



CCOF

Advancing organic agriculture through certification, education, advocacy, and promotion.

Ms. Michelle Arsenault
Advisory Committee Specialist
National Organic Standards Board, USDA-AMS-NOP
1400 Independence Ave. SW., Room 2642-S, Mail Stop 0268
Washington, DC 20250-0268

Docket: AMS-NOP-18-0029-0001

Re: Crops Subcommittee: 2020 Sunset Reviews

October 4, 2018

Dear Ms. Arsenault and NOSB,

Thank you for the opportunity to comment on the 2020 Sunset Review of crop substances on the National List of Allowed and Prohibited Substances.

CCOF is a nonprofit organization governed by the people who grow and make our food. Founded in California more than 40 years ago, today our roots span the breadth of North America. We are supported by an organic family of farmers, ranchers, processors, retailers, consumers, and policymakers. Together, we work to advance organic agriculture for a healthy world.

In the attached comments, we include the number of CCOF members who list the substance on their Organic System Plan (OSP) because it demonstrates the importance of the substance to organic production. Producers may routinely use all or some substances listed on their OSP, or they may only occasionally use listed substances for specific emergency situations. Some substances are commonly used by organic producers while others are only listed by a few producers who rely on the substance for their site-specific conditions. Therefore, the NOSB should carefully consider the impacts of removing a substance that has been listed on an OSP because producers need a variety of tools available to them.

Our comments also describe how the substance is used by our members and, when possible, whether viable alternatives exist. This information is based upon our experience as a certifier and upon feedback from our members. Although we strongly encourage our members to comment, they do not always have the capacity to directly submit their own comments. Our goal is to relay valuable information about our members' materials and practices to help NOSB maintain a clear, consistent regulatory environment for organic producers of all scales and types.

Thank you for your review of our comments. Please do not hesitate to contact me for further information.

Sincerely,

A handwritten signature in black ink that reads "Peter Nell".

Peter Nell
Policy Specialist

cc: Cathy Calfo, Executive Director/CEO
Kelly Damewood, Director of Policy and Government Affairs
Jake Lewin, President, CCOF Certification Services, LLC

CCOF's Comments on the 2020 Sunset Review Crop Scope Materials

The following comments are based on CCOF member input, our experience offering organic certification for more than 40 years, and our certification of over 2,300 organic farms throughout North America.

§ 205.601 (a) – Synthetic Substances Allowed in Organic Crop Production

Alcohols – ethanol, isopropanol

Many CCOF members use alcohols in their organic production. CCOF does not require members to list alcohols on their OSPs because producers do not use alcohols as inputs on crops. Rather, producers use alcohols to clean tools and equipment to prevent and manage the spread of plant diseases.

Sodium carbonate peroxyhydrate

49 CCOF members list sodium carbonate peroxyhydrate on their OSP. Sodium carbonate peroxyhydrate is used as an irrigation and water treatment to kill algae, reduce pathogens, and to maintain irrigation systems. Alternatively, producers may use copper products to achieve similar results.

§ 205.601 (b) – Synthetic Substances Allowed in Organic Crop Production

Plastic mulch and covers

Many CCOF members use plastic mulch and covers in their organic production. CCOF does not require producers to list plastic mulches and covers on their OSP because they are part of the producers' weed and pest management tools. They are not inputs and are removed after the growing season. Plastic mulch and covers are used for weed and disease management. They are important tools because they can retain heat to extend growing seasons in colder climates and moisture during droughts.

§ 205.601 (b) and § 205.601 (c) – Synthetic Substances Allowed in Organic Crop Production

Newspaper or other recycled paper, without glossy or colored inks

23 CCOF members list newspaper or recycled paper on their OSP. Newspaper and recycled paper are often used by small producers as cheaper alternatives to plastic mulches and covers. Newspapers and recycled paper are used to retain moisture in soil and as feedstock in commercial composts. Additionally, these materials are used to manufacture commercial weed mat products.

