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BioSafe Systems

Crop Protection Product Update(s)
BioSafe Systems

Industry Food Use Product Updates Session
IR-4 Food Use/Integrated Solutions Workshop
Sept. 23, 2019

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BioSafe Systems LLC

SIMPLY SUSTAINABLE. ALWAYS EFFECTIVE.

- *A family-owned manufacturer of biodegradable and reduced risk crop protection products.*
- *Headquartered in East Hartford, CT, USA*
- *Biochemical (Peracetic Acid Based), Botanical and Microbial based Biopesticides for organic and conventional Agriculture, Horticulture and Ornamental markets.*
- *Products registered in US, Canada and Mexico.*

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New Crop Protection Products from BioSafe Systems

OxiDate 5.0

ANEEM

PyClear

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OxiDate 5.0

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Active Ingredients:

Hydrogen Peroxide: 27.0%

Peroxyacetic Acid: 5.0%

- **US EPA Registered Broad Spectrum Liquid Plant Bactericide/Fungicide**
- **Labeled for control of major foliar diseases on wide variety of crops including but not limited to Fruiting Vegetables, Cole crops, Cucurbit crops, Leafy Vegetables, Tree crops, Berries, Citrus crops, Grapes, Pome Fruits, Tree nuts and other permanent crops**
- **EPA Registration No. 70299-28**
- **Registration Pending in CA**

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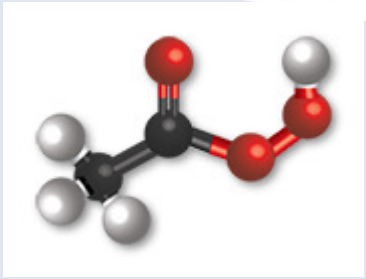
Product Features

- Formulation Type: Soluble Liquid (SL)
- Non-residual, exempt from pesticide tolerances
- Excellent addition to rotations for resistance management
- · Safely integrates with other chemical and biological disease management programs in Pome fruits
- REI-1 hr in enclosed environments; Wait until sprays have dried.

Mode of Action

- ✓ In combination with H202, PAA is a strong anti-microbial.
- ✓ Works by oxidizing Bacterial/Fungal cells/spores with which they come into contact.
- ✓ Damage to cellular macromolecules including lipids, proteins and nucleic acids occur upon oxidation.



OMRI LISTED For Organic Use

Made in the USA

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Preventative Application Rates: Begin applications early in season. Use a rate of 1:800-1:500 (16-26 fl. oz. of OxiDate 5.0 per every 100 gallons of water). Maintain a 5-10 day spray schedule to prevent the establishment of disease inoculum

Curative Application Rates: For best results, apply at first sign of disease. Use a 1:256 dilution rate (50 fl. oz. of OxiDate 5.0 per every 100 gallons of clean water). Maintain a 3-10-day spray schedule until control is achieved.

Rescue Treatment Rates: (For use on: Bulb Vegetables, Cereal Grains & Commodities, Cotton, Cranberries, Cucurbit Crops, Fruiting Vegetables, Legumes, Peanuts, Root & Tuber Vegetables). Concentrations up to 1:100 (1 gallon of OxiDate 5.0 for every 100 gallons of water) can be used as a rescue treatment for severe infestations. Maintain a 3-5 day spray schedule until control is achieved.

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2020 IR-4 Biopesticide Study Request(s)

-Request for product consideration on any of the following pest(s) or crop(s) as prioritized by IR-4 to develop additional data to support registration efforts with EPA and California.

-Fire Blight (Apples)

-Black Rot (Xanthomonas)-Brassica

-Botrytis/Bacterial Spot/Speck/Canker (Tomato)

-Spotted Wing Drosophila (All Crops)

-Downy Mildew (Basil)

-Powdery Mildew and Black Rot (Grapes)

-Bacterial Leaf Spot/Angular Leaf Spot (Cucurbit and Pepper)

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Active Ingredient(s):

*Cold Pressed Neem Oil…..70.0%**

Azadirachtin……0.7%

Formulation Type: Emulsifiable Concentrate (EC)

Expected EPA registration: Summer, 2020

- *Proposed label for use on wide variety of vegetables, fruits and ornamentals (outdoors or in greenhouses) for control of important insect pests, mites, nematodes and foliar fungal diseases including Powdery Mildew*
- *Proposed application Rates: 0.5%-1.5% v/v solutions (0.5%, 1.0% and 1.5% v/v)*
- *Can be sprayed up to and including day of harvest (0 PHI)*
- *Thorough coverage of upper and lower leaf surfaces is essential for good control*

