AyudO

Polymerized Adjuvants
for the reduction of
Agricultural Chemicals and
Green House Gases

Manufactured for:

Gro Green, LLC

Miami, Florida, USA

Background

Nature forms protective matrices against microorganisms in a number of ways including:

- physical barriers such as skin or peel of a fruit or
- filtration system (such as the systemic system),
- organic acids maintaining low pH of the fruit

Even with such natural protective mechanisms, plants can be overcome by a variety of predators and diseases.

Therefore:

It would be advantageous to SHIELD a plant with a long-acting protective coat against disease-causing organisms while –at the same time- protect the surrounding environment .

Ideally, this shield should be formulated as an ADJUVANT with the dual function of a chemical carrier, and a plant protector

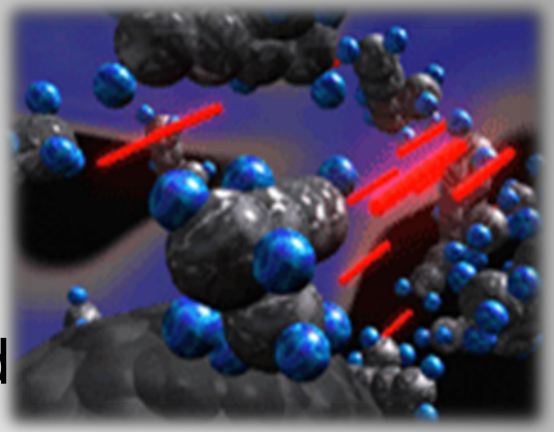
What would be the Ideal Adjuvant?

- Easy to use
- Water soluble to facilitate application
- Hydrophilic while increasing water resistance during drying
- Mechanically and chemically stable
- under ambient conditions
- Visco-elastic to allow the matrix to migrate/stretch slowly with surface expansion (such as plant growth)
- Accommodating to third party compounds dissolved or dispersed within the polymer matrix

- Sticks on surfaces and withstands heavy rainfalls 'Rain-Fast'
- Easily removed from the surface when needed

What is AyudO?

- AyudO is a series of new generation agricultural adjuvants
- AyudO leaves minimal environment impact
- AyudO was formulated using US FDA's GRAS-list of chemicals, and WHMIS NON-HAZARDOUS classified chemical ingredients



- AyudO is a unique, multi-purpose polymer solution that is formulated with patented inert materials.
- AyudO *exhibits both hydrophilic and hydrophobic properties*
- AyudO *is the answer to the* ***Ideal Adjuvant***

Current Limitations of Conventional Adjuvants used with Metal-Based Pesticides

Requires relatively high concentrations of metals
- Which increases costs

Low chemical solubility & oxidative stability
- Increases waste

Non-uniform deposition
- Leads to Chemical burn on contact surfaces

Low retention on target
- Washes out easily requiring more frequent reapplication

Bioaccumulation in soil and ground water
- DANGEROUS and toxic

Limited compatibility.
- Limits selection of active ingredients

Production benefits of AyudO™

- **Economical:** The use of AyudO™ allows a longer duration between applications, translating into less cost associated with spraying.