§ 205.601 (e) and § 205.601 (i) – Synthetics Allowed in Organic Crop Production

Aqueous potassium silicate

143 CCOF members list aqueous potassium silicate on their OSP. Aqueous potassium silicate is an effective general use fungicide, insecticide, and miticide.

Lime sulfur

56 CCOF members list lime sulfur on their OSP. Lime sulfur is used for pest and disease control. It is a valuable tool for vineyard and orchard producers for fire blight management.

§ 205.601 (e), § 205.601 (i), and § 205.601 (j) – Synthetics Allowed in Organic Crop Production

Elemental sulfur

1233 CCOF members list elemental sulfur on their OSP. Elemental sulfur is one of the most commonly used materials in organic production. Producers use elemental sulfur on a wide variety of crops for pest and disease control as well as for soil fertility. Elemental sulfur can be found in dusting and wettable forms. Many CCOF members list both types of sulfurs on their OSP because they use certain forms of sulfur during specific plant growth or fruiting periods.

CCOF strongly encourages NOSB to analyze data and research on the environmental and public health impact of all substances approved for organic production, including elemental sulfur. Given the importance of elemental sulfur to many organic producers, NOSB should carefully consider whether additional safety precautions or limitations could be required for its use.

Please see the attached appendix for CCOF's spring NOSB comment and member feedback.

§ 205.601 (i) – Synthetics Allowed in Organic Crop Production

Hydrated lime

89 CCOF members list hydrated lime on their OSP. Hydrated lime is often used as an ingredient in Bordeaux mixes. Bordeaux mixes are effective fungicides used to control diseases in orchards and vineyards. Many organic farmers rely on hydrated lime to manage fungal and bacterial diseases including fire blight, leaf curl, downy mildew, and powdery mildew.

§ 205.601 (j) – Synthetics Allowed in Organic Crop Production

Liquid fish products

825 CCOF members list liquid fish products on their OSP. Liquid fish products are an important source of nitrogen and are commonly used in crop fertility regimes.

Sulfurous acid

12 CCOF members list sulfurous acid on their OSP. Sulfurous acid may only be used if it is generated on farm via a sulfur generator. Elemental sulfur is placed into sulfur generator machines and sulfurous acid is generated. Sulfurous acid is used by producers with poor irrigation water or by producers who need acidic growing conditions.

§ 205.601 (k) – Synthetics Allowed in Organic Crop Production

Ethylene gas

No CCOF member lists ethylene gas on their OSP. CCOF's understanding is that ethylene gas is used for pineapple production and CCOF does not certify any pineapple producers.

§ 205.601 (o) – Synthetics Allowed in Organic Crop Production

Microcrystalline Cheesewax

No CCOF member lists microcrystalline cheesewax on their OSP. CCOF's understanding is that microcrystalline cheesewax is used for mushroom production and CCOF does not certify any mushroom producer that uses it.

§ 205.602 (e) – Nonsynthetic substances Prohibited in Organic Crop Production

Potassium chloride

64 CCOF members list potassium chloride on their OSP. Potassium chloride is prohibited in organic crop production unless it is derived from a mined source and applied in a manner that minimizes chloride accumulation in the soil. Compliance with the potassium chloride's restriction is verified at the operation's inspection.

APPENDIX

2018 Spring CCOF Comment on Elemental Sulfur

§ 205.601 (e), § 205.601 (i), and § 205.601 (j) – Synthetics Allowed in Organic Crop Production

Elemental sulfur

1224 CCOF members list elemental sulfur on their OSP. Elemental sulfur is one of the most commonly used materials in organic production. Producers use elemental sulfur on a wide variety of crops for pest and disease control as well as for soil fertility.

