

SFNMC SEEDLING PRODUCTIVITY TRIALS



2018 SFNMC Contact Meeting Pensacola, FL July 16, 2017 Nina Dowling Payne SFNMC Auburn University

2018 Seedling Productivity Trials

BAREROOT

- Soil Stabilizer Product study
- Copper Sulfate Rate study
- Plant Vigor Product study

Soil Stabilizer Product Study

To determine effectiveness of soil stabilizer products

- Study initiated to identify and compare competitor products to currently used soil stabilizers
- Bareroot trials installed at IFCO Jesup GA Nursery (nonreplicated) and Rayonier Elberta AL Nursery (replicated)
- Products tested:

PermaFlex 625 by Tailored Chemical Products

P-1490 by DuraPro Adhesives

SoilTac by SoilWorks

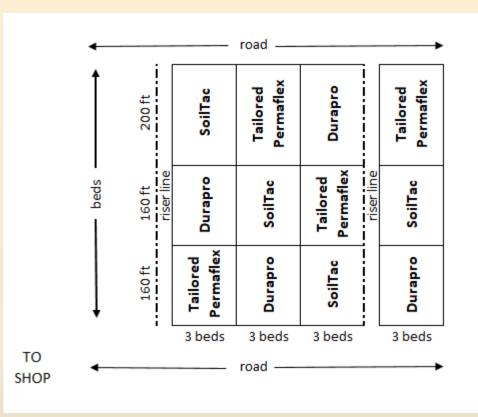
H.B. Fuller

Products applied operationally: equipment, rates, irrigation, herbicides, bark





Rayonier Elberta AL Nursery





Thanks to:

Tom Anderson, IFCO Shubuta MS Nursery
Bill Rowan and crew, IFCO Jesup GA Nursery
Mark Davis and crew, Rayonier Elberta AL Nursery

Chase Tolusic, DuraPro Adhesives Mark Chaffin, Tailored Chemicals Questions/comments?

Copper Sulfate Rate Study

To determine seedling tolerance to over-the-top applications of 4 rates of copper sulfate

- Study initiated to identify rates of liquid copper sulfate that can be safely applied later in the growing season (not at sowing)
- Bareroot trials installed at K & L Forest Inc. Buena Vista GA Nursery and Rayonier Elberta AL nursery at 8 weeks post-sowing
- Product tested: Ele-Max Copper FL by Helena-Agri Enterprises



label reads 'Conifers: 2 applications of ½ pint per acre once there is new season leaf production and again in early autumn'

rates of 1 qt., 4 qts., 8 qts./acre used

Thanks to:

Ken Singleton, K & L Forest Nursery Inc. Buena Vista GA Mark Davis, Rayonier Elberta AL Nursery

Dr. David South, Auburn University
Dr. Zach Taylor, Helena-Agri Enterprises

Questions/comments?

Plant Vigor Product Study

To determine effectiveness of plant micronutrient products on seedling growth

- Study initiated to identify and compare micronutrient products currently on the market
- Bareroot trials installed at IFCO Jesup GA Nursery, K & L Forest Nursery
 Buena Vista GA and Rayonier Elberta AL Nursery
- Products tested:

Megafol by Helena Agri-Enterprises Axilo Mix 5 by Valagro Foliar Blend + O2YS by AgriGro

- Multiple applications are recommended 2 3 weeks apart throughout growing season (began at 8 weeks post-sowing)
- Each product applied at 1 pint/acre; pH buffering required
- Labels recommend applying in morning and after irrigation or rainfall

MEGAFOL

F1873

2.5 GAL (9.5 L) NET VOLUME - 25.5 LB (11.6 KG) NET WEIGHT

3-0-8 PLANT NUTRIENT FOR FRUITS, **VEGETABLES AND FIELD CROPS.**

GENERAL INFORMATION

MEGAFOL is a liquid foliar fertilizer specially formulated to improve the vigor of vegetables, fruits, and field crops.

MEGAFOL is intended to supplement standard fertility programs and it is a readily available source of nitrogen and potassium.

CLEANING OF SPRAYER

Flush with clean water all parts of the sprayer, including the pump, hoses and nozzles, several times prior to and after the use of this product.

