



YOUR PARTNER FOR A CLEANER, GREENER WORLD

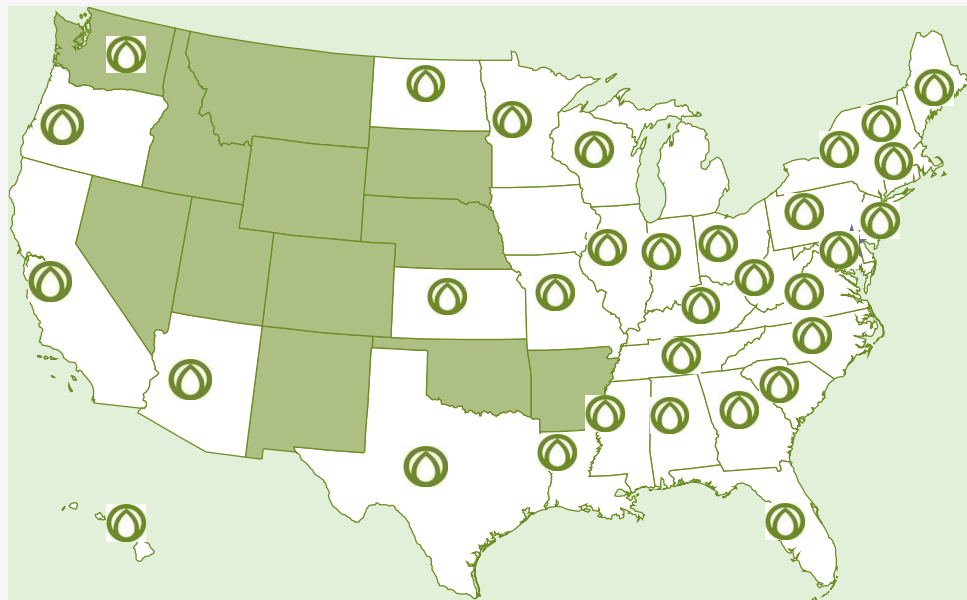
California Bioresources Alliance Symposium

Establishing Uses for Bioresource Products
Robert Ford

November 9, 2022



Synagro is North America's Preeminent Biosolids Residuals & Organics Management Company



Synagro Experience and Breadth

- Over 600 municipal and industrial clients in 34 states
- Manages over 12 million tons of biosolids annually
- 12 Class A EQ drying/pelletizing single-customer facilities
- 3 regional merchant thermal reduction facilities
- 7 Class A compost facilities, managing over 1,000,000 tons of Biosolids and Organic Waste in California alone

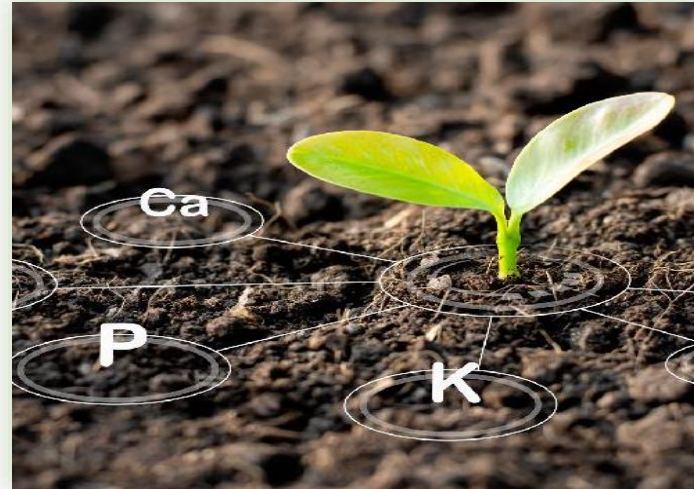
- Over 70 permanent and mobile dewatering locations
- Digester & pond cleaning services
- Permitted land base of over 1,000,000 acres
- Over \$350 million in annual revenues
- \$2 billion contract backlog
- Acquired by Goldman Sachs in 2020

We combine the following with extensive end-product marketing experience...



**Waste Diversion
& Recycling**

Processing of organic waste (Includes Biosolids) into sustainably manufactured feedstocks for energy transformation and fertilizer products to divert organics waste from landfills and sequester carbon in the soil.