Many CCOF members list both dusting and wettable sulfurs on their OSP because they use certain forms of sulfur during specific plant growth or fruiting periods. Many report that it is necessary to use both dusting and wettable sulfur because wettable sulfur is not appropriate for certain situations. For example, producers do not use wettable sulfur after strawberry plants set fruit because wettable sulfur leaves a residue on fruit. And producers avoid wettable sulfur at certain times in vineyards because it can stain grapes or cause subsequent fermentation of wine grapes.

A summary of CCOF member input on the efficacy of wettable sulfur is as follows:

- Dusting sulfur equipment can be applied on wet fields when it is too wet for wettable spraying equipment.
- Wet conditions are when sulfur is needed the most for mildew management.
- Wettable sulfur can cause issues with subsequent fermentation of wine grapes.
- Growers may not own spray equipment for wettable materials and may have already invested significantly into dusting sulfur applicators.
- Table grape growers would have staining issues from using wettable sulfur after grapes start coloring.
- Wettable sulfur can burn the cuticle of the grapes rendering them unmarketable.
- Wettable sulfur is less effective than dusting sulfur for getting inside bunches to prevent mildew on grape stems.
- Vineyards without water cannot wet the sulfur for spraying.
- In vegetable crops, dusting sulfur can penetrate through dense canopies of leaves better than wettable sulfur.
- Dusting sulfur lasts longer on plants than wettable applications.
- Dusting equipment causes less soil compaction.

Notably, producers report that they use dusting sulfur instead of wettable sulfur for efficacy purposes rather than cost concerns. Some producers invest up to \$16,000 for equipment to spread dusting sulfur, and this equipment cannot be used to spread other materials. So dusting sulfur is not always less expensive than wettable sulfur. Rather, as discussed above, producers use dusting sulfur instead of wettable sulfur for a variety of reasons related to pest and disease control as well as fertility issues.

NOSB should carefully review and consider a study done in Salinas that links the use of elemental sulfur to respiratory conditions in children in surrounding neighborhoods.¹ While it appears that the study is based on applications of dusting sulfur, it does not distinguish between dusting and wettable sulfurs. CCOF growers report that wettable sulfur is more commonly applied in Salinas Valley than dusting sulfur.

To resolve this issue, NOSB needs to understand whether dusting sulfur poses more risks to health than wettable sulfur. It would also be helpful to understand whether materials in the Salinas Valley in addition to sulfur contribute to respiratory health problems. Overall, CCOF strongly encourages NOSB to collect and analyze more data on the public health impacts of different forms of elemental sulfur.

Given the importance of dusting sulfur to many producers' operations and the safety concerns that have been raised about this material, NOSB should consider whether additional safety precautions or limitations could be required for its use. It would be helpful to have more information on whether both dusting and wettable sulfur pose risks, or whether wettable sulfur could replace at least some uses of dusting sulfur without damaging crops or disrupting soil health.

It is also important to note that most producers report that they carefully apply dusting sulfur, and California producers must comply with the California Department of Pesticide Regulation (DPR) rules. DPR requires the following instructions be included on product labels for air and ground applications of dusting sulfur:

1. The operator of the property and the applicator must establish a buffer zone of enough distance to prevent drift onto non-target areas such as hospitals, clinics, schools, residential areas and any other area designated by the county agricultural commissioner.
2. The operator of the property and the applicator must evaluate the method and equipment for each site to ensure proper and safe use. Evaluations shall include, but not be limited to the appropriateness of ground or air applications.
3. Sulfur shall not be applied when the wind velocity exceeds 10 miles per hour. Applicators should be aware that in some areas, "dead calm" conditions are often associated with an inversion situation. In these areas, applying sulfur when there is a minimum air movement of 2 miles per hour will ensure that an inversion situation does not exist.
4. When applying sulfur dust, best application practices should be utilized. Contact your local pest control advisor or county cooperative extension advisor to obtain information regarding best application practices.

