

Nutrol®

broad spectrum **Fungicide**

water soluble **Fertilizer**

tank **Buffer**

for Agriculture

Do Not Distribute in California

Nutrol® works three ways....

1. Non-toxic and powerful bio-pesticide for the control of Powdery Mildew and other foliar and soil-borne diseases
2. Highly-concentrated, yet very gentle, water soluble fertilizer
3. Tank buffer and water conditioner to prevent alkaline hydrolysis



Nutrol® • Bio-Pesticide

- Nutrol® can be used to control and eradicate **powdery mildew** on **Apples, Cucurbits, Grapes, Mangoes, Ornamentals, Peppers, Roses, Stone Fruit, and Tomatoes.**
- Nutrol® is labeled for the **control of several soil-borne and foliar diseases when applied with any of the Prudent® family of fertilizers.**
- Nutrol® is the ideal “partner” product for **alternation and tank mixing** with other EPA registered pesticides.
- Nutrol®, when used in alternation with other labeled fungicides, can **prevent the formation of resistant powdery mildew strains.**
- Nutrol® is safe for the applicator and the environment.

Nutrol® • Plant Nutrient

- Nutrol® contains over 50% P_2O_5 and 32% K_2O , making it one of the most **concentrated water soluble fertilizers** available.
- Nutrol® is also very gentle—it has **the lowest salt index of any fertilizer**—and will not cause phytotoxicity, even at high concentrations.
- Nutrol® is nitrogen-free, so you can **manage nitrogen requirements independently.**
- Nutrol® is suitable for foliar, soil and drip irrigation applications.



Nutrol® • Tank Buffer

- Nutrol® is a true tank buffer. Nutrol® can acidify and maintain the pH of tank solutions throughout application.
- Nutrol® buffers solutions to the **pH recommended for most pesticides.** *NOTE: The pH of a 1% aqueous solution of Nutrol® is 4.5 +/- 0.3.*
- Nutrol® **prevents alkaline hydrolysis**, which can negatively impact the performance of commonly used pesticides.
- One-percent (1%) solutions of Nutrol® in the pesticide tank will ensure optimal performance of each component.

Do NOT use Nutrol® with copper fungicides or other compounds that warn against mixing with low pH products.



Nutrol®

GUARANTEED ANALYSIS

Available Phosphate (P_2O_5).....50%

Soluble Potash (K_2O).....32%

Derived From: Monopotassium phosphate

Nutrol® is manufactured specifically as a **low salt, water soluble, foliar and special application fungicide and plant nutrient**. Its use is suggested as a supplement to a standard fungicide and fertilizer programs.

The target is **reduced pesticide use and enhanced yield and quality**. **Nutrol®** is a highly soluble, low salt index formulation developed to supplement standard fertility practices by providing a highly available source of phosphorous and potassium.

Research has shown that foliar-applied nutrients, in a pure and soluble form, are absorbed more efficiently by foliage than are those supplied in the soil. Nutrient translocation to all parts of the plant is generally more rapid when nutrients are applied foliarly. Foliar fertilization with **Nutrol®** is intended as a supplement to a regular fertilization program and will not, by itself, provide all the nutrients normally required by agricultural crops.

*A good tissue testing program may be helpful to monitor and maintain optimum plant growth and development. Adverse conditions such as moisture, stress, weather, salts, soil type, etc., may induce nutrient deficiency symptoms. When applied as directed, **Nutrol®** application is a means of obtaining a quick response to needed nutrients.*



Did you know?

Nutrol® has the lowest Salt Index of any commercial fertilizer!

Nutrol® has a salt index of 8.4. Salt index (S.I.) of a fertilizer is a measure of **the salt concentration that fertilizer induces in the soil solution**. S.I. does not predict the exact amount of a fertilizer material or formulation that could produce crop injury on a particular soil, but **it does allow comparisons of fluid formulations regarding their potential salt effects**.

Nutrol® solutions can be placed near seeds and seedlings with minimal risk of phytotoxicity.

