **Mixing and Diluting the Stock Solutions Before Spraying**

ALWAYS Mix Part A in to Part B! This means putting part B in a container first and then adding part A while stirring. The measurements listed here make 1 quart, which fits the size of the sprayer and bottles I posted above. This amount provides plenty of solution for a 2' tall plant, sprayed every 5 days for 30 days.

When stored in a dark cool place, the mixed solution is effective for approximately 1 month. The A and B solutions will be effective for at least 6 months.

### **For 1 Quart of Solution: which will fit the sprayer listed:**

- Use a 60cc syringe and suck up 50 ml of Part B solution
- Gently squirt the Part B solution in to the Pyrex measuring cup
- Completely rinse the syringe or use a second clean syringe
- Suck up 50cc of Part A Solution
- While stirring the stock solution in the measuring cup rapidly (I use a small Stainless Steel Whisk), gently squirt the 50cc's of Part A solution in to the measuring cup. Go slowly, yet quickly enough to completely mix them within 30 seconds.

### **REMEMBER it's IMPORTANT to DILUTE!**

Without dilution this solution will burn plants When the above directions are followed you will have 100ml of mixed stock solution in a pyrex measuring cup. Pour this solution into the 1 quart, brown glass bottle with the sprayer top and then fill the bottle the rest of the way with r/o or distilled water. (800+ml)

This dilution rate is very close to a 1:9, stock:water mixture. Add 6-10 drops of Dawn Ultra dish soap (or other soap/surfactant, some people use yucca extract), shake gently and spray until the soap mixture is being sprayed. Test it on a leaf. The mixture should stick to the leaf without beading up and rolling off.

If necessary, add additional drops of soap until the solution sticks/spreads well. You can also use Yucca extract as a spreader/surfactant, instead of the dish soap. (I cannot recommend Tween-80 even though other have said it works. I personally cannot use it without having serious memory, mood and logic problems when exposed to the Polysorbate in Tween-80.)

### **Light Proof the Sprayer Bottle!**

I know it's a brown glass bottle and a black plastic top, I still covered it further. Since I keep

it in the fridge, there is definitely strong light when the door is open. I put the sprayer in a black plastic trash bag and folded it in a few layers around the bottle, then taped it in place. It's not sexy, but it works. You can see it in the photo of the chemicals and bottles above.

### **Staying Safe!**

WEAR PERSONAL PROTECTION GEAR, including gloves, mask and goggles/glasses. You'll want to keep this off your skin and out of your mouth/lungs. Sodium Thiosulfate has no listed toxicity but it is an irritant with repeated exposure. Silver nitrate will stain surfaces brown, only light stains when mixed with sodium thiosulfate and diluted.

I sprayed my hand once, it felt 'cold' for days. Not a good sign, so I'm careful to protect myself from spray and inhalation. The solution rinses off of gloves and surfaces just fine, change out of any clothing you accidentally spill it on.

### **Spraying Methods and Schedule**

That being said, the process of treating your plants with STS is very straightforward. There's debate about spraying each node or using an eyedropper on each node. I use the spray method and I know it works.

- **Spray Every 5 Days After Lights Out**  
Silver Thiosulfate stops the production of ethylene. This effect only lasts a few days in cannabis and spraying every 5 days keeps ethylene production the lowest. Turn off the main lights and spray before the night cycle. Silver thiosulfate is sensitive to light, so low lighting and then dark works well.
- **Dilute Further if Burning/Yellowing Develops**  
Some strains/phenotypes of cannabis are more sensitive than others. Should yellowing or burning develop, pour out some of the solution in the sprayer (with lots of rinse water down the drain) and add distilled or r/o water.
- **Keep STS Out of the Root Zone**  
Cover the base area of the plant with newspapers before spraying. Make sure the plant has completely stopped dripping before removing the newspapers or other barriers.
- **Saturate Each Node With Spray**  
The nodes are located at each spot where a leaf joins a branch. During vegetative growth, each node will eventually produce another branch. During flowering, each

node produces flowers.