Additionally, dusting sulfur applicators must wear personal protective equipment including coveralls, chemical-resistant gloves made of waterproof material, shoes and socks, and goggles or eye protection. Material manufacturers set a minimum of 24 hours for workers to enter treated areas. These periods, restricted entry intervals (REIs), can be adjusted by DPR due to weather or other conditions.

Finally, please see the attached appendix for CCOF member input on sulfur. We provide these responses as an appendix to demonstrate the range of opinions on this material. On one hand, many producers report that dusting sulfur is a necessary material for their operation with no alternatives. On the other hand, some producers report that they have already phased out the use of dusting sulfur because of safety concerns.

¹ Raanan, Rachel, et al. "Elemental Sulfur Use and Associations with Pediatric Lung Function and Respiratory Symptoms in an Agricultural Community (California, USA)." *Environmental Health Perspectives*, vol. 125, no. 8, 2017, doi:10.1289/ehp528.

2018 Spring CCOF Member Feedback on Elemental Sulfur

CCOF members provided the below responses to NOSB's questions regarding elemental sulfur. Please note that some responses are not included because we did not receive permission to share their response. Some CCOF members may submit their own responses via written or oral comment.

Micah Zuorski, Amapola Creek Winery:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

No.

2. If yes, what health problems have been encountered?

N/A

3. What mitigation steps were/are taken to address health impacts?

Applications are timed to occur when non-applicators are not present near the treated fields, and winds are low enough that dust will not be carried into inhabited / wild areas.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

A lot of them.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

Not really, we don't even own a tractor mounted sprayer. Why on earth would using wettable be more organic than just using dust? Wettable can cause some serious problems with subsequent fermentation in winegrapes if it has to be applied at certain stages of berry development, making dust the only suitable application under some circumstances. I'm afraid we wouldn't be able to continue as a certified organic farm if we weren't allowed to use it.

Ria D'Aversa, McEvoy Ranch:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

No, never. All residents and schools are notified 24 hours in advance.

2. If yes, what health problems have been encountered?

N/A

3. What mitigation steps were/are taken to address health impacts?

All operators wear appropriate respirators. Respirators are checked and tested yearly, before the spraying season begins.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We use sulfur dust 2-3 times per year, equal to wettable sulfur. Sulfur dust requires a certain temperature window and if it is not met, then wettable sulfur is used.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

No, it would frustrate most growers and sulfur dust is the cheapest, most reliable source of fungicide. Wettable sulfur cannot be applied in extreme heat either.

Edwin Richards, Adastra Vineyards:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

Yes.

2. If yes, what health problems have been encountered?

Allergic reactions – sneezing, mild discomfort.

3. What mitigation steps were/are taken to address health impacts?

Wear masks and gloves during fieldwork after sulfur dust has been applied.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We have not used it for two years. It is less expensive, however than wettable spray applications.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

I don't think it would be feasible for some growers, because of the increased cost switching to wettable formulations would entail. Elemental sulfur has limitations but is effective under the right circumstances. Those for whom cost is a factor probably use less field labor.

Paul Underhill, Terrafirma Farm:

Table grape growers really don't have the option of using wettable sulfur once the grapes have colored (veraison) as the wettable sulfur stains the grapes very badly. The same is true with other wettable materials including Serenade.

Wettables are also much less effective materials at getting inside bunches of grapes to prevent mildew on the stems once the berries have sized.

Many, if not most growers, don't have any issues with their locations being near schools etc. That issue should be left to state officials and county ag commissioners to decide, NOT to the NOSB.

Elemental sulfur is a critical component in organic table grape production, period.