CONDITIONS OF SALE: seller warrants this product consists of the ingredients specified and is reasonably fit for the purpose stated on this label when used in accordance with direction under normal condition and use. No one other than an officer of the seller is authorized to make any warranty, guaranty or direction concerning this product. Because time, place, rate of application and other conditions of use are beyond the seller's control, the seller's liability from handling, storage, and use of this product is limited to replacement of the product or a refund of the purchase price. It is impossible to eliminate all the risks associated with the use of this product. Crop injury, lack of performance and all other unintended consequences may result because of such factors as use of the product contrary to label instruction, abnormal conditions, presence of other materials, the manner of application or other factors, all of which are beyond the control of Valagro USA or the seller. All such risks shall be assumed by buyer.

WEIGHT PER GALLON: 10.2 lb / NET VOLUME: 2.5 gallons (9.5 I) / NET WEIGHT: 25.5 lb (11.6 Kg).

MEGAFOL is a registered trademark of VALAGRO S.p.A.

SHAKE WELL BEFORE USING

GUARANTEED ANALYSIS

Total Nitrogen (N) 3.0 % Urea Nitrogen (N) 2.0% Other water soluble Nitrogen (N) ... 1.0% Soluble Potash (K₂O) 8.0 % DERIVED FROM: urea; protein hydrolysate; potassium acetate.

DIRECTIONS FOR MIXING

MEGAFOL will disperse in water with little agitation. Any residue in pails is water-soluble. Triple rinse and add contents to the spray tank. Do not reuse container.

TANK MIXES: Megafol can be tank mixed with pesticides, fertilizers or any other chemicals. It is advised to conduct a compatibility test. Megafol can be applied with copper based product on citrus and tomatoes, taking caution not to spray in extreme hot temperatures or at full bloom. On other crops with different sensitivities to copper, a small scale pre test is recommended before to apply Megafol in combination.

KEEP OUT OF REACH OF CHILDREN

MEGAFOL MUST NOT be applied directly to the soil on field crops in Iowa. In Mississippi this is a Low Analysis Fertilizers.

Do not sell unpacked.





FOLIAR APPLICATION

4239112F07P8EF 01

Nitrogen 3.0% Potash 8.0%

AXILO

CHELATED MIX OF CU. Fe. Mn. Zn + Ma + B + Ma

Decided from Magnetium Solidate, Servici St., Managamer 4019, Copper 4019, Dec 4011 Story And Solidate Madelates

GENERAL REPORMATION

™ Valagro•

ABLO ME 1 (94-4) is compatible with a male range of helitary; and periodies, however, a compatibility for less should be performed before relating, expectably with phosphorous field later. This product contains flower, as do not apply once to wred, or very young mails.

With Control C

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| PORAGE/GRASE CROPS including but out limited to alkalla, limitely, feature, suitable grass risk. | 626 - 200s per branduni arer | Apply maintenance Soom) during singelative growth and then "N 2" deprumit deficiency symptoms disappear. |
| OOL P COVERED CHEENE | To Bulleary (ES,ASS) say R() in a minimum 1 50 000 galloni, of mater | Apply in early-spring-afters greens are actively greating. From a reason applications can be resalted an immediaty interests to read that color and regar flightful afters should follow by the reads fall in the rewriting as early in the reasoning to reliable patiential for physicianism's. |
| TURF including but not limited to seed liners, gelf source for ways and tree, playing fields, we noticeed areas etc. | 0.31 - 2.0 ft per acer in a minimum: 60 gallers of value | To more applications per year to materials signame test |
| ORNAMINTALE | 0.26 - 2.00s per lessalcest acre- | Apply as a divised between room and auditorie total through surfy to the season. Integrity off or application. |

Magnesium 3.0%
Boron 0.5%
Copper 1.5%
Iron 4.0%
Manganese 4.0%
Molybdenum 0.1%
Zinc 1.5%

FoliarBlend



Product Information

FoliarBlend* is specifically formulated for foliar application but may also be soil applied in certain situations. FoliarBlend* is recommended for use on all crops includings. Alfalla, Almonds, Avocados, Apples, Bannas, Beets, Broccol, Brussel Sprouts, Cabbage, Carrots, Cauliflower, Celey, Cirux, Clover, Coffee, Corn, Cottos, Capses, Lettuce, Milo, Melons, Peaches, Peacns, Peppers, Potatose, Peants, Espers, Potatose, Peants, Peppers, Peants, Peants, Peppers, Peants, Peppers,

Directions for Use

Apply FoliarBland* at rates of 1-2 pints per acre beginning at early regetative stage of growth with applications continuing through crop maturity. Spray when crops are actively growing after irrigation or natural rainfall. Spray early in the morning or late in the alternoon when mid-day temperatures exceed 58 degrees F to insure optimum performance and leaf absorption. Foliar fertilization intended as a supplement to a regular fertilization program and will not by itself provide all the nutrients normally required by agricultural crops.