**Innovation, Science,
Technology & Manufacturing**

Use natural biological processes with the integration of technologies and science to convert organic waste streams into renewable energy and low carbon fuels for private customers and public utilities.



**Regenerative Agriculture, Landscape
& Retail**

Transform organic waste streams into non-chemical fertilizers, water saving and erosion control products, which support improving soil health and sequestering carbon.

A good way to begin this review is to state what compost is not. It is not animal manure or biosolids residuals or food waste or other organic substrates, either fresh or aged. It is not mulch such as wood chips, shredded green and wood waste.

Quality compost contains these elements, but they must be combined in the proper ratios and undergo a controlled process of decomposition during composting to produce quality certifiable compost.



- Composting is a Microbiological process. Many organisms have evolved to use decaying matter as their food source. Although they are too small for us to see, they are responsible for most decomposition.
- Fungi and molds are also important. White Rot fungi are well adapted to decompose woody materials.

14%

30%

18%

20%

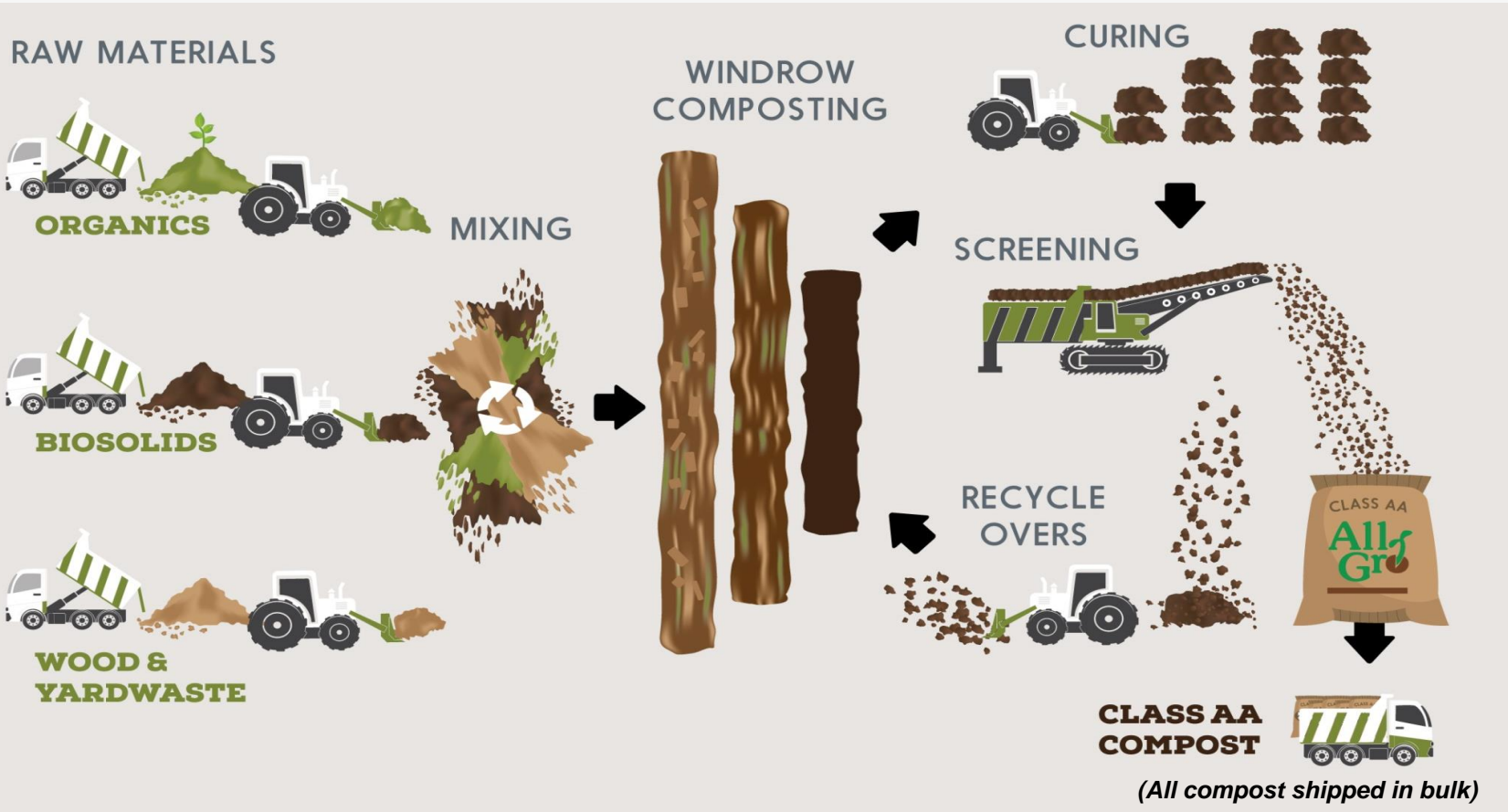


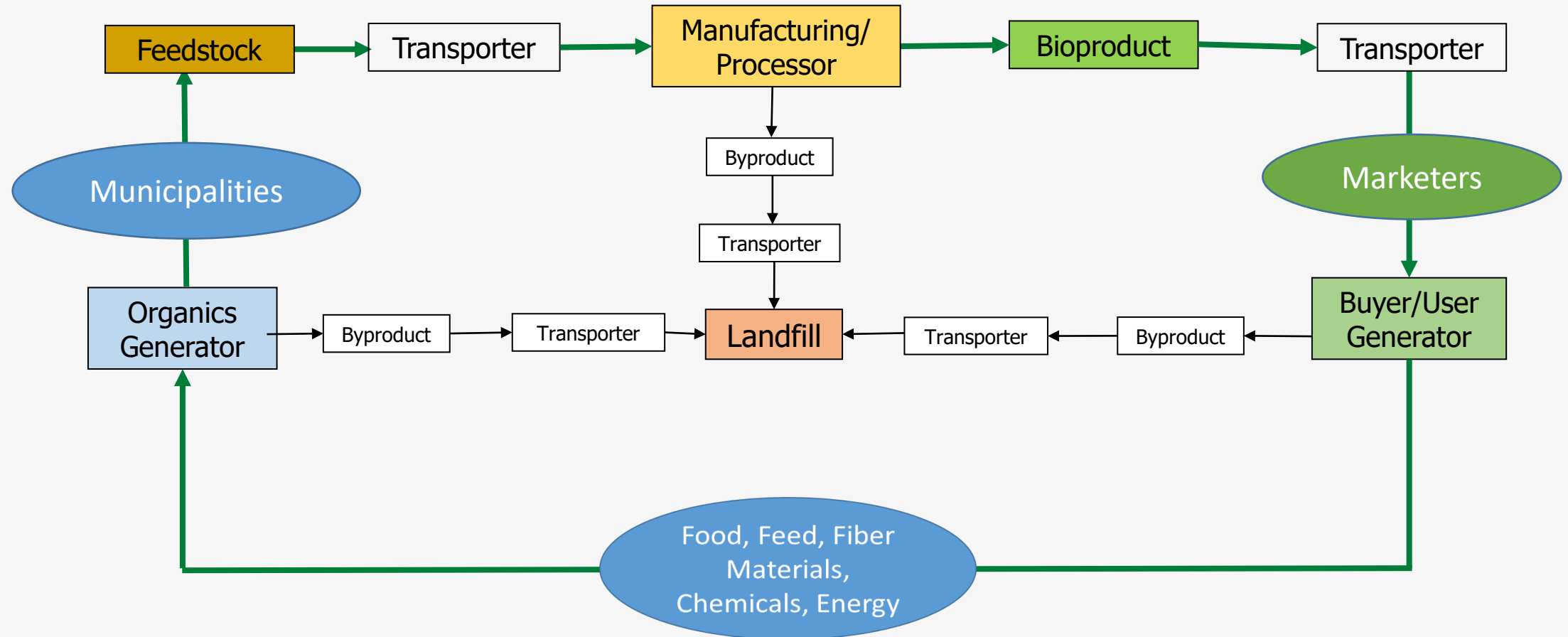
Synagro's sites that utilize windrow technology include:

2 in California, 1 in Arizona, 1 in Texas, 1 in Florida

Synagro's other California utilize Aerated Static Pile technology include:

- 1- Positive ASP with Biofilter Cap
- 1- Positive ASP with Membrane Cover





Credit – Nobel & Associates

The use of compost generated from local organics provides the public with an opportunity to see the benefit of recycling materials, while also helping replenish nutrients and carbon for healthy soils on the city and county properties.