safe, effective, gentle

p and k NUTRITION

100 % water-soluble, easy to use

Nutrol® Guidelines for Crop Nutritional Application, Part 1 of 2

Crop	Rate	Timing
Alfalfa and Clover	Foliar: 5-8 lb./Acre per application. Apply after cuttings at a maximum concentration of 1.9 lb./Acre only if label mixing directions are followed. Chemigation: Apply 40-50 lb./Acre	Foliar: Apply at first regrowth – when alfalfa is 6-8" tall; apply after each cutting. Chemigation: Apply one week after every cut through irrigation
Apples	10-20 lb./Acre per application. Use a maximum of 1.5 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 4 lb. of product per 10 gallons of spray solution by air.	Mid-Season Sprays: Apply during June/July, up to 4 successive sprays, 7-10 days apart. Finish Spray: Apply at the color break period. Post-Harvest Spray: Immediately apply after harvest.
Avocado	25-40 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply 2-3 times from fruit set until 30 days before harvest every 30 days.
Banana	20-30 lb./Acre per application. Use a maximum of 2 lb. of product per 10 gallons of spray solution.	Apply 1-2 times – 15 and 21 days after shooting. Apply 1 time 21-30 days before bloom
Beans: Such as Dry, Succulent and Lima	5-8 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply at first flower. Apply 2 additional times during the main filling stage of pod development, 7-10 days apart
Berries: Bush Type	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Make 2-4 foliar applications, at 14-21 day intervals, starting at first flower.
Citrus: Such as Grapefruit, Lemons, Oranges and Tangerines	20-25 lb./Acre per application. Use a maximum of 4 lb. of product per 10 gallons of spray solution.	Apply up to 3 times: Pre-bloom, late June (after June drop) and in early September.
Corn: Field and Sweet	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Two applications: Apply 2 weeks prior to tasseling and again between tasseling and silking.
Cotton	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution by ground rig and a maximum of 10 lb. of product per 10 gallons of spray solution by air.	Make applications at 30 (square development), 60 (first flowering) and 90 (boll set) days after emergence.
Cucurbits and Melons: Such as Cantaloupe, Cucumber, Honeydew, Musk Melon, Pumpkin and Squash	8-12 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply 2-4 sprays beginning at fruit set on a 7-14 day interval.
Deciduous Fruits: Such as Apricots, Cherries, Nectarines, Peaches, Pears, Plums and Prunes	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply as a pre-bloom and post-bloom spray.
Grapevines: Such as Raisin, Table and Wine	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply starting at the 1-2 inch (3-5 cm) shoot stage through veraison every 2-4 weeks.
Hops	5-10 lb./Acre per application. Use sufficient water for complete coverage by ground sprayers. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Begin applications at early season training and continue through end of bloom period as often as every 7 days.

Nutrol® Guidelines for Crop Nutritional Application, Part 2 of 2

Crop	Rate	Timing
Legumes: Such as Garbanzos, Lentils and Peas (Dry and Succulent)	5-8 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply at first flower with 2 additional applications during the mid-filling stage of pod development 7-10 days apart.
Lemons	8-10 lb./Acre per application. Use a maximum of 4 lb. of product per 10 gallons of spray solution.	Make 2 applications – 1 after fruit setting and the second 1 month later.
Mango	15-20 lb./Acre per application. Use a maximum of 4 lb. of product per 10 gallons of spray solution.	Apply up to 3 times after panicle development every 14 days.
Nuts: Such as Almonds, Filberts, Pecans, Pistachios and Walnuts	Foliar: Pre-bloom: 5-10 lb./Acre; Finish: 5-15 lb./Acre. Use a maximum of 1.5 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 4 lb. of product per 10 gallons of spray solution by air.	Bloom; mid-season (7 to 14 day interval); finish. Almonds: begin at petal fall and continue through hull split at 30 day intervals.
Onions and Garlic	8-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Make 2-4 applications beginning at transplanting. Repeat applications every 30 days.
Peanuts	5-8 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply 3 times– first at early bloom with 2 additional sprays at 80 days after planting and then 10 days later.
Peppers & Tomatoes	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution.	Apply 2-6 sprays every 14 days starting at first bloom.
Potato	5-10 lb./Acre per application. Use a maximum of 5 lb. of product per 10 gallons of spray solution.	Apply at early initial tuber formation. Apply subsequent sprays with fungicide applications.
Produce: Such as Celery, Cole crops and Lettuce	2-4 lb./Acre per application. Use a maximum of 1 lb. of product per 10 gallons of spray solution.	Use multiple low rate applications 10-14 days apart starting just after transplant. Use as a preharvest application from 3-14 days before harvest to improve color.
Rice	3-6 lb./Acre per application. Use a maximum of 1 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 5 lb. of product per 10 gallons of spray solution by air.	Spray 2 times, first at the end of tillering and then at panicle initiation.
Root Crops: Such as Beets, Carrots and Sweet Potatoes	2-8 lb./Acre per application. Use a maximum of 2 lb. of product per 10 gallons of spray solution.	Apply at increasing rates every 14-21 days from early root swell until 2 weeks before harvest.
Small Grains: Such as Barley, Oats and Wheat	8-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 8 lb. of product per 10 gallons of spray solution by air.	Apply at late anthesis stage.
Soybean	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 8 lb. of product per 10 gallons of spray solution by air.	Apply 2 times – first at the early bloom stage and then at the main pod filling stage.
Strawberry	5-10 lb./Acre per application. Use a maximum of 3 lb. per 10 gallons of spray solution. Chemigation: Apply 5-10 lb./Acre	Apply 2-4 times during the harvest period on a 7-14 day schedule. Apply as needed through chemigation.
Sugarbeet	5-10 lb./Acre per application. Use a maximum of 3 lb. of product per 10 gallons of spray solution by ground rig or a maximum of 8 lb. of product per 10 gallons of spray solution by air.	Apply when leaves are 10" across and again 3-4 weeks later. Apply again 4 weeks before harvest.