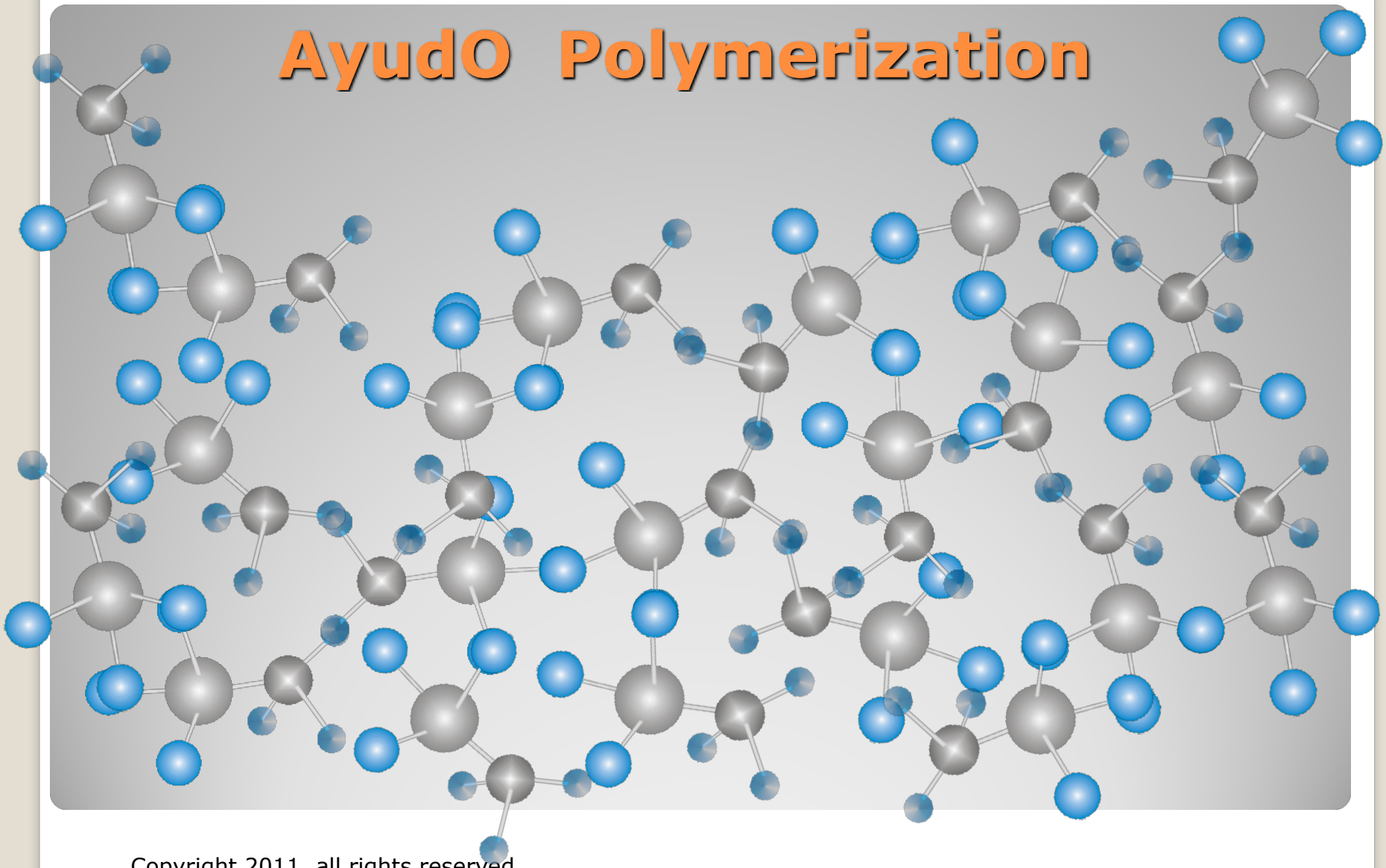
  Environmental: AyudO™ is non-toxic. The nature of AyudO™ requires less chemicals overall, therefore reduced harm to the environment. This makes it harvest friendly. Any harvest product may be more appealing to consumers due to less chemical usage.

- The end result of using AyudO™ is that you will see an improvement in the effectiveness of spray programs, a reduction in chemical costs, and healthier plants.

Moisture Intelligence

- One of the greatest values of AyudO™ is it can replace the stickers, spreaders, wetting agents, drift retardants and penetrants currently in use. What sets AyudO™ even further apart from other products is MOISTURE INTELLIGENCE.
- Moisture Intelligence is the ability to protect and hold the added chemicals on the target surfaces in the face of hard rain and the ability to redistribute added chemicals over the target surface with ambient moisture (dew).