- Synagro – one of the largest private composters in the United States and in California – participates with municipalities to establish programs and stands ready with multiple distribution options for AllGro compost enabling cities and counties to be compliant with SB 1383's procurement requirements through the use of our Class A Exceptional Quality compost in a variety of applications, such as land used for agriculture, gardening, landscaping in city parks, golf courses, on center divides of roads and highways, public giveaways, and in community or school gardens.
- Additionally, compost can be used in civil engineering applications like erosion control along roadways and streets. AllGro compost also provides many direct and indirect benefits when used as a component of systems and treatments designed for:
 - Carbon sequestration,
 - Water retention in soil,
 - Fire remediation, and land reclamation
 - Storm water management
 - Erosion Control
 - Wetlands Development or Recovery



Model Partnership Overview

Approach:

- Educate constituents and make compost available for SB1383 Procurement.
- Introduce local cities or agencies to participating Biosolids/Organics compost contractor.
- Sample compost available at centralized location for local cities to pick-up for trials and distribution
- Preferably develop a dedicated website or page (IE: www.ocsan.gov/compost)
- Host compost webinar with participating agencies that is in sync seasonal projects.
 - Record webinar post on website as go forward resource.
 - Education on compost benefits and use and recycling benefits for the community.
- Compost Toolbox - post on website
- Develop customized fact sheets for cities to distribute educate the public.



Credit – Orange County Sanitation District



Civil Engineering Project Benefits:

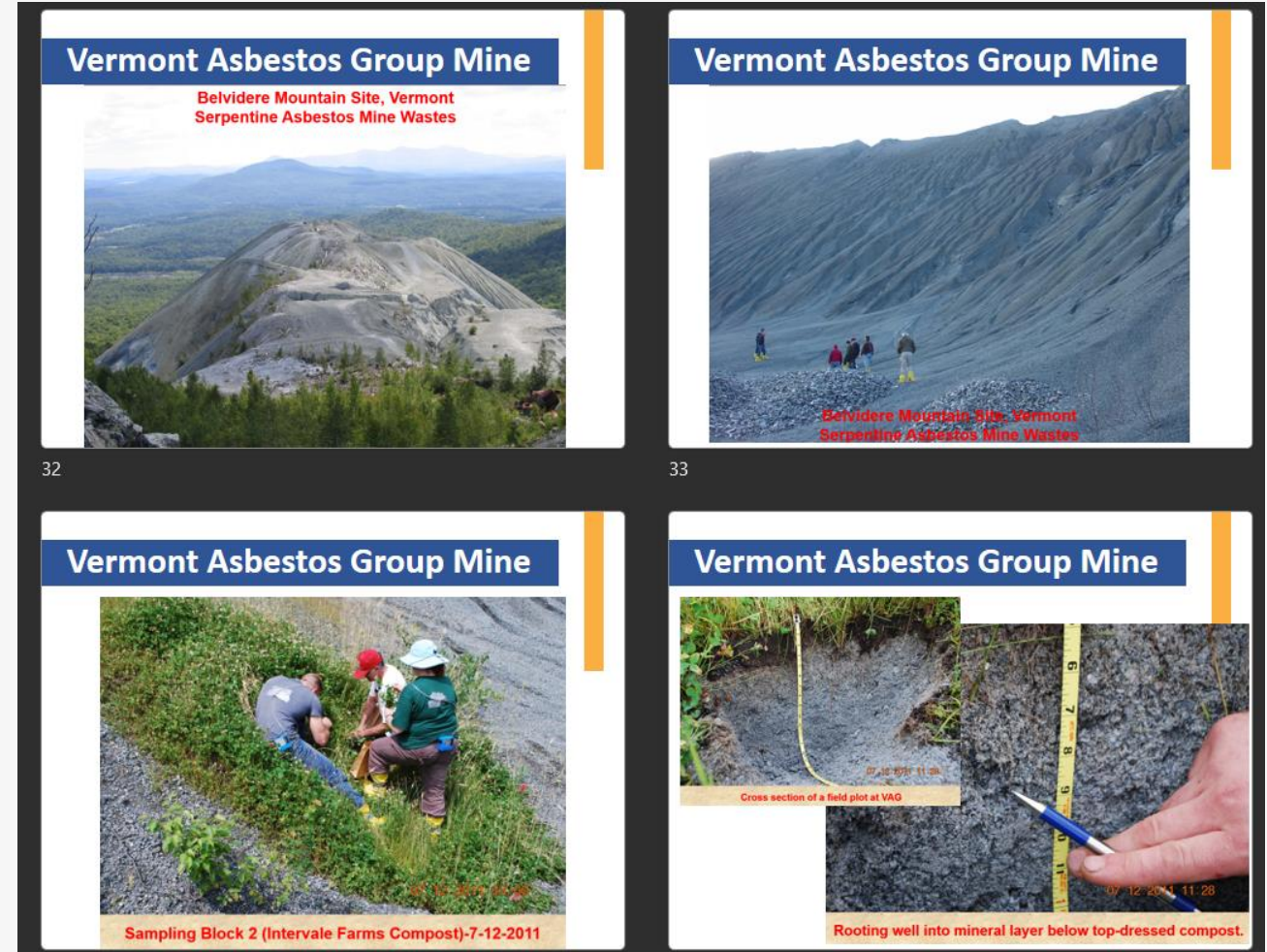
- Soil Conditioning
- Faster Germination for Cover
- Slope Stabilization
- Erosion Control
- Reduced rate for re-application Vs Hydro Seeding