Susan Poor, Poor Ranch:

Our family has personally used dusting sulfur for 5 generations. We have applied it PERSONALLY and ALL GENERATIONS have lived to be an old age with no unusual health problems. John S. Poor -80 years old died in 1921, George R. Poor - 93 years old died in 1978, John R Poor SR. -93 years old died in 2017, John Poor Jr. - still alive and kicking at 63 years old with no health issues, and John S. Poor -37 years old with no health issues. Our family members have never gotten sick and all of our neighbors have never had an issue. We have no water at all in our vineyards and that means zero gallons of water available to us. So wettable sulfur is not an option. If dusting sulfur is dropped from the OMRI list we will have to stop being certified organic because we will not stop using dusting sulfur because it is the only thing we use in our vineyards and after over 120 YEARS of farming at the same location we know DUSTING SULFUR WORKS and DOES NOT HARM the ENVIRONMENT around the vineyards OR THE INSECTS that live in our vineyards!! However, it is super effective at preventing powdery mildew.

Tom Pavich, FMP Vineyards:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

No. And never.

2. If yes, what health problems have been encountered?

N/A.

3. What mitigation steps were/are taken to address health impacts?

N/A.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

The application of dusting sulfur is my primary mildew fungus control. My experience is to use wettable sulfur only when I am applying another wettable foliar or pest control material. Spraying with a water-based solution without wettable sulfur is a recipe for crop failure as the water alone will encourage powdery mildew growth. It is with the addition of wettable sulfur that the powdery mildew is inhibited when spraying another material.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

Requiring wettable sulfur ONLY for table or raisin grapes would NOT be feasible. Wettable sulfur is not as effective as dusting sulfur and not as simple to apply as dusting sulfur. Dusting sulfur is a cheap economical organic product. The added costs of eliminating dusting sulfur would make our organic table grapes more expensive and consumers will buy less of them. Eliminating wettable sulfur on our organic raisins would further make us less competitive with our import competitors Turkey and China. This proposal would lead to our farm going out of business.

Max Jehle, Sun Pacific Farming Co.:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

Adverse impacts should be qualified as all sulfur products can cause minor eye and skin irritations depending on an individual's sensitivity to sulfur.

2. If yes, what health problems have been encountered?

Mitigation steps we take for sulfur use are well documented with CDFA and DPR, such as coveralls and eye protection, or the use of a closed cab system on the tractor.

3. What mitigation steps were/are taken to address health impacts?

Depends on the crop. My perspective is table and wine grapes, which without sulfur would be very difficult, or impossible, for some varieties to grow organically. There are stark differences in susceptibility to mildew with different varieties in wine and table grape production.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

In the grape industry, we use both wettable and sulfur dust in tandem as spray applications will not give us complete control due to the heavy canopies that are required in certain regions of the state. In addition, with table grapes we cannot use wettable sulfurs after berries set due to the fact that they will leave unsightly blotches on the fruit and have a tendency to burn the cuticle of the berries rendering them unmarketable.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

I think I answered the last question, as for use in the grape business it is not one or the other, but rotational use to deliver a marketable product.

Joe Del Bosque, Del Bosque Farms:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

We have been using elemental sulfur since we have been farming organically 2004, and prior to that nonorganically. We have never had a case of injury to our workers, nor to anyone else as a result of our sulfur applications.

2. If yes, what health problems have been encountered?

No health problems encountered.

3. What mitigation steps were/are taken to address health impacts?

On our farm, we stress safety, and strive to prevent any injuries or illnesses. Our application operators are well trained in pesticide handlers safety. Handlers are provided all necessary and required personal protective equipment. Applications are made in the early hours before other people start working in the area. Wind conditions are closely monitored to prevent drift offsite. Required re-entry intervals are observed before any workers can enter the site applied.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We only use dry sulfur because of its effectiveness in getting adequate coverage on all our organic melons and asparagus.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

We don't believe that wettable sulfur will be as effective as dry dust, especially in dense foliage, and we could suffer more extensive losses to pests and disease.

Andrew Fisher, Fisher Ranch:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

Our first time setting up the sulfur duster we had a mechanic experience eye irritation. Since then, there have not been any incidents of adverse health impacts to any of our staff, their families or any local residents. The only other notable complaint was the smell of our clothes at the end of the day.