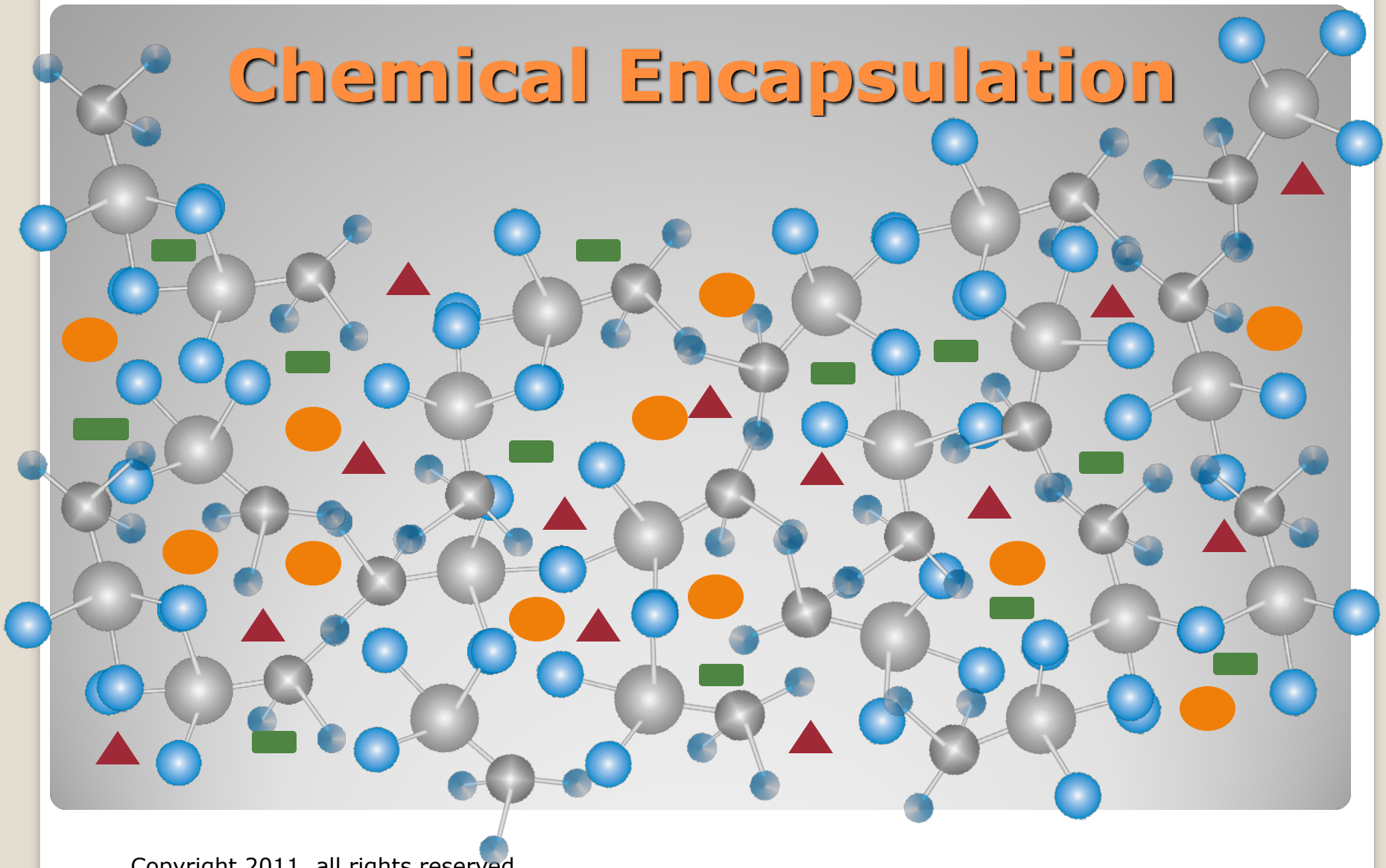
AyudO Polymerization



AyudO Structural Concept

- Ionic, water soluble polymers (containing carboxylate and sulfate groups) can form extensive gel structures over a wide pH range at very low concentrations
- These novel polymers-gel matrices can be formulated with metal ions and serve as a chemical adjuvant (AyudO) for antimicrobials (suspended or dissolved), herbicides, and nutrients, etc. encapsulated within the polymer-gel structure.
- AyudO is compatible with most chemicals that will not break its unique polymer gel structure