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ANEEM

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Mode of Action

As an Insecticide/Miticide

- ✓ *ANEEM controls target pests on contact or by ingestion.*
- ✓ *The Neem Oil in ANEEM coats insect's body, blocks the respiratory openings resulting in insect suffocation and death.*
- ✓ *The product also acts on target insects and mites by way of repellence, anti-feedant action and interference with the molting process.*

As a Fungicide

- ✓ *Neem Oil in ANEEM is know to prevent germination and penetration of fungal spores resulting in prevention or control of certain foliar fungal infections.*

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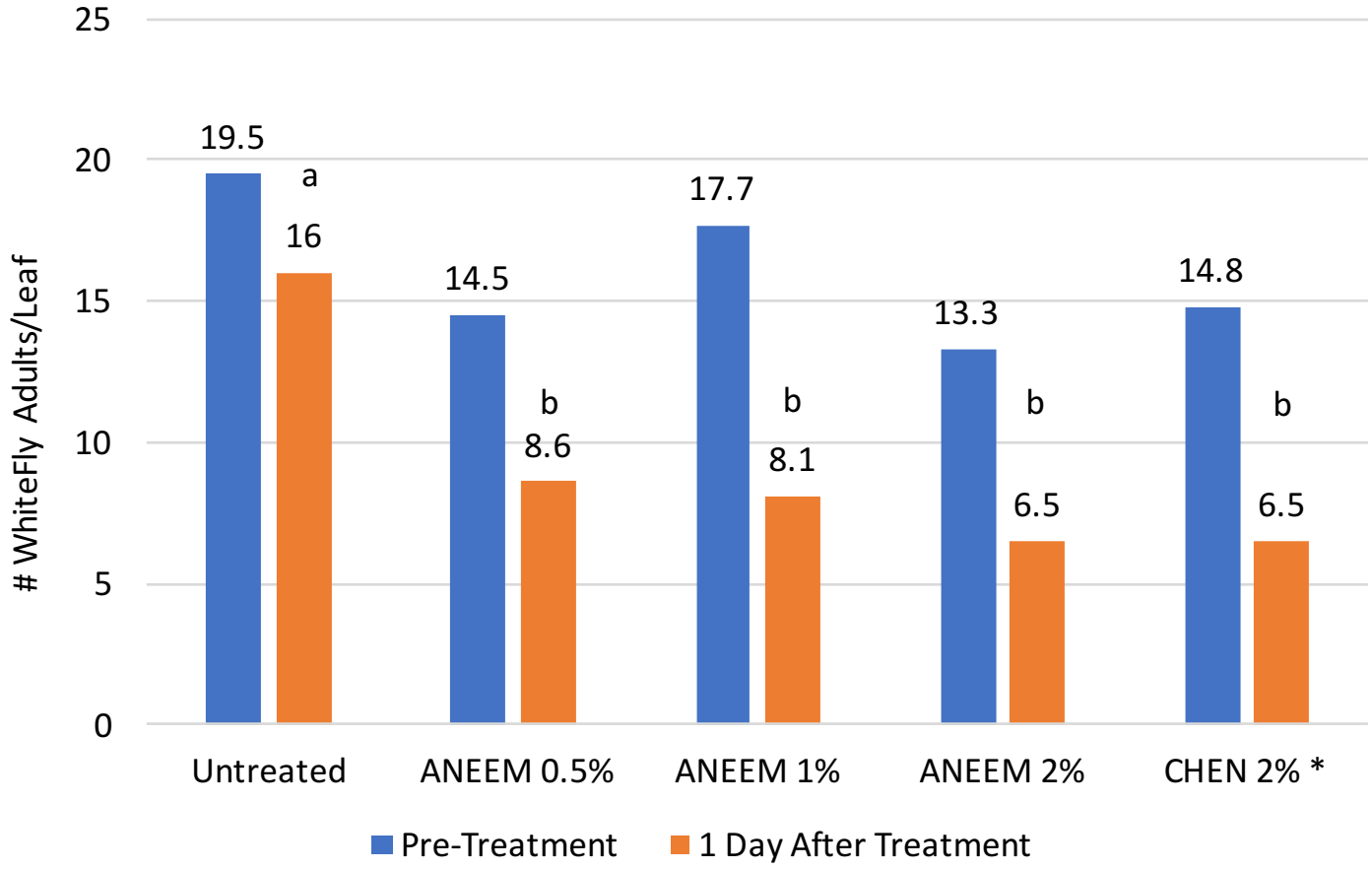
Kale-Whiteflies
(BioSafe Systems, 2019)



% are given in v/v
**** CHEN = Clarified Hydrophobic Extract of Neem Oil (70%)***

