

AGRI-BOTANICAL SOLUTIONS FOR CANNABIS GROWING FACILITIES



Thyme



A controlled growth environment with plants that are not excessively stressed is essential for research and healthy yield production of cannabis. Insect pests, pathogens and molds can cause subtle changes in gene expression or plant metabolism that affect research and plant yields. Therefore, regular inspections for infestations, frequent cleaning of plant growth areas, proper disposal of dead or diseased plant material, and controlled access to the growth rooms will help to make research more reproducible and plant yields more healthy and reliable.

Powdery mildew, a fungal pathogen, and arthropod pests, including aphids, thrips, fungus gnats, and spider mites, are the most common problems. This protocol describes bio – protocols utilizing botanical insect and pathogen control by means of maintaining optimal growth conditions, promptly disposing of dead or diseased plant material, and the use of botanically derived biodegradable environmentally sound PreVasive' products. Included are recommendations for environmental controls, controlled access in growing rooms and infestation event mitigation.

Successful cannabis agri-business require healthy plants that are free from pests and diseases. As plants are grown from seed or clone, have a short life cycle, and are often raised in grow rooms rather than greenhouses, it is possible to maintain an almost entirely pest-free growth environment. However, almost always; pests including insects, mites, and pathogens do sometimes find their way into growth facilities. Early recognition, treatment, and continuous monitoring are important to preventing a pest outbreak from getting out of control.

Many pests, including, aphids, thrips, spider mites, white flies and powdery mildew, can become pervasive in cannabis growing facilities. Consistent greenhouse practices used in the care of other plant species can be applied similarly well to preventing pest and pathogen infestations of cannabis growing operations. This protocol focuses on the monitoring and management of pests and pathogens that are frequently found on cannabis. It also includes a general description of plant symptoms, life cycles of the most common pests, and PreVasive' treatment options.

Strong healthy growing plants will be less susceptible to pests and diseases than weak and stressed plants. Attention to the plants and their growth environment diminishes the risk of a pest outbreak and mold injury. Preventing a pest or mold problem is important, and early detection will make any outbreak that does occur much easier to manage. Follows are good practices that will help to prevent pest and mold occurrences.

Growing Areas

Keep the growth area clean. Start with a clean shelf or table. Used soil and old plant debris can harbor insects or fungal spores from previous plantings. Therefore, before planting, clean the entire area thoroughly.

Periodically schedule a time when the growth area can be completely emptied out. Wash all surfaces, walls, floors, ceilings, benches, equipment etc...with PreVasive' (BAC) Botanical antimicrobial cleaner, rinsed off afterwards. Then antimicrobially clean all surfaces with PreVasive's BAC then reapply and, let dry. Then for lasting protection against molds, bacteria and pests. Removal of the host material, sanitizing, and sealing the area, will make it very unlikely that any pests or spores will survive. Clean the floors of the growth room weekly. Sweep up debris and mop the floors with PreVasive's BAC disinfecting cleaner disinfect the areas weekly with BAC on hard surfaces and let dry.

Growth Supplies

Always use clean or new pots and trays. For potting soil, use bagged, commercial, peat-based soilless mixes. If pots or flats must be reused, they should be cleaned thoroughly with PreVasive's BAC botanical antimicrobial cleaner solution rinsing with water afterward., then reapply BAC as a residual surface coating.

Dead Plant Material

Remove dead or dying plants in the growing areas. When plants are no longer needed, bag them tightly and remove them from the growth facility. Also, remove cells that do not have any sprouted seeds from plant flats. These cells will stay damper than ones with plants growing in them and can provide a breeding environment for fungus gnats and diseases.

Plants that are dry and awaiting seed harvest or cloning should be moved out of the growth facility or into cleaned and sanitized HEPA filtered processing rooms with controlled access points. The entrance should be controlled. This reduces the chance that pests from potentially heavily infested aging plants will migrate to vulnerable seedlings. The ideal situation is to have a separate seed harvest room, where aging or dry plants can be stored at room temperature, away from the growth facility, allowing valuable growth space to be used for actively growing plants.

Avoid introducing and spreading molds and pests.

If there are already pests in the growth facility, establish a controlled access protocol whereby workers or anyone who has entered an infested area refrains from entering un-infested areas later on that same day.

Make sure that all the users of the growth facility adhere to this protocol, even if it seems inconvenient.