Chemical Encapsulation

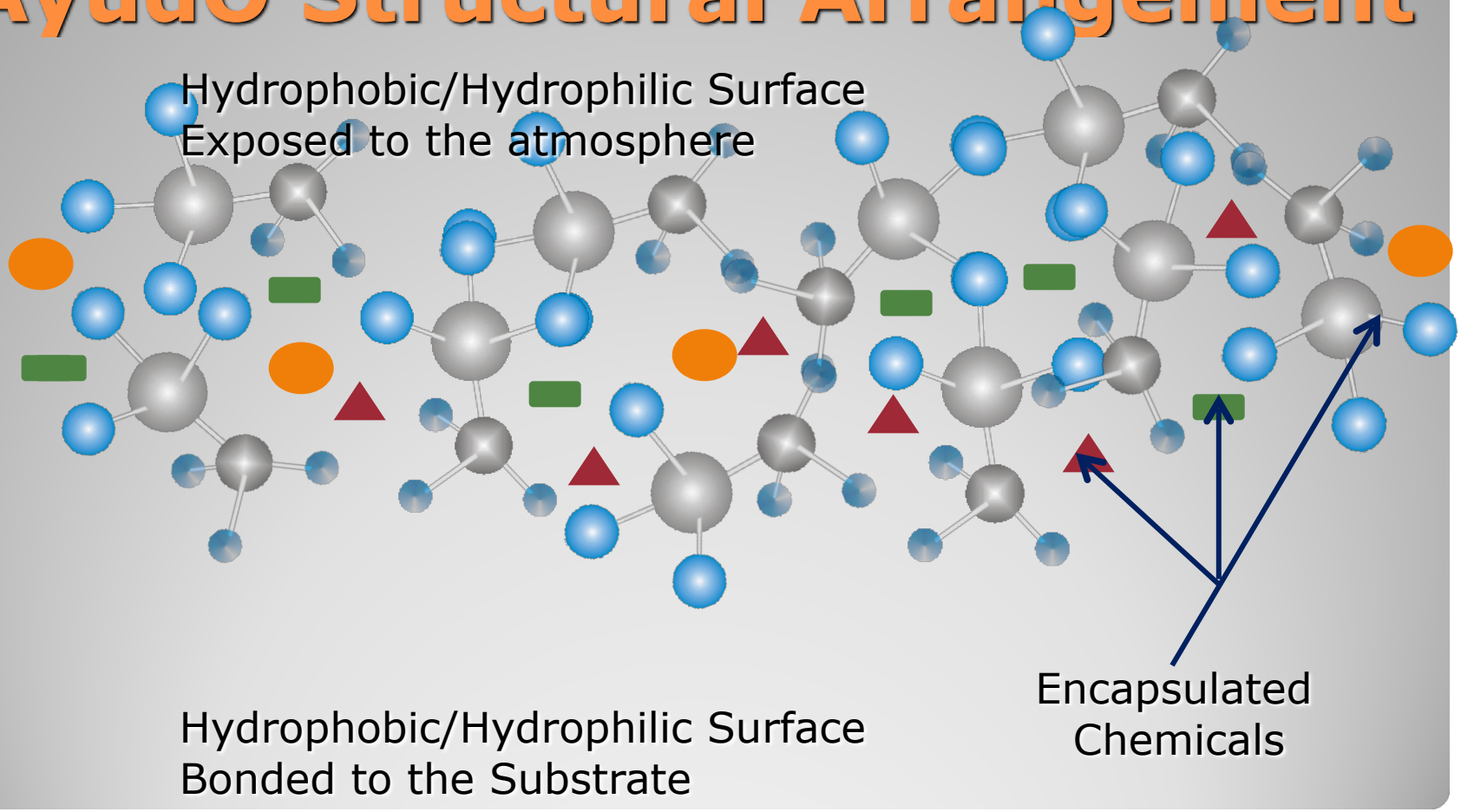


Chemical Encapsulation

- Furthermore, the polymerized-gel structure can in itself serve as a physical barrier limiting contact from airborne pathogens with the target substrate.

- This gel can also serve as a cooling/humidity absorber because of its affinity to trap water within the gel itself. This has the added advantage of remaining flexible allowing the gel to stretch in a high humidity environment (such as rain or morning dew)

AyudO Structural Arrangement



AyudO Structural Arrangement

- Additional ingredients can also be added to the polymers-gel matrix to:
- Increase/decrease tackiness
- Control light-induced degradation of certain pesticides
- Decrease water drop size during spraying
- Increase the hydrophobicity of the polymer film while drying on to target surface
- Enhance-regulate O_2/CO_2 permeability

Who should use AyudO?

- Crop growers
- Fruit growers
- Vegetable growers
- Agriculturalists
- Horticulturists
- Gardeners
- Land owners
- Greens keepers
- Forest management
- Weed control
- Landscapers
- Park management
- Sporting field managers
- Schools
- Road maintenance
- Government agencies

Typical Physical Characteristics

Rain Washout

Leaf Burn

Ground Water Pollution

AyudO Physical Characteristics

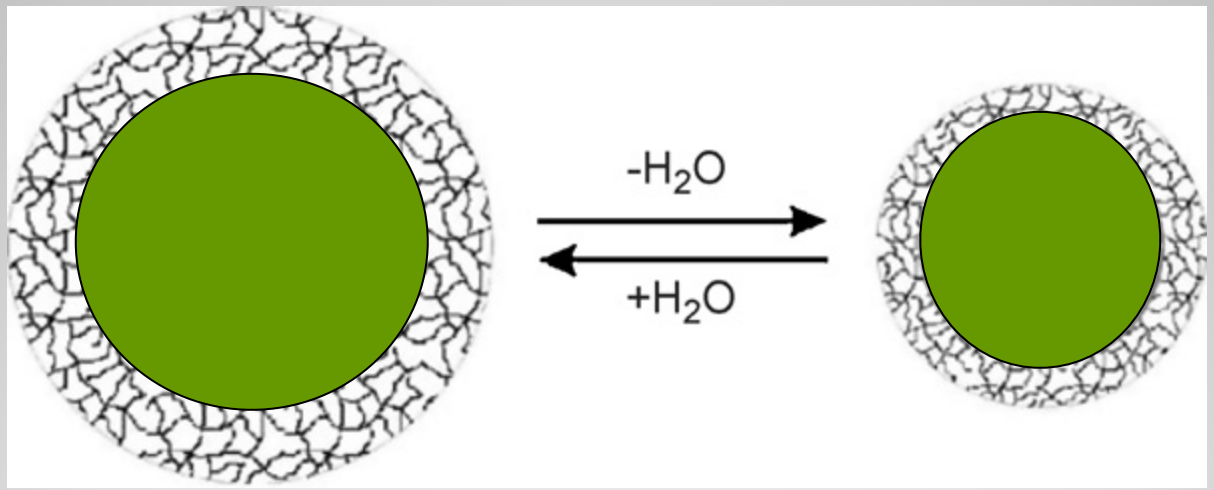
- Shields substrate from chemical or solar burn

Each leaf was exposed to a 1500W hair dryer on 'High' at a distance of 20cm for 10 minutes

AyudO . Physical Characteristics

- Adheres and adapts to changing surfaces

With rainfall or morning dew AyudO . gel swells and migrates on the targeted substrate



Gel matrix may limit large ice crystal formation and protects against damage from frost and sunburn

AyudO Chemical Characteristics

- Does not affect respiration of living plant
- Non-toxic to animals
- Increased retention of antimicrobials and nutrients
- Controlled photo-induced oxidation
- Controlled hydrophobic/hydrophilic ratio
- Controlled chemical release by modulation of equilibrium binding constants

Why choose AyudO?