Nutrol® Powdery Mildew Crop Protection Application Guidelines

Apples

Use 8 to 40 lbs of Nutrol per acre. Start spraying at tight cluster and continue spraying every 7 to 10 days until terminal shoots cease their vegetative growth. The rate of product per acre will vary depending upon the tree size (canopy development) and the volume of water.

Cucurbits

Cucumber, Melons, Squash, Watermelons

Use 10 to 20 lbs of Nutrol per acre. Start spraying when plants begin to run or when disease pressure is anticipated. Repeat at 7 to 14 day intervals as needed. Under conditions of severe disease pressure, use the higher rate and apply at 7 day intervals. For best results, do not apply when temperatures are over 85°F and humidity is high. Shading is necessary for greenhouse use.

Grapes

Use 8 to 40 lbs of Nutrol per acre. Start spraying in the spring when shoots are 1 to 2 inches (3 to 5 cm) in length and when disease pressure is anticipated. Repeat every 10 to 14 days. When disease pressure is low, use low per acre rates early in the season. The per acre rate must be increased as disease pressure increases. For improved appearance on table grapes, use lower application rates.

Leafy Vegetables

(Including but not limited to lettuce, cabbage, greens, spinach and parsley)

Use 10 - 20 lbs of Nutrol per acre. Start spraying when plants begin to run or when disease pressure is anticipated. Repeat at 7 - 14 day intervals as needed. Under conditions of severe disease pressure, use the higher rate and apply at 7 day intervals. For best results, do not apply when temperatures are over 85°F and humidity is high. Shading is necessary for greenhouse use.

Mangoes

Use 8 to 40 lbs of Nutrol per acre. Start spraying at first appearance of bloom panicles (approximately 2 inches long) and repeat at 7 to 14 day intervals until all fruit are set. If additional sprays are required, continue at 2 to 3 week intervals until shoot growth ceases – which should be about 6 sprays.

Peppers

Greenhouse Grown: Mix 10 lbs per 100 gallons and apply 1.5 gallons of finished spray per 1000 sq. ft. at 5 to 7 day intervals. *Use shading to reduce temperatures during spraying.*

Field Grown: Use 8 to 20 lbs of Nutrol per acre when disease pressure begins to increase. Repeat at 7 to 10 day intervals.

Start Spraying in early spring when conditions become favorable for disease development (i.e. cool, humid, cloudy periods) and continue spraying on a 7 - 14 day schedule for the entire season.

Stone Fruits

Peaches, Nectarines, Plums, Cherries

Use 8 to 20 lbs of Nutrol per acre. Follow local recommendations for powdery mildew control timings or apply when disease pressure is anticipated and repeat every 7 to 14 days.

Tomatoes

Greenhouse Grown: Use 10 lbs per 100 gallons and apply 1.5 gallons of finished spray per 1000 sq. ft. at 5 to 7 day intervals. *Use shading to reduce temperatures during spraying.*

Field Grown: Use 8 to 20 lbs of Nutrol per acre when disease pressure begins to increase. Repeat at 7 to 10 day intervals.

Start Spraying in early spring when conditions become favorable for disease development (i.e. cool, humid, cloudy periods) and continue spraying on a 7 - 14 day schedule for the entire season.

IMPORTANT....Resistant Powdery Mildew Fungus Strains May be Present!

If treatment is not effective following use of conventional fungicides as instructed, a resistant strain of the fungus may be present. If this occurs, then fungicides such as benzimidazole, thiophanate or DMI type will not give effective control. ***When resistant fungus strains are present, give serious consideration to the use of Nutrol® for effective mildew control and crop protection.***

Nutrol® controls mildew strains that are resistant to other fungicides and is a valuable “resistance management” tool.

Powdery Mildew Crop Protection with Nutrol®

Application rates vary according to the specific volumes of water applied to the crop. Select a water volume and corresponding rate of Nutrol® necessary to thoroughly spray/mist all fruit and foliage surfaces.

Always add Nutrol® to the tank mix first, and then add other products after all Nutrol® has been completely solubilized.