Wear a lab coat when working in the growth facility. Pests are easily spread on clothing, both by people moving within the facility and by people coming in from the outdoors. Dedicate a set of "growth area only" lab coats for all users of the facility. Use sticky mats instead of foot baths at the entrance of the growth facility to help prevent pests from being tracked in.

Quarantine any new plants to avoid introducing pests from another growth area. Isolate the new material for a few days and carefully inspect it for emerging pests. This waiting period is important because pests that are not visible initially may hatch out.

The easiest way to control a pest outbreak is often to dispose of the affected plants. Sometimes this is worth considering in order to curtail a more serious outbreak. If the infested plants are essential and must be saved, move them to a separate growth chamber or other isolated area that is away from unaffected plants.

When moving infested plants, prevent pests from spreading by covering with a dome or by bagging. Clean and sterilize the cart and associated materials with PreVasive Botanical antimicrobial cleaner then apply and final again with BAC and let dry.

Keep similarly aged plants together. Plants of the same age will be easier to monitor for pests. Older plants are more vulnerable to pests and it is best to keep them separated from young seedlings. The ideal approach is to coordinate growth of plants in a particular area so that they mature at about the same time, allowing the growth facility to be cleaned out before planting again.

Apply BAC, fFor spraying fewer than 10 flats, a small hand sprayer will be sufficient. For larger infestations, use a pump sprayer, fogger or a specialized electro static sprayer.

Set the nozzle to a fine setting. It is best to create a "mist" of small droplets that will evenly cover the surfaces of the plant rather than a "rain" of larger ones. The electro static sprayer will provide a 3-D wrap around the plant and is the most desirable application method. Also the goal is to spray and drench the soil at the same time.

- BAC- Ready to use- Surface antimicrobial- -may be used on plants and cleaning surfaces .. FIFRA 25B registered for plants, water and hard surfaces
- BAC Botanical Antimicrobial cleaner is a pH 4.8 long lasting defense against organisms and pests
- Always check for phytotoxicity on a few plants before undertaking a large-scale pesticide application. Read and follow the directions on the label, use proper personal protective equipment, adhere to reentry interval guidelines, and keep good records of all pesticide applications.

Biological pest controls such as predatory mites, parasitoid wasps, nematodes, and the bacterium *Bacillus thuringiensis* can be used on *Arabidopsis*. However, such control methods are not absolute and usually require some tolerance to low-level pest populations. Extremely intense inspection abilities are important to ensure that biological controls are employed early in an infestation. Biological pest control is not always appropriate because even a low-level pest problem can alter plant phenotypes beyond desired parameters. Control agents work best when applied before a pest outbreak, rather than once it has started. Therefore, weekly releases of biological control organisms are recommended. Therefore, good growing facility practices and sanitization is the best prevention.

EARLY WARNING SIGNS OF PEST OUTBREAKS

Become aware of the early signs of pest outbreaks and monitor for these. Visually, damaged or sick plants can be recognized before the pests themselves are observed.

- Regularly inspect all plants in the growth area.
- Keep a record of the locations where you suspect a pest outbreak and monitor those areas closely.

Sustaining Healthy Plants

- Provide optimal plant growth conditions (temperature, light, humidity) to generate healthy
- Plants. Cannabis grows well 80% as a seedling to 40% as it matures relative humidity, and a light intensity of 80 to 150 μE all somewhat differing between seedlings or cuttings. Use of the BAC is useful during all phases for mold and pests prevention on the plants and soils. Ensure that there is good air circulation around plants.
- The watering and moisture protocol for cannabis does increase the incidence of fungus gnats and other underground pests, use of the PreVasive' system products and good greenhouse methods can reduce significantly these costly occurrences.

Arthropod Pests

Fungus gnats and thrips are the most common pests of cannabis in growth rooms, and greenhouses. Aphids and spider mites are less problematic, but can also infest cannabis, especially in growing facilities where they may already be established on other plants.

FUNGUS GNATS

Fungus gnats (*Bradysia* spp.) are one of the most serious cannabis pests. They can appear, seemingly from nowhere, and quickly take hold. Often, fungus gnats are not detected until the adult flies emerge. However, it is the larval stage that does all the damage and it is important to monitor plants for signs of larval feeding. Fungus gnat larvae feed on tender roots, fungi, decomposing organic matter, and decaying plant tissue in the soil. They will also chew on leaves that are touching the surface of the soil. Larvae pupate underground and emerge at the surface as adult gnats. Adult fungus gnats do not harm the plants, except by laying more eggs, which soon hatch into more hungry larvae. The full fungus gnat life cycle takes 3 to 4 wk, which may account for the fact that the heaviest infestations are usually seen on older plants. Fungus gnat adults will generally run along a surface when prodded.