2. If yes, what health problems have been encountered?

The first time we ever used dusting sulfur, a mechanic involved in setting up the machine was inadvertently standing downwind of the area, which resulted in temporary eye irritation.

3. What mitigation steps were/are taken to address health impacts?

The duster operators have the option to wear disposable jump suits to avoid clothing contamination, goggles and N95 respirators. We also apply the dusting sulfur against any breeze or wind, which causes the resulting cloud to drift away from the operator. We also clear any personnel down wind of the treatment area and notify nearby residents. If winds are causing excessive dust to blow towards residential homes, people or work areas, we avoid application until conditions are more favorable.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

Our operation uses both wettable formulations and dusting sulfur to control pests and disease problems.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

That annotation would not be feasible to our operation. Having the flexibility to use whichever formulation is most efficacious for the problem is extremely valuable and necessary for the successful production of organic products. In most situations wettable sulfur is used more as a preventative treatment. For disease or insect problems that have grown to a critical level, sulfur dust is the only known treatment. It is also not possible to apply wettable sulfur at the same rates as dusting sulfur. Furthermore, the lingering effect of the sulfur dust, which is not present when using wettable formulations, is part of what makes it effective.

David Boldt, D.E. Boldt Family Farm:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

The only adverse impacts we are aware of from agricultural sulfur use is eye irritation to the applicator when using dusting sulfur. We have not suffered any adverse impacts from field applications (our own or that of neighbors), nor do we know anyone who has, including our field workers.

2. If yes, what health problems have been encountered?

N/A.

3. What mitigation steps were/are taken to address health impacts?

We only apply sulfur as a wettable formulation and require a 3-day re-entry interval for workers after May 1st. Sprayable sulfur applications are important to our operation for fungus and thrips control.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

Sulfur dust applications are relatively rare in our area; we have not dusted sulfur in over 25 years.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

Requiring only sprayable formulations for organic agriculture would be feasible for us at this time as stone fruit growers, but it seems a shame to lose dusting as it might be the best option for other crops in other circumstances. Dusting vs wettable would not present different hazards to the consumer. Perhaps the environmental concerns of dusting could be better addressed with environmental restrictions (minimum distance from homes, schools, etc.).

Daniel Ostrowski, Durst Organic Growers:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

No.

2. If yes, what health problems have been encountered?

N/A.

3. What mitigation steps were/are taken to address health impacts?

Wash water is provided at the field, so workers can wash their hands before leaving the field. Applications are made with enough lead-time to go beyond the 24hr REI so that most of the sulfur has fumed off before workers enter the field. Also, we only use wettable sulfur to keep the product from moving off-site.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We do not. However, I would bet that every single organic wine/table/raisin Grape grower in the California central valley, as well as most organic winegrape growers in areas hot enough to use sulfur in the Napa Valley, use sulfur dust. For organic winegrape growers with powdery mildew sensitive varieties (Chardonnay, etc.), there is literally no other option for controlling powdery mildew.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

For our operation, this would not impact us at all. However, I am sure this would be a huge deal for the organic grape growers. A sulfur rig is able to drive very rapidly through a field and often sulfur is applied weekly. In contrast, spraying liquid is slow, and is a much more labor-intensive activity. Meeting UC IPM recommendations for Powdery mildew disease control would be difficult if growers had to spray liquid formulations.

Vernon Peterson, Abundant Harvest Organics:

We certainly need elemental sulfur as a soil amendment to maintain pH. For us specifically, we'd be okay with eliminating dusting sulfur and only using wettable. Without wettable we would have some challenges.

Phil LaRocca, LaRocca Vineyards:

I stopped using dusting sulfur in 1986 and only use wettable sulfur when needed. Dusting sulfur is not necessary for my operation.

Dave Germano, Monte Fredo Farm:

I use wettable sulfur only for scab and rust control on my organic almond orchard. No complaints from anyone. Without being able to use sulfur in moist warm springs could possibly put me out of business growing organic.