Add an approved/compatible “spreader-sticker” to the solution to assure complete spray coverage of plant surfaces.

Nutrol® suppresses existing mildew disease and inhibits further development of new mildew growth on plant

tissue. Use alone, in alternating applications or in tank-mix spray programs with other compatible, EPA-approved fungicides. It is rapidly absorbed by the plant and is mobile within the plant tissues, improving the potassium and phosphorous content in the plant. It therefore acts in a dual role as a biocompatible fungicide for plant disease control and as an essential plant food.

Nutrol® will also acidify/buffer your spray tank solution to help reduce alkaline hydrolysis of other compatible, tank-mixed materials.

Best performance is attained by beginning Nutrol® applications prior to the onset of disease, as a preventative disease control program.

Application Rates and Water Volume Guidelines for Powdery Mildew Control with Nutrol®

Pounds of Nutrol® Needed for Various Water Volumes					
	Water Volume (gallons per acre)				
CROP	50	100	150	200	250
Apples	8	8 - 16	17 - 20	21 - 30	33 - 40
Cucurbits	10	8 - 20	17 - 20	20	20
Grapes	8	8 - 16	17 - 20	21 - 32	33 - 40
Leafy Vegetables	10	10 - 20	17 - 20	20	20
Mangoes	8	8 - 16	17 - 20	21 - 32	33 - 40
Peppers	8	8 - 16	17 - 20	20	20
Stone Fruits	8	8 - 16	17 - 20	20	20
Tomatoes	8	8 - 16	17 - 20	20	20

Nutrol® in combination with labeled rates of Prudent® fertilizers, NpHource®42 or ArmorTech® 44, all LidoChem, Inc. fertilizers, is acceptable with local crop protection practices.

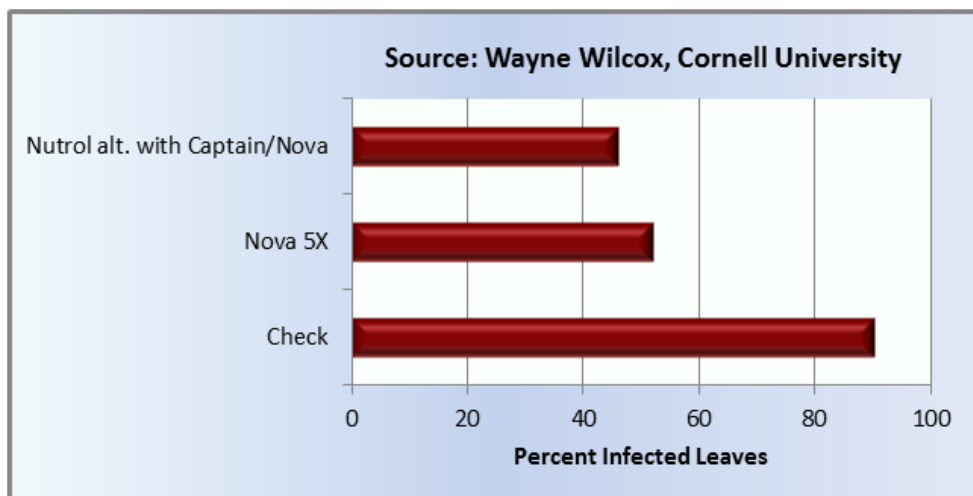
The end user must contact a LidoChem®, Inc. representative or specialist for specific rates, timing and use recommendations. It has been found that the combination of Nutrol® and Prudent® fertilizers, NpHource®42 or ArmorTech®44 fertilizers aids in the protection of the crops listed on the following page.

Prudent, and Performance Nutrition are Registered Trademarks of LidoChem, Inc.

NpHorce is a registered trademark of Loveland Industries, Inc., ArmorTech is a Registered Trademark of United Turf Alliance.

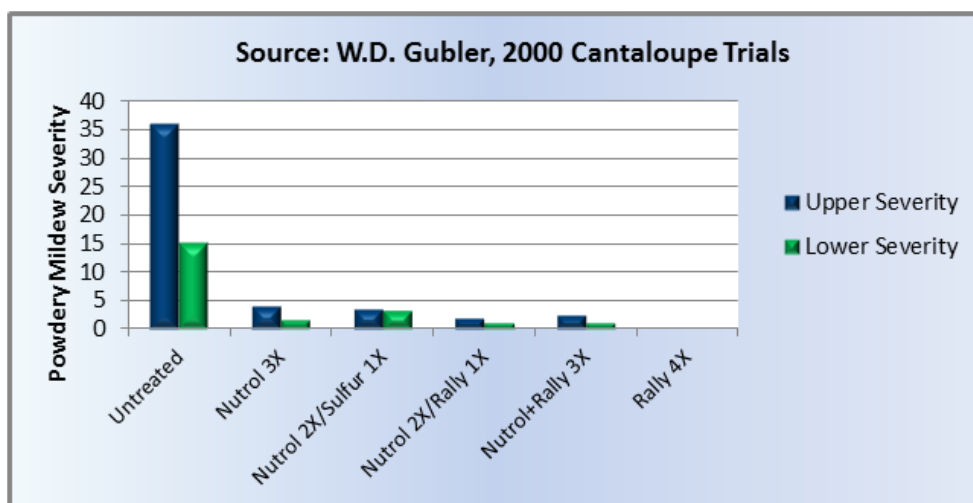
Nutrol® Expanded Efficacy with Product Combination Disease List