Prevention Fungus Gnats

Clean with the BAC antimicrobial Cleaner (Organic Thyme and Citrate Acid), apply and let dry on hard surfaces. Then Apply several times to plants during growth cycle for mold and pest control at a dilution of 1 oz per gallon.

Fungus gnat eggs can be found in commercial, bagged soilless mixes, especially those that are high in partially decomposed organic matter. Before planting, drench the soil with a suspension containing *Bacillus thuringiensis israelensis*, which is sold as Gnatrol™ (Valent Biosciences). Any fungus gnat larvae that hatch in the soil will be killed after they ingest the *B. thuringiensis* toxin. Allow growth media to dry slightly between watering and do not leave pools or puddles of standing water on the floor or bench. Fungus gnats thrive in damp, humid conditions that also promote fungus growth.

Fungus Gnat Recognition



Plants grow slowly and lack robustness when fungus gnat larvae chew their roots. Seedling and early-rossette-aged plants are the most vulnerable. Small round holes will appear on leaves touching the soil surface where the larvae

have sampled leaf tissue. Seedlings are extremely vulnerable to fungus gnat larvae. With severe infestations, whole seedlings can be devoured overnight. If suspected fungus gnat holes are seen, carefully lift up the leaf and look for whitish translucent larvae with black heads. The larvae will avoid light, and usually respond by burrowing into the soil.

Yellow sticky cards (Whitmire Micro-Gen) hung throughout the growth area will catch adult gnats. These cards work only as a monitoring device and not a control method. Count the number of gnats on each card and keep records as a quantitative measure of the severity of the infestation. Continue monitoring after treating the soil and plants with Rhizosphere AG for the gnats to determine the efficacy of the treatment- spray on the plant and the soil underneath the plant to visible wet.

Cut a small (half-inch) plug of raw potato and place this on the soil surface on random or plants that are suspect. After one day, lift the plug and look for larvae feeding on the potato. This is also a good technique to use for monitoring the success of soil treatment, or as part of a regular inspections of the growth facility. Mark the positions where the potato plugs are and check them every few days. They will need to be replaced as they dry out or become moldy.

Fungus Gnat Treatment

Treatment should be targeted at the larval stage. It difficult to control adults because they hide in places where they are not easily reached by pesticides. Fungus gnat larvae live near the soil surface, so BAC should be applied to the upper inch of the soil. This can be done using a spray nozzle on a coarse setting and spraying the material onto the soil, or by carefully watering the solution onto the growing containers. Eggs and pupae are generally not susceptible to pesticides, so it will be necessary to repeat applications, every 5 to 7 days until the infestation is eliminated.

BAC is not only a good preventive treatment for fresh soil, but also a good pesticide to use on existing fungus gnat infestations. Additionally, application of PreVasive Rhizosphere organic kelp and concentrate manure enzyme and bacteria for soil will increase soil health, create soil fertility and allow the plant to grow faster, stronger and resistant to pests and pathogens.

In addition to *B. t. israelensis* bio-control, the predatory mite *Hypoaspis miles* and the predatory nematode *Steinernema feltiae* can be used on *Arabidopsis* for biological control of fungus gnats with good results. Both of these organisms need to be incorporated into the soil at planting time. The nematodes are sold under many brand names and, to ensure obtaining viable nematodes, it is best to purchase them through a reputable biological control supplier. A list of biological control suppliers in North America can be found at the Web Site [:www.cdpr.ca.gov/docs/ipminov/ben_supp/contents.htm](http://www.cdpr.ca.gov/docs/ipminov/ben_supp/contents.htm)

THRIPS

Thrips, in most cases the species *Frankliniella occidentalis*, are another serious pest of cannabis. In their 3-wk life cycle, these insects pass from eggs through two larval and two pupal stages to become adults. Pupae are generally in the soil, but all other growth stages are found on the plant. Thrips are good at hiding in axils, rosette centers, and even flower buds. As a result, they are difficult to control and early detection is particularly important.