Requires lower concentrations of active ingredients
- Which decreases user costs

High chemical and oxidative stability
- Reduces waste

Uniform deposition
- Reduces expected destruction

High product retention
- Minimal wash out

Greatly reduces Bioaccumulation in soil and ground water
- Reduced eco-toxicity

Wide range of product compatibility
- Larger selection of active ingredients

More Reasons

- AyudO reduces metal dependency therefore reducing mining operations and GHG (CO_2) emissions
- AyudO reduces fertilizer dependency therefore reducing GHG (NO_2) emissions
- AyudO increases spray intervals therefore reducing the need for operating equipment burning hydrocarbon fuels, and GHG (CO_2) emissions.

- AyudO traps water/moisture on targeted surfaces for longer periods of time therefore reducing the demand for our limited supplies of clean fresh water
- AyudO reduces environmental toxicity by keeping the chemicals on the substrate.

ADDITIVES ON DEMAND

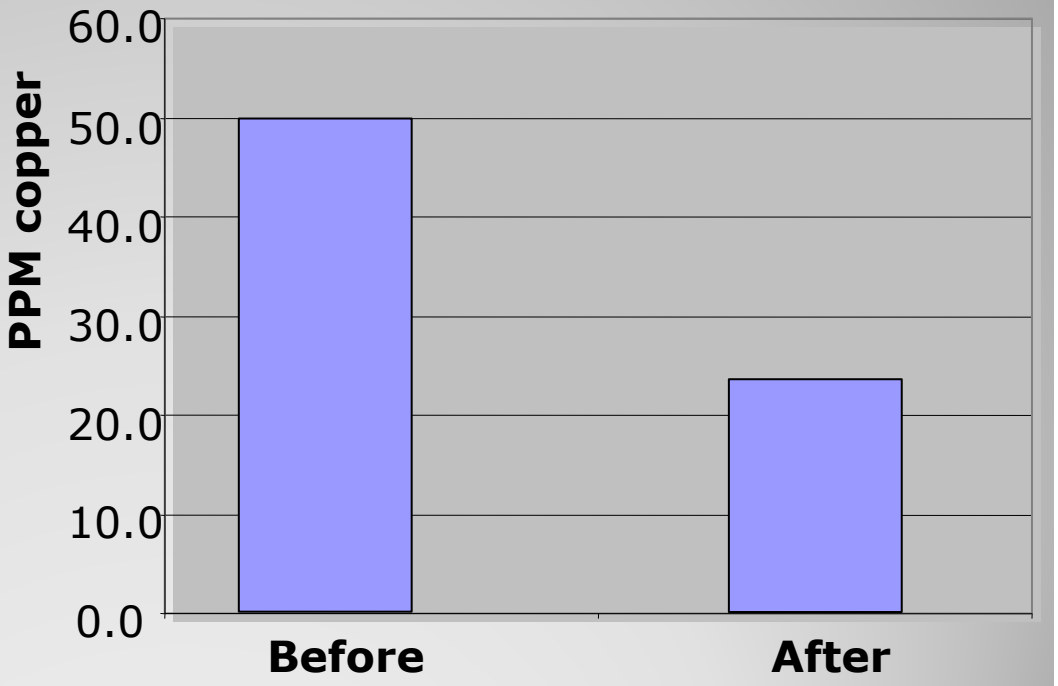
- AyudO patent pending polymer has a unique "slow-release" property. This is activated when moisture is introduced
  - This is comparable to biomedical field where a polymer allows the slow-release of drugs from stents and other artificial tissues into the blood stream
- Moisture is needed for bacteria, fungi, viruses and all living organisms to grow
  - If microbes are present on the surface they will be killed when moisture is introduced and the polymer releases the active chemicals
  - AyudO can also be used for releasing fertilizers to feed nutrients to the crops
  - In the "field" morning dew could be enough to promote growth and release of active chemicals in the matrix