Crop	Common Disease Name	Pathogen
Almond	Bacterial Diseases	<i>Pseudomonas syringae</i>
Apple	Gray Mold Rots • Crown Rot	<i>Botrytis cinerea</i> • <i>Phytophthora cactorum</i>
Apricot	Bacterial Diseases	<i>Pseudomonas syringae</i>
Artichoke	Downy Mildew • Powdery Mildew	<i>Plasmopara halstedii</i> <i>Erysiphe cichoracearum</i>
Cherry	Bacterial Diseases • Gray Mold Rots	<i>Xanthomonase pruni</i> • <i>Pseudomonas syringae</i> • <i>Botrytis cinerea</i>
Citrus	Brown Rot • Gray Mold Rots	<i>Phytophthora citrophthora</i> • <i>Botrytis cinerea</i>
Corn, Sweet and Field	Seed and Stem Rots	<i>Pythium</i> , <i>Fusarium</i> , <i>Rhizoctonia</i> sp.
Eggplant Pepper	Downy Mildew • Verticillium Wilt Gray Mold Rots • Fusarium Wilt Damping-Off of Seedlings	<i>Peronospora tabacina</i> • <i>Pythium ultimum</i> P. <i>debarysanum</i> • <i>Verticillium</i> sp. <i>Rhizoctonia solani</i> • <i>Botrytis cinerea</i> • <i>Fusarium annuum</i>
Grape Vine	Downy Mildew • Gray Mold Rots	<i>Plasmopara viticola</i> • <i>Botrytis cinerea</i>
Lettuce, Endive, Chicory	Powdery Mildew • Downy Mildew Damping-Off of Seedlings • Bottom Rot	<i>Erysiphe cichoracearum</i> • <i>Pythium</i> sp. <i>Rhizoctonia solani</i> • <i>Bremia lactucae</i>
Melon Cucumber Zucchini	Downy Mildew • Fusarium Wilt Gray Mold Rots Damping-Off of Seedlings	<i>Pseudoperonospora cubensis</i> • <i>Fusarium</i> <i>oxysporum</i> f sp. <i>cucurbitae</i> • <i>Botrytis cinerea</i> <i>Pythium</i> sp. • <i>Rhizoctonia solani</i>
Peach	Bacterial Diseases • Verticillium Wilt Gray Mold Rots • Crown Canker	<i>Xanthomonas pruni</i> • <i>Pseudomonas syringae</i> • <i>Verticillium albo-atrum</i> • <i>Botrytis cinerea</i> • <i>Phytophthora</i> sp.
Pear	Powdery Mildew • Gray Mold Rots Bacterial Diseases • Collar Rot	<i>Podosphaera leucotricha</i> • <i>P. oxycanthae</i> <i>Botrytis</i> <i>cinerea</i> • <i>Pseudomonas syringae</i> <i>Phytophthora cactorum</i>
Plum	Bacterial Diseases	<i>Xanthomonase pruni</i>
Potato	Powdery Mildew • Fusarium Wilt Verticillium Wilt • Gray Mold Rots Late Blight	<i>Erysiphe cichoracearum</i> , <i>Oidium</i> sp. <i>Fusarium oxysporum</i> • <i>Verticillium</i> sp., <i>Thizoctonia solani</i> • <i>Botrytis cinerea</i> • <i>Phytophthora infestans</i>
Soybean	Phytophthora Rot • Rhizoctonia Stem Rot Pythium (Damping Off) • Downy mildew Sudden Death Syndrome • Phonopsis	<i>Phytophthora sojae</i> • <i>Pythium</i> sp. <i>Rhizoctonia solani</i> • <i>Peronospora manschurica</i> <i>Phomopsis/Diaporthe</i> • <i>Fusarium solani</i>
Strawberry	Powdery Mildew • Fruit Rots • Red Stele Verticillium Wilt • Gray Mold Rots	<i>Sphaerotheca macularis</i> • <i>Rhizoctonia solani</i> • <i>Phytophthora fragariae</i> • <i>Verticillium albo-atrum</i> • <i>Botrytis cinerea</i>
Tomato	Late Blight • Leaf Mold Diseases Root Rot • Damping-Off of Seedlings Fusarium Wilt	<i>Phytophthora infestans</i> • <i>Cladosproium fulvum</i> • <i>Thielaviopsis basicola</i> • <i>Pythium</i> sp. <i>Rhizoctonia</i> <i>solani</i> • <i>Fusarium oxysporum</i> var. <i>lycopersici</i>
Walnut	Bacterial Diseases	<i>Xanthomonase campetstris</i> pv. <i>juglandis</i>