FoliarBlend* can be applied through standard ground and aerial application equipment, and may be mixed with most herbicides, pesticides, fungicides and liquid fertilizers.

To view all timing and rates of application for your specific crop, please contact your local dealer or visit www.agrigro.com

Mixing Instructions

- 1. Put 2/3 water in tank.
- 2. Add correct amount of FoliarBlend*.
- 3. Add other chemicals or fertilizers, if any
- Fill tank with balance of water and agitate until mixed.

Store out of direct sunlight.

As with any Agri-Chemical, do a compatibility check to insure proper mixing.

CAUTION! KEEP OUT OF REACH OF CHILDREN

Do not swallow. Store below 120 degrees F.

Ig material containing Molybdenum (Mo) may result in crops

Information regarding the contents and levels of metals in this product is available on the internet at www.aapfco.org/metals.htm

Guaranteed Analysis 1-0-0

| 1.0% Urea Nitrogen 0.03% Boron (B) 0.03% Chelated Cobalt (Co) 0.002% Soluble Manganese (Mn) 0.10% Molybedenum (Mo) 0.002% Soluble Zinc (Zn) 0.002% Defived Forms Urea, Boric Acid, Cobalt MEA, Manganese Sulfate, Ammonism Molybedenum | Total Nitrogen (N) | 1.00% |
|--|--|---------------------------|
| Chelated Cobalt (Co) 0.002% Soluble Manganese (Mn) 0.10% Molybdenum (Mo) 0.002% Soluble Zinc (Zn) 0.05% | 1.0% Urea Nitrogen | |
| Soluble Manganese (Mn) 0.10% Molybdenum (Mo) 0.002% Soluble Zinc (Zn) 0.05% | Boron (B) | 0.03% |
| Molybdenum (Mo) 0.002% Soluble Zinc (Zn) 0.05% | Chelated Cobalt (Co) | 0.0029 |
| Soluble Zinc (Zn) | Soluble Manganese (Mn) | |
| | Molybdenum (Mo) | 0.002% |
| Derived from: Urea, Boric Acid, Cobalt MEA, Manganese Sulfate, Ammonium Molyb | Soluble Zinc (Zn) | 0.05% |
| | Derived from: Urea, Boric Acid, Cobalt MEA, Manganes | e Sulfate, Ammonium Molyb |

Non-Plant Food Ingredients: FoliarBlend* contains stabilized oxygen, complex carbohydrates, chelating agents, natural plant extracts, enzymes, amino acids, plus plant and soil stimulants which are derived microbially from naturally occurring bacteria and fungi.

Boron Warning

This fertilizer intended for use on: affalfa, almonds, avocados, apples, bananas, beets, berries, broccoli, brussel sprouts, cabbage, carrots, califlower, cellery, citrus, clover, coffee, corn, cotton, gapas, lettruce, grain sorghum, meliono, citra, paschets, pecans, peopers, potatose, parametre, corghum, soybeans, sugar beets, sweet com, sugar cane, strawberries, tobacco, tomatoes, watermelon, and wheat.

Use of this fertilizer on any other crops or under conditions and rates other than those recommended may result in serious injury to the crops.

Conditions of Sale, Limitation of Warranty & Liability.

Limitation of Liability: In no avoist shall saller or manufactures that this five special, incidental or consequential demaps, or for demaps in the nature of panalities. Salter or manufactures that not ablate to buyer, buyer of indermedication teasonism or buyer, saller, or any and panages, sum or money, claims or demands, whatoever, resulting from or by reason of, or rising out of the insistance or the falsew to took to be ablated to buyer or instructions for our different panalities and the salter or manufactures to buyer. Buyer or curel vaculous removing and waters' or manufacturer's total liability shall be for demaps not exceeding the core of the purduct.

variety occusions: Interest control or other conscients consignates that year to exclude a scale control of the sales or manufacturate hore case shall sales or manufacturate be liable for consequential, special or indirect demagns resulting from the use or handling of this product. All such risks shall be susumed by the buyer in contraven, Test have not been carried out under all possible conditions and sales or manufacture carried and does not warrant that the products are compatible with all other chemicals. Sales or manufacture rearrants to manufacture makes and conforms to the affirmation of fact made on the container and lake Sales or ensufacture makes and conforms to the affirmation of fact made on the container and lake Sales or ensufacture makes of tasks, statistive or otherwise, with respect to the product sale (saleding, but not for limited to merchantability, finess for a particular purpose, use or eligibility of the product for any particular trade state.