- **Turn Off Fans Before Pollen Begins Dropping**  
Pollen is insidious and will float in to every crack and corner of your house. HEPA filtered ventilation (even HEPA rated furnace filters work) will significantly reduce the spread of pollen. Spray down all pollen covered areas with clean water to deactivate pollen.
- **Dilute Solution if Plants Show Burning**  
A slight reaction is fine, while severe reactions require diluting with additional distilled or r/o water. Open up the spray bottle and top it off with about 1/3rd of a cup of distilled or r/o water. Pour a bit out first, if there won't be room.

### **What You Should Expect to See**

You sprayed down your female, gave her 5 days more veg and sprayed her again. You changed the lighting to flowering and have sprayed her every 5 days for a couple weeks. Here's an example of what you could be looking at. In the photo below you can see the male flowers, the parts which look like balls or seed pods, and also the white pistils of the female flowers.



**Although I Prefer Parchment Paper for Collecting Pollen**

you can see I used aluminum foil for this project. The foil was placed under the branches to collect dropping pollen. In the photo below, you can see the foil has a dusting of pollen on it, with small drifts building up at the creases.



**Here You Can See a Foil Cupcake Cup**  
with pollen and male flowers in it from one piece of foil.



**Lastly: Does it Pollinate and Make Seeds?!?!**

What do you think? This Early Dane feminized pollen has already been used to pollinate another Early Dane I had growing. You can see in the photo of her below, the pistils are all darkened and seeds are forming from definitely viable pollen! The seeds forming are going to be 99.9% female plants.



**Here She Is a Few Weeks Later**

You can see the seeds have grown quite a bit and are now breaking open the seed bracts covering them. An amazing sight for me to see, after a decade and a half of avoiding them.



### **Some Tips From the Pros**

I've searched the internet for as much information as I could find on using STS and working with pollen. I found a few pieces of information which some of you may find helpful. The first two are mine.

- Trim Everything But The Top Three Nodes of Each Branch  
You want the plant to focus a lot of energy on perfectly formed flowers. Trimming off

all of the undergrowth (before starting flowering) will make this happen. Trust me, you will get plenty of pollen.

Doing this reduces the possibility of mold and other problems. This also means, at harvest time, there's nothing to stop the fall of pollen except some branches.

- **Spray Every 5 Days**  
All over the internet you'll see people recommending spraying a plant and tossing it in flower and only a few say to spray it again after 2 weeks. The rest of the horticultural world says STS is effective for about 5 days in a plant. The rest of the horticultural world sprays every 5-7 days.

I spray every 5 days. Starting 5 days before changing the lighting to a flowering schedule, spray the nodes of the plant every 5 days until 10% of the flower pods are open and dumping pollen. (Once the last spray is dry, lay out your collection trays, parchment paper or foil)

- **Pods Which Won't Open Can Still Be Viable**  
Spraying every 5 days, the pods should open well and dump lots of pollen. Should you find a plant which grows pods and seems to quit, right before opening, you can still harvest the pollen. Clip the pods off and dry them in a low humidity area or dessicant chamber.

Over a piece of glass or parchment paper, rub the pods across a stainless steel mesh, like this small fine-mesh kitchen strainer. Pollen will drop through the screen, along with small bits of pod/plant matter. You'll also end up with plant matter which will not go through the screen. Rub until you're sure you've rubbed the majority of the pollen through the screen. A small brush comes in handy to clean the screen of pollen.

- **Dilute Your Pollen With Toasted Flour**  
When pollen is mixed with toasted (and cooled) flour, it greatly reduces waste and helps contain the pollen when using it. Using straight pollen is wasteful and adding flour greatly increases your chances of spreading the pollen thin enough for full use. Adding flour also helps keep pollen from floating around the grow area, pulling it to the floor.

Toast 50 to 100 times as much flour as you have pollen in a dry pan over medium heat. Let it cool. Thoroughly mix your pollen into the cooled flour. I like using a stainless steel pan, because pollen and flour slide effortlessly across the bottom. Once it's completely mixed you can pollinate your flowers.