Thrip Prevention

- Regular, methodical monitoring is important for detecting thrips in the early stage of infestation.
- Old soil and dead dry plant debris can harbor thrips and thrip pupae. When disposing of plant materials, completely remove them from the growth facility. A trash bag full of plants or a debris pile left aside can serve as a reservoir for thrips waiting to colonize new plants.
- HEPA ventilation can significantly prevent thrips along with controlled access from the exterior and good growth facility practices.
- Keep greenhouse floors clean and clear of weeds that can harbor thrips. Regularly clean, disinfect and apply the PreVasive products

Thrip Detection and Monitoring



Typically thrip damage will be seen before the insects themselves are detected. Thrips scrape the leaf tissue and then consume the plant juices, which results in silvery-white patches that are usually seen at leaf edges, or near the center of the rosette. Sometimes the white patches will be covered with black dots of thrip frass. Distorted expanding leaves are often caused by thrip damage.

Adult thrips are tiny, slender, and difficult to see. They are 1 to 2 mm long and resemble a small sliver of wood. Larvae of thrips are slightly smaller, but can also be seen. If thrip damage is discovered, blow on the plant gently and then look at the damaged area with a magnifying lens. In response to the CO₂ in your breath, the adult and larval thrips are likely to come crawling out from the center of the rosette where they are hiding. Applying the BAC to the plant will be helpful in preventing, repelling and reducing thrip infestations.

Tap plants, especially flowering or aging plants, over a piece of white paper, and thrips will be seen crawling on the paper. Thrips are often found when harvesting plants and seeds.

Thrip Treatment

- Thrips can be suppressed with PreVasive' Botanical Thyme (BAC) and will not damage leaves. Try minimal concentrations at first dilute ready to use by half for first application.
- Thrips are known to readily develop resistance to several pesticides. For this reason it is important to rotate concentrations from ½ to full every 7 days, also can use 1oz per gallon with BAC on plants.
- Treat all plants in the infested growing area. Adult thrips fly, and can also be transported on clothing.

APHIDS

Aphids are common greenhouse pests that may also infest cannabis. Aphid outbreaks in growth chambers or growth rooms occur less frequently, but there can be transfers of aphids from nearby greenhouses. species include (e.g., melon aphids and root aphids) have been reported. *M. persicae* are soft-bodied, yellow, green, red, or tan pear-shaped insects, 1 to 3 mm long, that are usually seen in clusters on the undersides of leaves or along the stems. Aphids reproduce by parthenogenesis, with females giving birth to genetically identical offspring. Because of this, even a single aphid can quickly become a large infestation. Winged asexual female aphids are produced when food becomes limiting—for instance, when plants start to go to seed or are drying down. These winged parthenogens can spread quickly and invariably produce wingless female offspring. Aphids can also reproduce sexually, but this is initiated under cool temperature (15°C) and short daylight conditions that are not commonly found in cannabis growth facilities.

Aphid Prevention

Screens on vents, HEPA Filtered growing rooms, diligent inspection of nearby host material, and good housekeeping in the growth facilities will help deter aphids.

Aphid Detection and Monitoring



1. Aphids can be found on flower stalks, on young leaves in the rosette center, and on the undersides of leaves. Winged aphids are highly mobile and typically can be found on the rosette leaves. They are often trapped on the yellow sticky cards used to monitor fungus gnats.
2. A sticky, moist "honey dew" will coat the plant surfaces when aphid infestations are severe. Sometimes this honey dew will turn black with sooty mold. Application of BAC at 1 oz per gallon, is a good prevention tool.

Aphid Treatment Suggestions

As with any chemical treatment of cannabis it is always a good idea to do a test spray on a few plants first. BAC to the plant will be helpful in preventing, repelling and reducing aphid infestations.

SPIDER MITES

The two-spotted spider mite, *Tetranychus urticae*, is a common cannabis pest. Like aphids, spider mites are sap-sucking and can cause leaves and flowers to wilt and die. The entire mite life cycle takes about 3 wk: Eggs hatch into hungry nymphs, the nymphs go through several cycles of feeding followed by dormancy, and adults hatch after the third dormancy period.

Spider Mite Prevention

1. Spider mites thrive in hot, dry conditions. Maintaining a high relative humidity (greater than 50%) will deter spider mites.
2. Sanitation is important for preventing spider mite infestations, in particular if there has been an outbreak recently or nearby. Spider mites are good at hiding in cracks in the floor and in plant debris. Diapause, a type of hibernation, can occur when temperatures drop, days get shorter, or when the food supply gets low, such as when plants are aging. Fertilized adult females will stop feeding and laying eggs, and will hide in cracks until conditions improve.