Wendell Naraghi, Naraghi Farms:

We use wettable sulfur as primary tool in our almond orchard to control disease of blossom brown rot and shot hole etc. Of course, as always, we have capable management to educate in safety applications and proper protective gear. We have good results in the crops and no adverse effects with applicators or neighbors. We certainly endorse continued use as the principal fungicide we use and very compatible with the environment and worker safety.

Joe Dutton, Dutton Ranch Corp.:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

Adverse impacts would be limited to noticeable odor, and occasional minor eye irritation for workers in field on hot days. We have never had a worker comp claim attributed to sulfur dust use.

2. If yes, what health problems have been encountered?

We have never encountered any health problems.

3. What mitigation steps were/are taken to address health impacts?

We follow label directions for worker safety and make sure drift is confined in the orchards by watching wind speed and direction.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We use sulfur dust for a number of reasons. It's quick to apply, wet orchards can be accessed by dusters where spray rigs would bog down, the lighter rigs cause less soil compaction, and it's economical. Other organic growers would use sulfur for similar reasons, but it's unknown how many organic growers are using elemental vs wettable sulfur.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

Because of elemental sulfur dust's general utility and good fit in an organic program, requiring wettable use would be removing an important and safe tool from our limited toolbox. For growers who only use elemental sulfur, switching from a duster to a spray rig would be an unduly burdensome investment. Application windows would be missed when fields were too wet for spray rigs, and/or more soil compaction would occur. Profit margins would decrease somewhat because of the slightly higher cost of wettable sulfur. A blanket prohibition on sulfur dust is punitive on all organic growers, whereas the health concerns are perhaps more regionalized. It would make more sense to fine-tune the CCOF standards to specifically account for issues, if needed, than penalize all growers and making the challenge of organic farming even more "interesting".

Mark Sanchietti, Sanchietti Farming Inc.:

1. Have organic farmers, farmworkers, related family members, or residents living near treated fields, including young children, experienced adverse impacts of agricultural sulfur use?

None, I am 4th generation farmer and myself along with children have grown up with vineyard right in our backyard. None of our employees or anyone I or my family know of have had any impacts, I have never ever heard of this.

2. If yes, what health problems have been encountered?

N/A.

3. What mitigation steps were/are taken to address health impacts?

N/A.

4. How many organic farmers use sulfur dust applications (in contrast to wettable spray applications) to control pest and disease problems?

We do not currently use dust in our operation, but we do use wettable all the time, it is the number 1 component in our spray programs to combat mildew which continues to be a big battle and having issues with resistance management. We are heavily dependent on wettable sulfur all the time. Dust is also a critical material for a lot of growers. This as well is very critical material.

5. Would an annotation requiring the use of wettable formulations for sulfur pesticide applications in organic crops be feasible?

I do not want to have any restrictions, as this is the most critical material we use year in and year out.

Lou Preston, Preston Vineyards:

We haven't had human health problems with sulfur dust that we know of. We do take all the safety precautions prescribed by California DPR as well as NOP through CCOF. And we contract with a Safety Consultant to ensure compliance and avoid problems. But we recognize the toxicity of sulfur dust which manifests itself on our farm through its damage to beneficial insect populations.

Part of our Organic Certification requires no-spray zones around our vineyards. In our case we have planted extensive hedgerows that provide an effective barrier. The hedgerows and clean zone separating us from neighbors is about 50 ft wide with plants up to 15 ft high.

We find that delaying the seasonal use of elemental sulfur by substituting alternative materials—in our case compost tea—lessens our insect exposure and whether intended or not our personnel and human community exposure. We have used wettable sulfur in the past, we do find it a bit more time consuming, but from the perspective of safety it may be the right thing to do. We will certainly engage ourselves in the conversation.

So: we have experienced no recognized problems with counter measures including delay, substitution and separation. Of course, a requirement to use wettable sulfur is feasible.