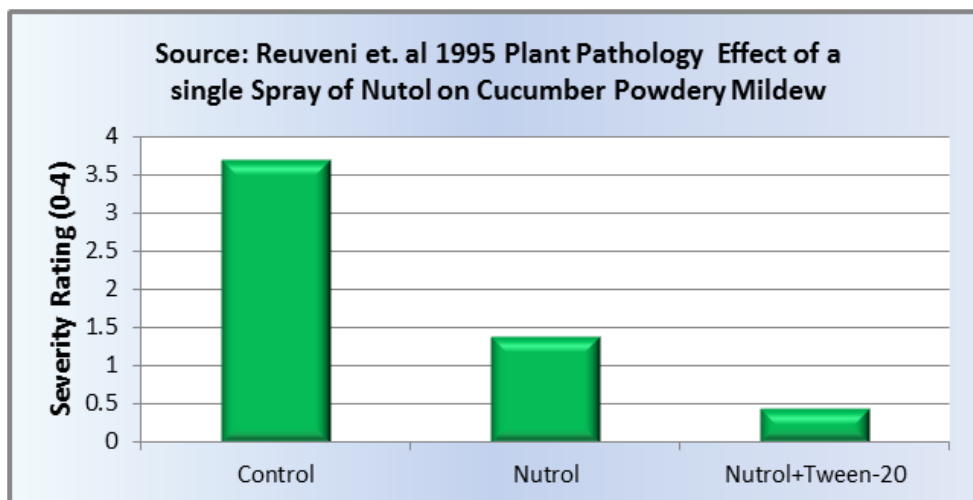
Apples

This university study shows that using Nutrol® in alternation with Nova™ provides equivalent disease suppression using half the total amount of Nova™.



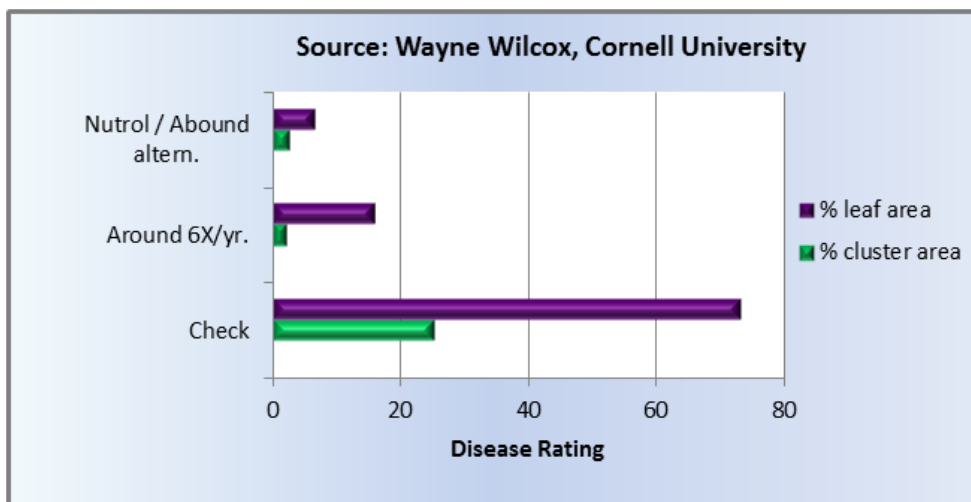
Cantaloupes

Dr. Gubler found that Nutrol® alternated with sulfur or Rally provided equivalent powdery mildew suppression as compared to Rally® alone