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ANEEM

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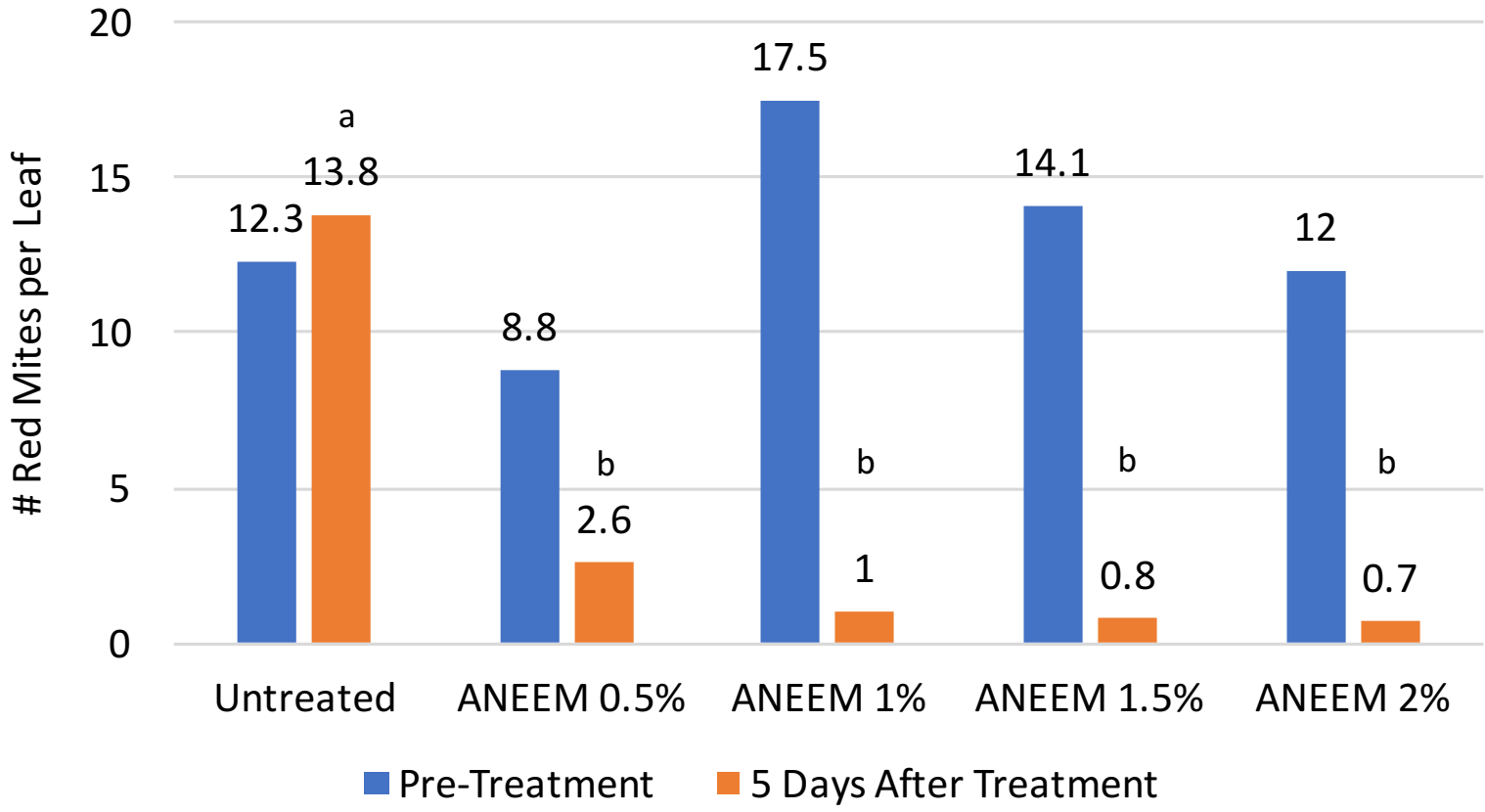
Citrus-Red Mites
(BioSafe Systems, 2019)



% are given in v/v

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ANEEM

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2020 IR-4 Biopesticide Study Request(s)

-Study requests on any of the following pest(s) or crop(s) as prioritized by IR-4, to develop additional data for supporting registration efforts with EPA and in California.