Put AyudO to work

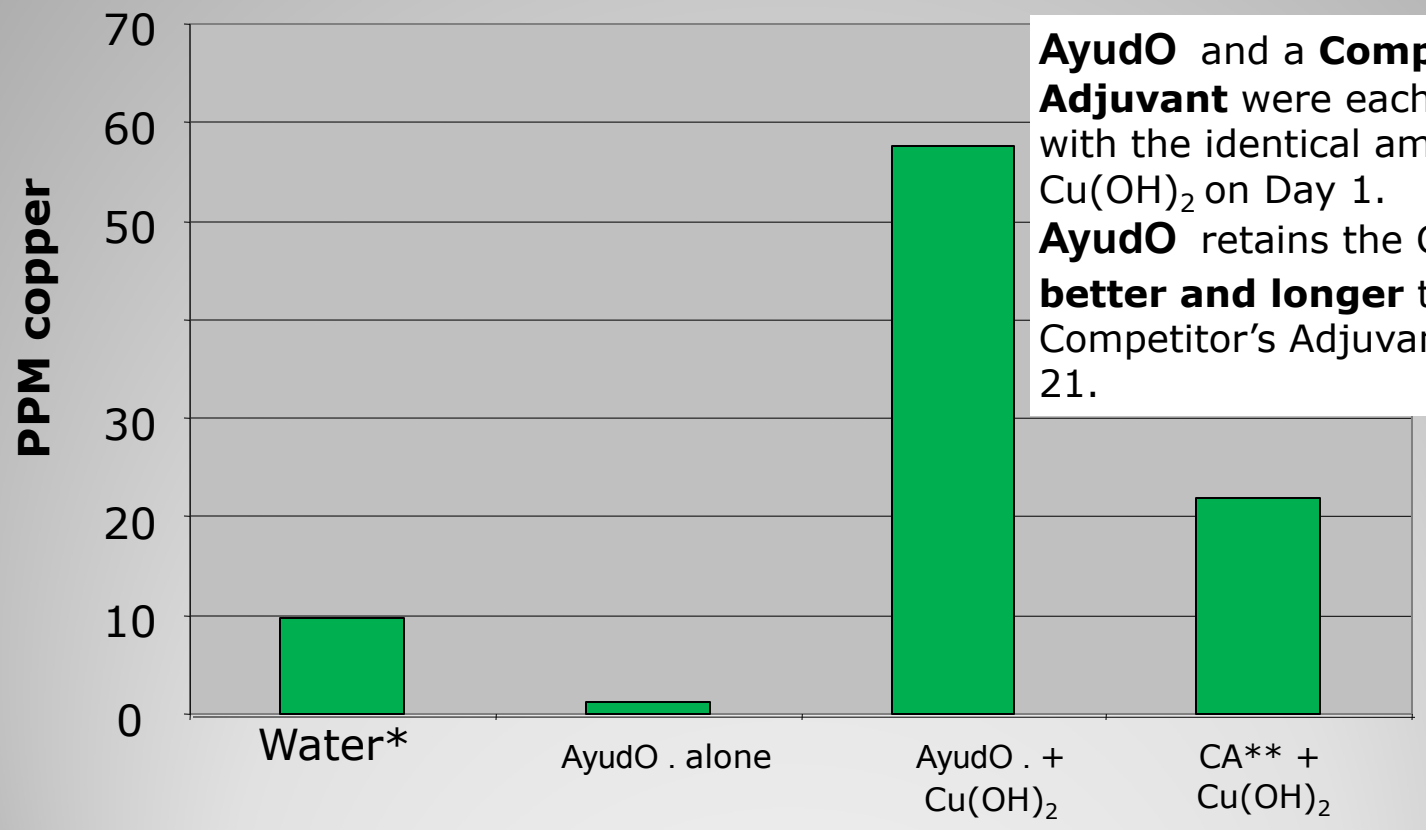
- AyudO is manufactured in a concentrated format
- Recommended Dilution is 1 part AyudO to 30 to 50 parts water
- The ease of on-site blending makes AyudO the product of choice in the field
  - Use tank agitation or pump recirculation until soft gel or liquid is obtained
  - Pleasure to work with due to odorless and colorless properties
  - Easy cleanup due to water solubility
- AyudO can reduce or even eliminate spray applications, thereby improving overall efficiency and **INCREASE PROFITS**

AyudO has Proven to Outlast the Competition

- Ayud is proven to withstand rainfall and reduce chemical wash out therefore reducing the amount of chemicals required adequately protect crops
- Atomic absorption analysis of residual copper bactericide on crops sprayed AyudO before and after a tropical rain



Atomic Absorption Spectroscopy on Day 21 After Application on New Flush



AyudO and a **Competitor's Adjuvant** were each dosed with the identical amount of $Cu(OH)_2$ on Day 1. **AyudO** retains the $Cu(OH)_2$ **better and longer** than the Competitor's Adjuvant on Day 21.

*Ground/well water contains ~10ppm of Cu

**Competitive Adjuvant

Consider this

- Pesticides and herbicides have been accumulating in ground water for as long as farmers have been using them
- The bioaccumulation of these products over the years causes damage to the cellular membranes of all living things

- With the proper use of AyudO, the amount of pesticides and herbicides introduced to the environment can be reduced substantially

AGRIPAC

- "Trabajamos para que el agricultor ecuatoriano tenga y use los insumos necesarios, entre químicos y orgánicos certificados para cultivar productos saludables al ser humano y que al mismo tiempo, no afecten al medio ambiente."

AGRIPAC

A QUIEN INTERESE

Por la presente certifico que después de pasar las pruebas experimentales con el producto E3 como sustituto del aceite agrícola, comenzamos a hacer varias pruebas aéreas en algunas plantaciones bananeras en varias zonas del país.

A principios de este año (época lluviosa: Enero-Abril) hemos empezado a usarlo comercialmente comparándolo con aéreas dentro de la misma finca donde se aplican los fungicidas con aceite agrícola, en algunas de las zonas bananeras de Ecuador, y en especial en una de las zonas más lluviosas del país, como lo es la del área de Quevedo, Provincia de Los Ríos, con muy buenos resultados.