Agri-Gro*, Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale or limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authoriside representations of Agri-Gro*, Inc.

Manufactured by:

F-682 | **Agri-Gro*, Inc.** | HC 4 Box 333 | Doniphan, MO 63935

Nitrogen 1.0%
Boron 0.03%
Cobalt 0.002%
Manganese 0.1%
Molybdenum 0.002%
Zinc 0.05%

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OII-YSTM Spreader/Sticker

An Adjuvant For Fungicide, Herbicide, Insecticide And Nutritional Sprays

Net Contents 5 Gallons (2x2.5 Gallon Containers)

(% BY WEIGHT)
Principal Functioning Agents:
Yucca Extract, Chitosan 89
Constituents ineffective as spray adjuvants 929

Washington Registration No.: 99826-13001

All ingredients are exempt from the requirements of a tolerance as specified in 40 CFR 180.

KEEP OUT OF REACH OF CHILDREN

CAUTION / PRECAUCION

Si usted no entiende la etiqueta, busque a alguien que se la explique a usted en detalle (If you do not understand this label, find someone to explain it to you in detail.)

PRECAUTIONARY STATEMENTS

CAUTION:

Causes moderate eye irritation. Harmful if swallowed, inhaled or absorbed through skin. Avoid contact with skin, eyes or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

Personal Protective Equipment: Wear chemical-resistant gloves, longsleeved shirt and long pants, and shoes plus socks.

First Aid

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment strices.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

GENERAL INFORMATION

OII-YSTM is a specialized formulation of natural surfactants and sticking agents. OII-YSTM can positively affect the application of nutritional sprays and both the application and efficacy of herbicides, insecticides and fungicides designed for use with wetting/spreading type adjuvants.

DIRECTIONS FOR USE

FOR USE AS AN ADJUVANT WITH FUNGICIDES, HERBICIDES, INSECTICIDES AND NUTRITIONAL SPRAYS FOR AGRICULTURAL, ORNAMENTAL, VEGETABLE, FRUIT AND TURF. NOT FOR AQUATIC USE.

OII-YS™ may be applied by ground or aerial equipment or through irrigation.

For most applications, use sufficient OII-YS™ to provide uniform application of spray onto leaf surfaces.

For ground or aerial application to row crops, commercial vegetables, fruit trees, omamentals or turf: Use 1 − 4 pints OII-YS™ in minimum of 20 gallons of spray solution. For irrigation, use 1 − 4 pints per acre.

NOTE:

The prior recommended rates are considered adequate for adjuvant use with most fungicides, herbicides, insecticides, and nutritional sprays. Some products may require higher or lower rates. In all cases, follow the fungicide, herbicide, insecticide or nutritional spray label directions.

MIXING

Follow manufacturer's guidelines for cleaning spray equipment prior to mixing. Add fungicide, herbicide, insecticide or nutritional ingredients according to product labels, agitate as directed. Adjust pH of spray solution in the range 5.5-5.9. Mix contents of OII-YS™ container well before dispensing product. Do not add OII-YS™ until the spray solution has been adjusted to the recommended pH. Add OII-YS™ last and continue moderate agitation to achieve thorough mixing. (Excessive agitation may lead to foaming of spray solution.)

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Store in original containers only in cool area at 41°F – 77°F. Keep away from incompatible substances. Keep away from metals. Do not store in metal containers.

CONTAINER DISPOSAL

Triple rinse (or equivalent) and add rinsate to spray tank.

Do not reuse empty container. Recycling decontaminated containers is the best disposal option. The Agricultural Container Recycling Council (ACRC) operates the national recycling program. To contact your state or local ACRC recycler visit the ACRC web page at www.acrecycle.org. Decontaminated containers may also be disposed of in a sanitary landfill according to state and local statutes.