Spider Mite Detection



1. All life stages of spider mites are usually found on the undersides of leaves, which makes early detection difficult. Once established, however, they can sometimes be seen crawling across the leaf surface or near the center of the rosette.
2. Mite feeding causes a stippling effect, in which the leaves become covered with white or yellow chlorotic spots. In early infestations, the stippling tends to be more concentrated near the leaf margins.
3. When the infestation becomes severe, spider mites will spin threadlike webbing that covers the inflorescences. Mature flowering plants and senescing plants are especially vulnerable.

Spider Mite Treatment

Only adult spider mites and feeding nymphs are susceptible to PreVasive' Botanical Thyme BAC. The eggs and dormant nymphs will not be harmed by chemical treatment. Therefore, it is important to plan on multiple applications 5 to 7 days apart.

WHITE FLIES



Whiteflies will hide underneath your cannabis leaves much as the spider mite and can be just as detrimental. They are teeny tiny and spread diseases as they munch on one plant then move to another. Worse, they traverse afar and spread plant diseases in exponential proportions. To check for whiteflies, all you need do is shake your plant. If you see a swarm of what looks like white dust with wings once disturbed, you have discovered one of the most damaging bugs to your cannabis crop.

Whiteflies feed on the leaves and stems of plants, including cannabis. They excrete honeydew, much as the aphid and also spread diseases. They are one of the most damaging pests to food crops. Since cannabis is consumed or used by humans, it falls under this category when considering harmful pests. Whiteflies are mostly immune to pesticides which makes them a formidable foe. They appear in masses making them hard to control. The best most effective control method for repelling the whitefly is prevention.

White Fly Prevention

Another natural solution to ridding your cannabis of whiteflies is to apply the BAC on the plants by fogging, spraying or electra-static machine. The BAC is an excellent bug repellent! Apply spray to the plants thoroughly, paying attention to the undersides of the leaves. Spray your plants twice per week until you no longer see them.

DISEASES

In cannabis growth conditions, fungal and bacterial pathogens typically occur in situations where there is high humidity, poor air circulation, or continuously wet soil. Viruses are usually spread either by insects or when plants are propagated from cuttings. However, *Erysiphe* sp. (powdery mildew) and *Botrytis cinerea* (gray mold), two fungal pathogens that are familiar in cannabis settings, do occasionally cause spontaneous infections, and are described below.

On the other hand, it is likely that many cases of pathogens infecting cannabis remain unidentified, because it is often easier to dispose of a set of sick-looking plants and start over, rather than trying to identify the potential microbial agent causing the problem. We know from studies of plant-pathogen interactions that cannabis is

susceptible to many pathogens, including a variety of viruses, bacteria, and both necrotrophic and biotrophic fungi. Almost everyone working with cannabis has encountered unexplained symptoms such as wilting, yellowing of the entire plant, chlorosis of leaves, anthocyanin accumulation, or general lack of vigor. Often, this is attributed to a "bad batch of soil," but it is possible that these sickly plants are infected with an unidentified organisms. PreVasive' botanical thyme is a antimicrobial cleaner and can prevent many of these unexplained pathogenic issues if utilized with proper cleaning, disinfecting, proper greenhouse methods and PreVasive product system.

POWDERY MILDEW (ERYSIPHE SP.)

Powdery mildew is an obligate biotrophic pathogen that infects many agricultural crops. Species in the genus *Erysiphe* commonly infect *Arabidopsis* in greenhouses and growing rooms. Airborne fungal spores settle and germinate on living plant tissue. After germination, the mycelium grows over the surface of the leaf, projecting food-absorbing appendage of this parasitic fungi into the epidermal cells. The pathogen develops in this manner, invisible to the naked eye, until spore producing conidiophores are formed. This reproductive phase is visible on the leaf as a patch of white "powder" that consists of the conidiophores and the multitudes of spores ready to become airborne, continuing the cycle and infecting more plants.