Hasta la fecha se han hecho cinco aplicaciones a una frecuencia promedio de 10 días, usando E3 en las mezclas de fungicidas Bravo 720 + un sistémico en agua solamente; y en mezclas de dos fungicidas sistémicos en agua más E3. Los estados evolutivos de la enfermedad están similares a los encontrados en el área donde los fungicidas se los aplica con aceite agrícola. Adicional a esto, se ha encontrado en el promedio de emisión foliar, una hoja más en el área donde se aplica E3.

Atentamente

Eduardo Martillo
Gerente Técnico de I&D
Agripac S.A.

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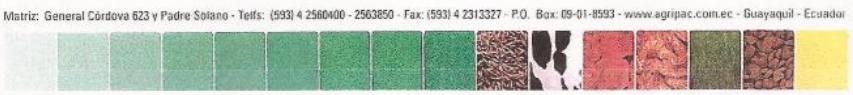

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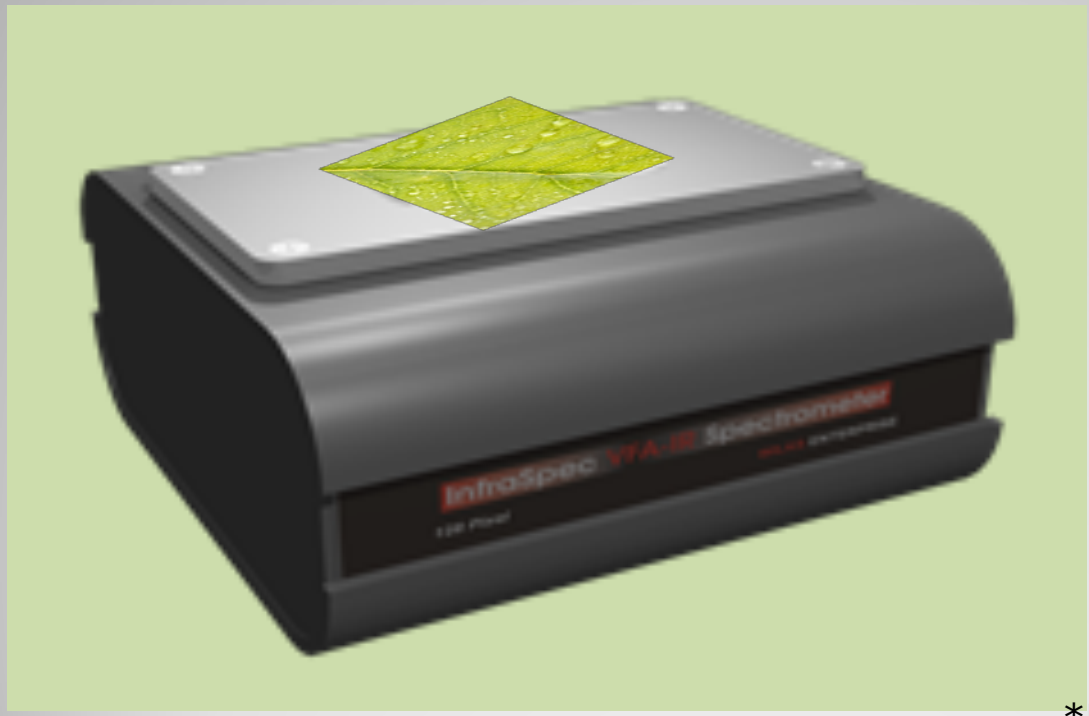
Logistics AyudO vs Oil