CONDITIONS OF SALE, LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

O2YS Corporation warrants that OII-YS™ conforms to the chemical description on its label. When used in accordance with label directions under normal conditions, OII-YS™ is reasonably fit for its intended purposes. Application timing, method of application, weather, plant and soil conditions, inclures with other chemicals, and other factors affecting the use of this product are beyond our control. Therefore, no warranty is given concerning the use of this product differing from label directions or as a result of abnormal conditions. The user assumes all risk of such use. To the extent consistent with applicable law, the exclusive remedy against the company for any cause of action against O2YS Corporation relating to the handling or use of this product shall be 1) Refund of the purchase price paid by buyer or user of product purchased or 2) Replacement of used product. All other claims against O2YS Corporation to expense of any nature are waived. O2YS Corporation and the seller offer this product and the buyer or user accept its limited warranty and remedies.

© 2012 O2YS Corporation

Manufactured Exclusively By:

O2YS Corporation PO Box 2096 Carrollton, GA 30112 601-624-4747 www.o2yscorp.com



REV. 5.13.2011

Adjuvant applied with FoliarBlend

Yucca Extract, Chitosan 8%

Not included in this study, also available:



Guaranteed Analysis

Chelated Micronutrients:

| Primary Nutrients: | |
|--------------------------------------|-------|
| Soluble Potassium (K ₂ O) | 2.00% |
| Secondary/Minor Nutrients: | |
| Sulphur (S) | 2.00% |
| 2.00% combined Sulphur(S) | |
| Magnesium (Mg) | 1.00% |
| 1.00% chelated Magnesium (Mg) | |
| Iron (Fe) | 2.50% |
| 2.50% chelated Iron (Fe) | |
| Boron (B) | 0.02% |
| 0.02% chelated Boron (B) | |
| Manganese (Mn) | 0.05% |
| 0.50% chelated Manganese (Mn) | |
| Zinc (Zn) | 0.05% |
| 0.50% chelated Zinc (Zn) | |

Derived from: Potassium nitrate, Magnesium Glucoheptonate, Iron Glucoheptonate, Boron Glucoheptonate, Manganese Glucoheptonate, Zinc Glucoheptonate

Net Weight 10.67 lbs/gallon pH: 6-6.5

PRECAUTIONS

- · Avoid getting in eyes or on skin and avoid breathing vapors. Wearing protective gloves and safety glasses (or goggles) is recommended when handling this product.
- . Do not contaminate food, feed, seed or water supplies during application or when cleaning equipment.

KEEP OUT OF REACH OF CHILDREN CAUTION

Read entire label for additional precautionary statements and use directions. FOR PROFESSIONAL USE ONLY

F968

FIRST AID

If on Skin: Wash with soap and water. Consult a physician if any irritation persists. Wash clothing before reuse.

If in Eyes: Flush with water for 15 minutes. Consult a doctor for treatment if irritation persists.

If Ingested: Do not induce vomiting. Call 911 or physician for treatment advice.

If Inhaled: Remove affected person from source of exposure. Call 911 if breathing is difficult.



NET CONTENTS



2.5 Gal



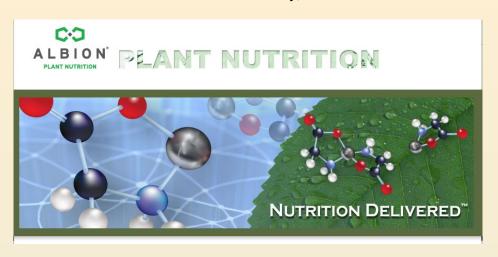






Potassium 2.0% Sulphur 2.0% Magnesium 1.0% Iron 2.5% Boron 0.02% Manganese 0.05% Zinc 0.05%

Not included in this study, also available:





Magnesium 0.5% Boron 0.025% Copper 0.25% Iron 0.25% Manganese 2.5% Zinc 1.25%



Calcium 1.0%
Magnesium 1.0%
Copper 0.5%
Iron 0.5%
Manganese 0.5%
Molybdenum 0.1%
Zinc 0.5%

Thanks to:

Bill Rowan, IFCO Jesup GA Nursery
Ken Singleton, K & L Forest Nursery Inc. Buena Vista GA
Mark Davis, Rayonier Elberta AL Nursery

Ken McQuage, IFCO Bareroot LLC Davey Rehberg, Advanced Ag Solutions Ricky Sloan, Helena Agri-Enterprises Questions/comments?

Seedling Productivity Trials Recap

2018:

3 bareroot trials in 7 installations

nina.payne@auburn.edu

Wednesday Tour

Comstock Rd Soil Stabilizer **Studies Fumigation Study** Herbicide **Plant Vigor** Copper Sulfate Google Earth Studies © 2018 Google