-Downy Mildew, Organic Basil

-SWD

-BMSB and White Fly (Q-Biotype)-All crops

-Apple Maggot and Codling Moth-Apple

-Asian Ambrosia Beetle (Avocado)

-ACP (Citrus)

-Berry Borer (Coffee)

-Cabbage Aphid (Brassicas)

-Striped Cucumber Beetle (Cucurbits, Vegetables)

-Colorado Potato Beetle (Potato)

-Potato Leaf Hopper (Potato)

-Chilli Thrips (All Crops)

-Varroa Mite (Honey Bee)

-Bagrada Bug and Cabbage Looper (Brassica)

-Squash Bugs (Cucurbits)

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PyClear

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Plant Insecticide

Active Ingredients:

Pyrethrins…..3.0%

Piperonyl Butoxide…30.0%

Formulation Type: Emulsifiable Concentrate (EC)

EPA Reg. No.: 89459-40-70299

Expected launch by BioSafe Systems in Spring, 2020

Not registered in California

Not for Organic Use

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- ✓ Labeled for use as an Insecticide on vegetables, fruits and ornamentals (outdoors or in greenhouses)
- ✓ Application Rate: 0.75 to 2.5 fl.oz per 10 gallons of water
- ✓ Can be sprayed up to and including day of harvest (0 PHI)
- ✓ Thorough coverage of upper and lower leaf surfaces is essential for good control

Mode of Action

- ✓ Pyrethrins in PyClear are neurotoxic that moves systemically in the insect body.
- ✓ Targets primarily the insect neuron system by binding of the voltage-gated sodium channel resulting in quick knock down of the target insect through loss of coordination and paralysis.
- ✓ Piperonyl Butoxide acts as a synergist increasing the toxicity of Pyrethrins.

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Labeled for use to control wide variety of insect pests of following crops:

VEGETABLES: beets, carrots, horseradish, potatoes, radishes, celery, lettuce, parsley, spinach, broccoli, cabbages, cauliflowers, beans, peas, cucumbers, melons, pumpkins, summer squash, watermelons, zucchini.

FRUITS: grapefruits, lemons, limes, tangerines, oranges, apples, pears, apricots, cherries, nectarines, peaches, plums, grapes, raspberries, blackberries, strawberries.

HERBS AND SPICES: anise (aniseed), balm, basil, borage, burmet, camomile, caraway, catnip, chicory, chives, clary, coriander, costmary, cumin, curry leaf, dill, fennel (Italian and sweet), fenugreek, horehound, hyssop, marigold, marjoram-sweet (oregano), marjoram (wild), mint, nasturtium, paprika, parsley, pennyroyal, rosemary, rue, sage, savory (summer and winter), sweet bay (bay leaf), tansy, tarragon, thyme, wintergreen, woodruff, wormwood.

ORNAMENTALS: African violet, ageratum, aster, azalea, begonia, cactus, calceolaria, calendula, calla, camellia, carnation, ceanothus, chrysanthemum, cineraria, coleus, cyclamen, cypress, daffodil, dahlia, delphinium, eucalyptus, fern, ficus, foliage plants, fuschia, gardenia, geranium, gladiolus, gloxina, gypsophila, hyacinth, hydrangea, feles, iris, ivy, lily, maidenhair fern, marigold, narcissus, orchid, pansy, pelargonium, peony, petunia, philodendron, phlox, poinsettia, pyracantha, rhododendron, rose, rubber plant, snapdragon, stock, sweet pea, tulip, viburnum, wandering jew, zinnia and Andromeda, arbovitae, ash, beech, birch, boxwood, butternut, chamaecyparis, cherry, cotoneaster, crabapple, dogwood, Douglas fir, elm, euonymus, fir, firethorn, forsythia, hackberry, hawthorn, hemlock, hickory, holly, honey locust, horse chestnut, juniper, larch, laurel, lilac, linden, London plane, magnolia, maple, mimosa (silk tree), mountain ash, myrtle, oak, pachysandra, peach, pine, planetree, poplar, privet, quince, spruce, sycamore, Taxus, tulip tree, walnut, willow, yew.

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2020 IR-4 Insect Efficacy Study Request(s)

-Study requests to develop and support additional data at lower than current labeled rate and to support registration efforts in California.

-BMSB, SWD and White Fly (Q-Biotype)-All crops

-Apple Maggot and Codling Moth-Apple

-Asian Ambrosia Beetle (Avocado)

-ACP (Citrus)

-Berry Borer (Coffee)

-Cabbage Aphid (Brassicas)

-Striped Cucumber Beetle (Cucurbits, Vegetables)

-Colorado Potato Beetle (Potato)

-Potato Leaf Hopper (Potato)

-Chilli Thrips (All Crops)

-Varroa Mite (Honey Bee)

-Bagrada Bug and Cabbage Looper (Brassica)

-Corn Root Worm (Corn)

-Squash Bugs (Cucurbits)

-Flea Beetles (Eggplant)

-Pepper Weevil (GH Pepper)

-Wireworms (Potato)

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Thank You

From BioSafe Systems, LLC

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