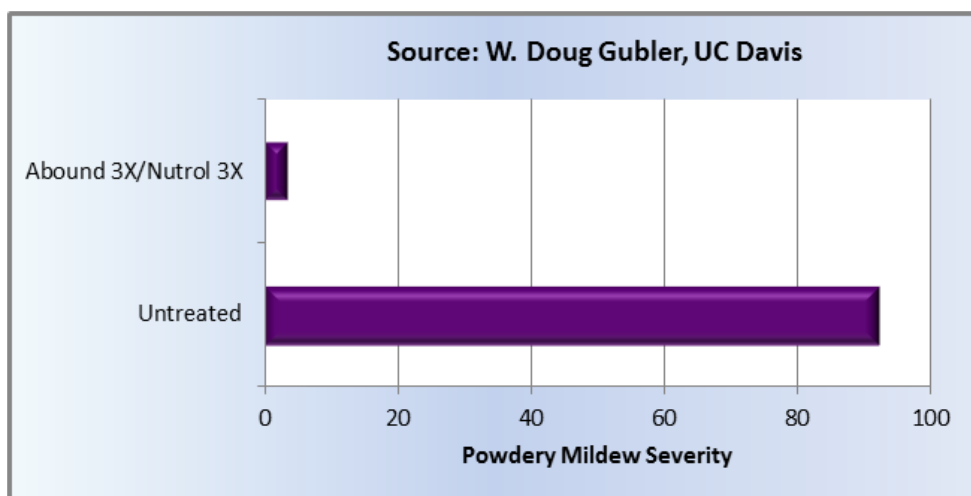
Cucumbers

This trial by Dr. Reuveni shows the benefit of adding a spreader/sticker to Nutrol® for better powdery mildew suppression.



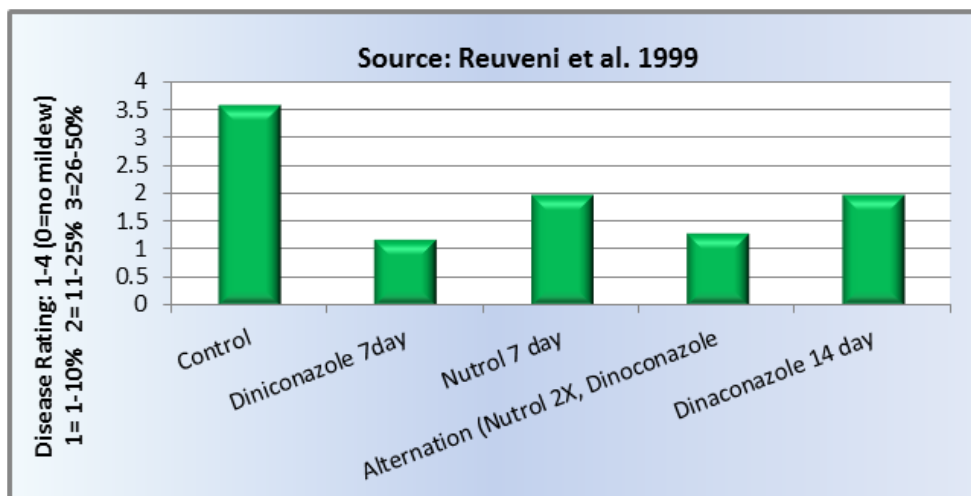
Grapes

In Dr. Wilcox's trial, Nutrol® alternated with Abound® provided better powdery mildew suppression as compared with applications of Abound® alone.



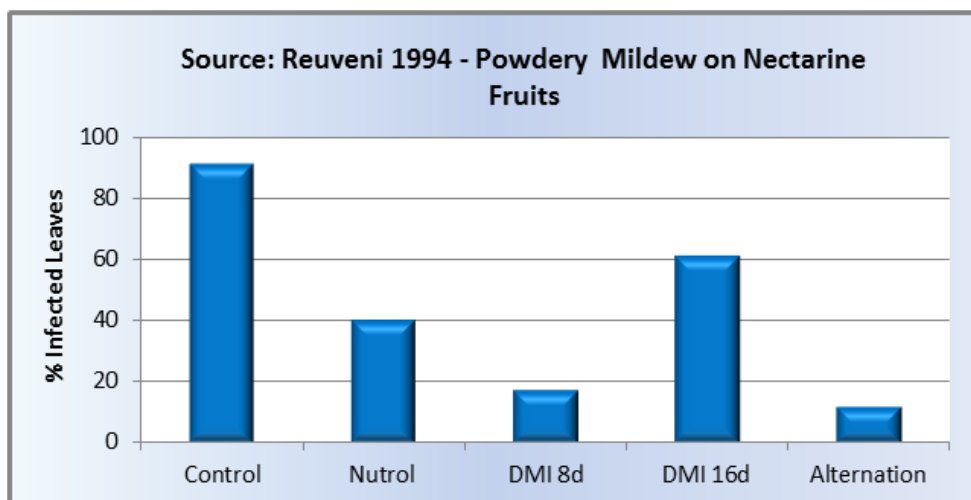
Grapes

Dr. Gubler found that applications of Abound® and Nutrol® in alternation virtually eradicated all powdery mildew symptoms.



