TECHNICAL FACTS ABOUT

THAT™ Flowable Sulfur

The use of Sulfur in agriculture has been with us for over 100 years. Yet, few people have understood how or why the Sulfur has been of such value.

Following, we will develop the understanding of Sulfur and the use of **THAT™ Flowable Sulfur:**

History:

Sulfur has been used for an all-purpose fungicide. Research has shown that sulfur was used to kill soil fungi as well as leaf fungi. Fungi have never developed a resistance to sulfur.

In recent history sulfur has been used by itself to control mildew, brown rot, etc.. The greatest use, however, has been as a dust base for mixing with other fungicides and insecticides.

Sulfur dust has been the dust base for insecticides such as DDT, Toxaphene, and parathion. Used by itself, sulfur has been a good miticide.

As can be seen, sulfur has been a versatile, all-purpose product.

It has been used:

1. As miticide,
2. As fungicide,
3. As dust base for mixing (carrier) other fungicides and insecticides.

The major problems with sulfur were:

1. It had to be used as dust,
2. It was explosive,
3. It was irritating to handle,
4. It had to be used in large quantities per acre,
5. The drift caused many problems.

How sulfur works?

Elemental sulfur has a certain fumigation power. As it comes into contact with certain insects, it burns and kill. Perhaps more importantly, it causes the insects to move around on the leaves so that they come in contact with the insecticides that are mixed with sulfur.

As a fungicide, the elemental sulfur oxidizes when temperatures are over 26 degree Celsius. One of the intermediate chemicals formed during oxidation is TETRATHIONATE. This is the killer. In order to kill fungi, a certain concentration of tetrathionate must be present on the leaf.

Providing the temperature is 26 degree Celsius or more, how much tetrathionate will be created by a sulfur application? It is directly related to the amount of SURFACE AREA that is available for oxidation. **NOT POUNDS OF SULFUR …THE SURFACE AREA OF THE SULFUR** is important. THE SMALLER THE SULFUR PARTICLE SIZE—THE LESS AMOUNT OF SULFUR IS NEEDED.

Since sulfur is a contact killer, particle distribution on the plant leaf is important. It does no good to have small particle size if they are not well distributed on the plant leaf.

Advantages of using THAT™ Flowable Sulfur:

U.S. STANDARD GRIND	SQUARE FEET PER POUND OF SULFUR
60 Mesh	57
100 Mesh	95
200 Mesh	191
325 Mesh	321
5 Micron	2,832
2.5 Micron	5,664
1 Micron	14,160
0.75 Micron	18,880

Most dusting sulfur is ground to pass through a 325 mesh screen. The surface area is 321 square feet per pound of sulfur.

THAT™ Flowable Sulfur is an emulsion…not suspension. It is manufactured by an exclusive method (blowing apart molten sulfur under very high pressure) to an average particle size of 0.75 micron with a surface area 18,880 square feet per pound – almost 60 times more surface area than typical dusting sulfur.

The recommended rates are about 10% of the amount of dust.

In order to get maximum benefit for **THAT™ Flowable Sulfur**, the application technique is important. The small particles must be well distributed on the leaves. This depends on two things:

1. Amount of water applied,
2. Use of good spreader such as BOND.

Due to the composition of **THAT™ Flowable Sulfur**, it is very hard to wash off of the leaves by rainfall or over-head irrigation. The particles will redistribute on the leaves but are resistant to wash-off.

THAT™ Flowable Sulfur can be handled in bulk or container. It must never be allowed to freeze.

Farmers no longer like to mix dry products in their spray tank…they want to pour products from a pail.

4001 W. Sam Houston Parkway N, Suite 100; Houston, TX 77043
Telephone 713-461-1493 ♦ Fax: 713-461-4467 ♦ www.stollerusa.com

Flowable products:

1. Mix easier,
2. Has less waste,
3. Can be handled in closed system.

Remember, THAT™ Flowable Sulfur, is an emulsion. When mixed in a spray tank it must be handled like a very fine wettable powder.

Why use THAT™ Flowable Sulfur?

The use of **THAT™ Flowable Sulfur** will do four things:

1. Provide sulfur as a nutrient for plant growth,
2. Help control fungus diseases,
3. Help control insects,
4. Acidify leaf surfaces.

1. Sulfur as a nutrient. For every ten pounds of nitrogen used by a plant, it needs one pound of sulfur to make protein. Without sulfur, a plant can not make protein or use nitrogen—it wil die. Foliar applied sulfur can be used as a nutrient.

2. Sulfur as fungicide. Sulfur is a good fungicide when used by itself for many diseases. Sulfur can make other fungicides BETTER when used in combination to control all fungus diseases. Research has shown that sulfur will help make other good fungicides…BETTER.

3. Sulfur as an insecticide. Sulfur can control certain mites by itself. Sulfur can make other insecticides work better when used in combination to control many insects. This why sulfur was used as dust base many years ago.

4. Sulfur as a leaf acidifier. When sulfur oxidizes on the leaf surface, it forms an acid. Insecticides can work better in an acid environment. For this reason, sulfur mixed with insecticides and fungicides can help give better control.

   Why do plants turn dark green after sulfur is applied? We believe it is because the acid products of sulfur solubilize iron in the plant leaf for more chlorophyll production. If sulfur can make more iron available in the plant leaf, it could also affect the availability of other plant leaf nutrients.

   THAT™ Flowable Sulfur—Fundamental to every spray tank

   No one product does so many things as does **THAT™ Flowable Sulfur** when its foliar applied. Anytime that a crop is sprayed it could use **THAT™ Flowable Sulfur.**

   THAT™ Flowable Sulfur and your spray tank…"They Belong Together."

4001 W. Sam Houston Parkway N, Suite 100; Houston, TX 77043
Telephone 713-461-1493 ♦ Fax: 713-461-4467 ♦ www.stollerusa.com