Powdery Mildew Prevention

1. Provide ample air flow circulation surrounding the plants. Keep plants spaced apart and use fans to keep air circulating throughout the growth area. Although powdery mildew spores can germinate at a lower humidity than most fungi, the progression of the disease on the plant is increased in high humidity environments.
2. Control the temperature and humidity in the growth facility. Warm days with low relative humidity combined with cool nights with high relative humidity favor development of powdery mildew. These conditions are common in winter in growing facilities that do not have good temperature and RH control.
3. Clean the growth area between plantings. After removing all plants, wash all surfaces (walls, floors, benches, etc. with the PreVasive Botanical (BAC) cleaner a fungicide. Then apply and let dry the' BAC followed by hard surface application of to create a lasting protective anti microbe and fungicidal coating on surfaces). Cleaning will remove all remnants of plant material on which spores might survive.

Powdery Mildew Detection



1. White patches of mildew will first become visible at the tips of the upper surfaces of older rosette leaves. When the powdery mildew infection is advanced, cauline leaves, stems, and siliques will also show these patches.
2. Powdery mildew is most easily detected on plants that have reached the large-rosette stage. Plants that are much younger and otherwise appear to be healthy can still have a powdery mildew infection that has not yet reached the reproductive phase and is thus invisible to the naked eye.

Powdery Mildew Treatment

1. Early treatment is important because the airborne spores are easily spread. Avoid spreading powdery mildew by not entering other plant growth areas after exposure to infected plants.
2. When powdery mildew is first discovered, cover the affected plant with BAC at 1 oz per gallon dampened paper towel and clean off the mold. This will reduce the spread of the spores. Spraying plants or moving infected plants drives spores onto neighboring plants. After cleaning apply the PreVasive' Botanical thyme to all plants in the room.

GRAY MOLD (BOTRYTIS SP.)

Botrytis, in high-humidity conditions can infest plants that are already weak, stressed, or compromised in some way can become infected.

Botrytis Prevention

1. Keep the growth area clean and remove plant debris that can harbor Botrytis spores.
2. Healthy, vigorously growing plants are unlikely to become infected with Botrytis. Avoid wounding or damaging plants when handling flats. Wound sites are frequent areas of infection. Apply PreVasive BAC to wound areas.
3. Provide good ventilation and avoid overcrowding of plants. In a greenhouse, when night temperatures drop, a thin film of moisture can condense on plant surfaces, creating an ideal condition for Botrytis spores to germinate.

Botrytis Detection and Treatment



Botrytis appears as a gray mold on older leaves.

Special note from Growers, BAC is supplied at a .23Percent RTU the suggested dilution is:
Spider/Broad/Russet Mites: 0.025% and Botrytis /Mildew/Common Molds 0.05%

Cannabis Greenhouses (3)

Applied via: Dosatron, Pressure Back Pack Sprayer, Electrostatic sprayers

IPM (Integrated Pest Management): Botrytis, Powdery Mildew, Downey Mildew, Spider Mites, Thrips

Cleaning of Water Tanks

Cleaning of Pots/Working Tools

Cleaning of irrigation lines

Cleaning of floor covering material.

Hemp Nurseries (2)

Applied via: Back Pack Sprayer

IPM (Integrated Pest Management): Botrytis, Powdery Mildew, Downey Mildew, Spider Mites, Thrips

Trial implementation in SOP for Cloning stations

Food Processing Center (1)

Cleaning of stainless-steel processing equipment.

Added to water reservoirs in washing of lettuce/kale leaf

Sprayed in walk-in freezers

The overall consensus is overwhelmingly great. The product is versatile, effective and has many qualities that will make it the go to product across many industries.

Treehouse consultants

(BAC) Botanical Antimicrobial Thyme

EPA Recognized FIFRA- 25B

A safer, cost effective Germicidal Antimicrobial anti-Fungal and Pest control
Organic product

The Natural alternative

- Active ingredient is directly from whole essential oil of white thyme
- Non-toxic
- Non-corrosive
- Not irritating
- Biodegradable
- EPA GRAS

EPA, USDA, FDA FIFRA Recognized product: BAC

- Active-Thyme essential oil, CAS-8007-46-3
- 40 CFR180.940(a) Food-contact surfaces in public eating places, dairy processing equipment, and food –processing equipment and utensils
- 40CFR 180.960 any food use site
- Minimum Risk Exemption 40CFR 152.25(t)
- EPA (GRAS) - Generally recognized as Safe
- 40 CFR 180.910 / 40 CFR 180.920 FIFRA 25 B-For use on growing crops or raw agriculture products after harvest.
- 40 CFR 180.930 for use on animals.



Thyme



Botanical Antimicrobial