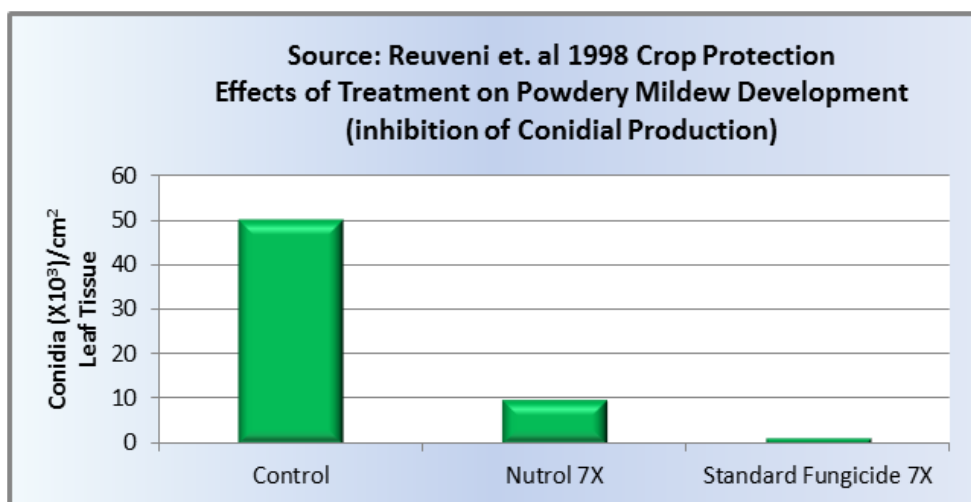
Mangoes

Dr. Reuveni shows that applications of Nutrol® alternated with Diniconazole™ provided equivalent powdery mildew control as Diniconazole™ applications alone.



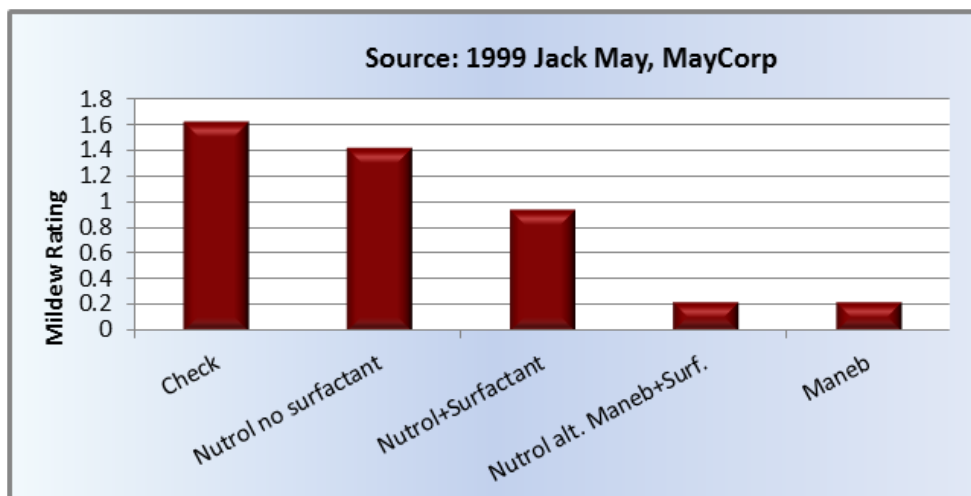
Nectarines

Dr. Reuveni found that applications of Nutrol® alternated with DMI controlled powdery mildew on nectarines slightly better than applications of DMI alone.



Peppers

Dr. Reuveni found that applications of Nutrol® inhibited conidial production as well as applications of standard fungicides.



Tomatoes

This trial by Dr. Jack May shows that applications of a tank mix of Nutrol®, Maneb™ and a surfactant gave similar powdery mildew control as Maneb™ applications alone.

Try other Performance Nutrition® products

Humates & Humic Acids

KaPre® Soil Amendments

KaPre® Soy-based Fertilizers

Krystal Klear® Patented Foliar Micronutrients

LidoQuest® Patented Soil Fertilizers

NutriSmart® Patented Eco-Fertilizer

Pennamin® Amino Acid Nutrients

Prudent® Patented Phosphite Fertilizers

Vibrant® Patented Foliar Fertilizers

Worm Castings & Extracts

PERFORMANCE
NUTRITION®

Performance Nutrition is a division of LidoChem, Inc.

©2018 LidoChem, Inc.

LidoChem, Inc.

Performance Nutrition Division

20 Village Court

Hazlet, NJ 07730

Ph: 732 888 8000 • Fax 732 264 2751

www.pnfertilizers.com

info@lidochem.com