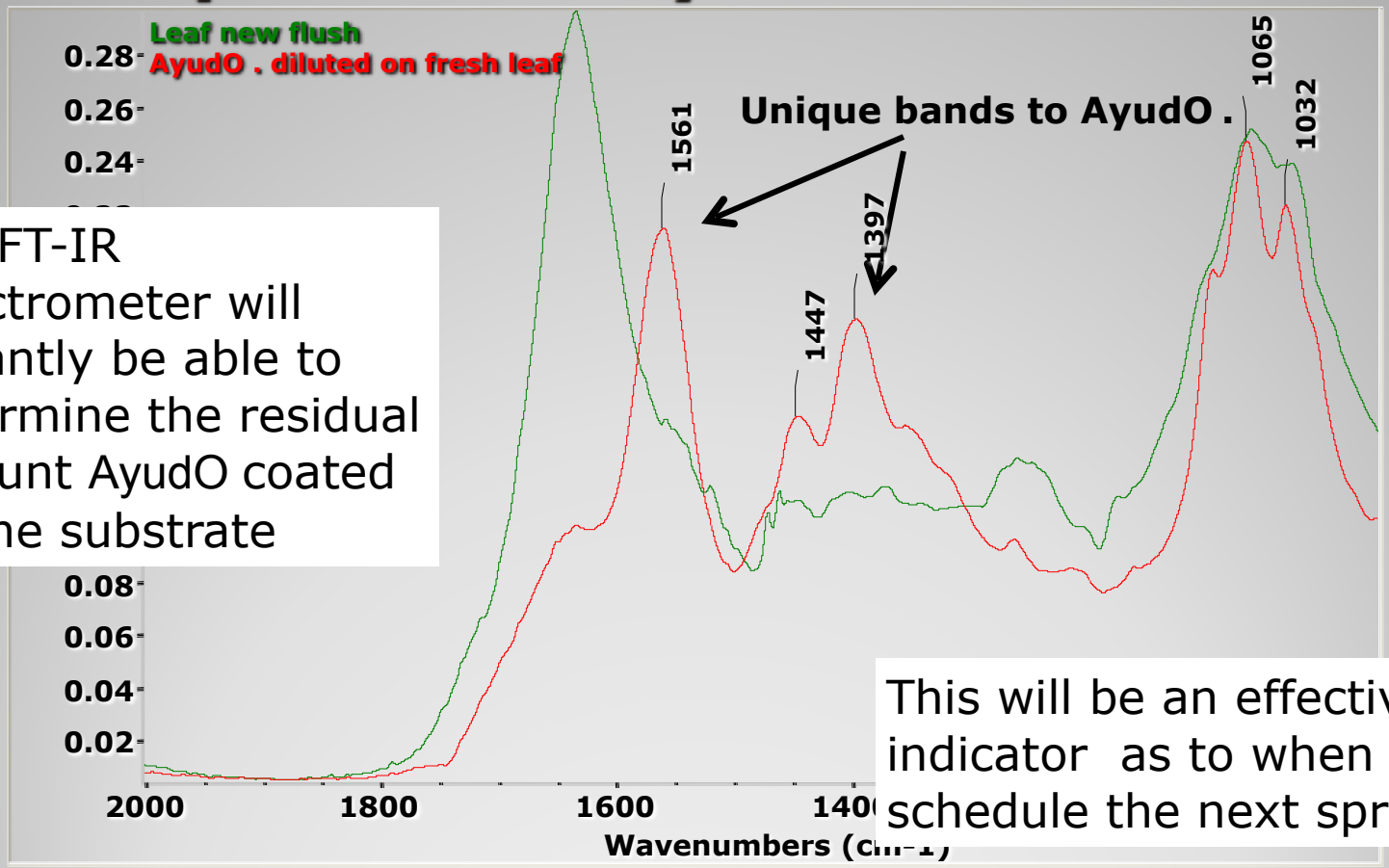
5 Gallon Pail AyudO =165 Gallons (3X55g Drums) Oil

IN DEVELOPMENT
AyudO . Handheld Field FTIR* Spectrometer



*Fourier Transform Infra-Red

FTIR Spectra of AyudO .-Coated Leaf



The FT-IR Spectrometer will instantly be able to determine the residual amount AyudO coated on the substrate

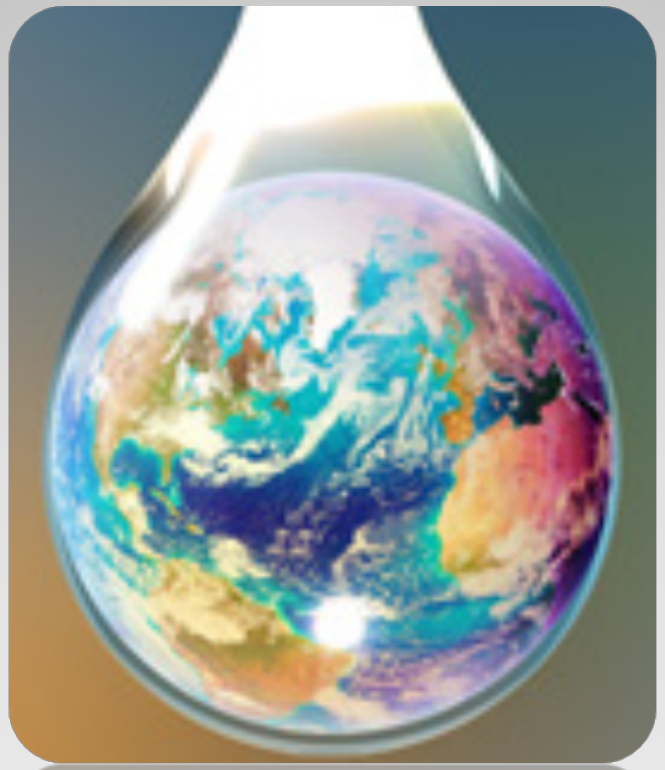
This will be an effective indicator as to when to schedule the next spray

Conclusion

Our research has shown that AyudO . can:

- Reduce heavy metal requirements (in most cases) by two-thirds.
- Prolong treatment intervals due to longer substrate retention
- Reduce GHGs by controlling chemical usage and runoff
- Optimize plant growth
- Increase productivity while reducing costs
- INCREASE PROFITS

Thank You



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