Reforestation Project Benefits:

- Soil Conditioning
- Faster Germination for Cover and Accelerated Tree Growth
- Slope Stabilization
- Erosion Control
- Reduced rate for re-application of cover seeding.
- Contained nutrients are complexed /bound – limits run off water contamination



- Biosolids compost has an extraordinary assimilative capacity that allows it to fixate (complex chemistry) large concentrations of constituents in the soils, *allowing plants to thrive - even in the contaminated soils*
- Biosolids compost has reclaimed mine tailings with severe soil contamination, so soils with elevated constituents does not exclude the use of biosolids compost



Wetlands are a natural solution and critical for erosion control, limit flooding, moderate groundwater levels and base flow, assimilate nutrients, protect drinking water sources and buffer coastal areas from storm surges

- Biosolids compost has an extraordinary assimilative capacity that allows it to fixate (complex chemistry) large concentrations of constituents in the soil systems along with natural biologicals , *allowing recovering wetland ecosystems to reestablish themselves and thrive.*
- EDUCATION! Some soil scientists and landscape architects do not know about biosolids compost chemistry and demonstrated abilities.
- SHOW THEM THE RESULTS!



Ag Market User Snapshot

Growers of:

- Pistachios, Almonds, Grapes – Table & Wine in California.
- Citrus, Cotton, Wheat
- Alfalfa, Corn, Sorghum

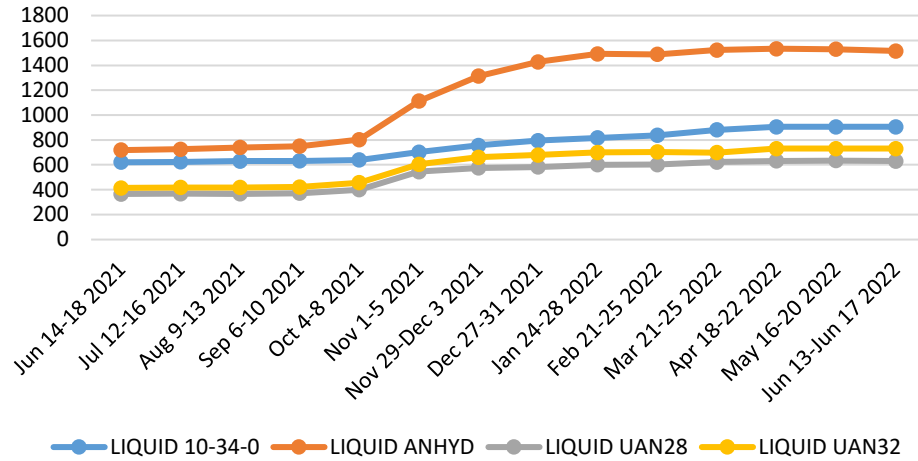
Key drivers – Water and Nutrient efficiency can be improved with compost use which reduces cost and improves yields.

Pound for Pound, there is no better all-in-one soil amendment providing cost-effective critical soil needs for growers.

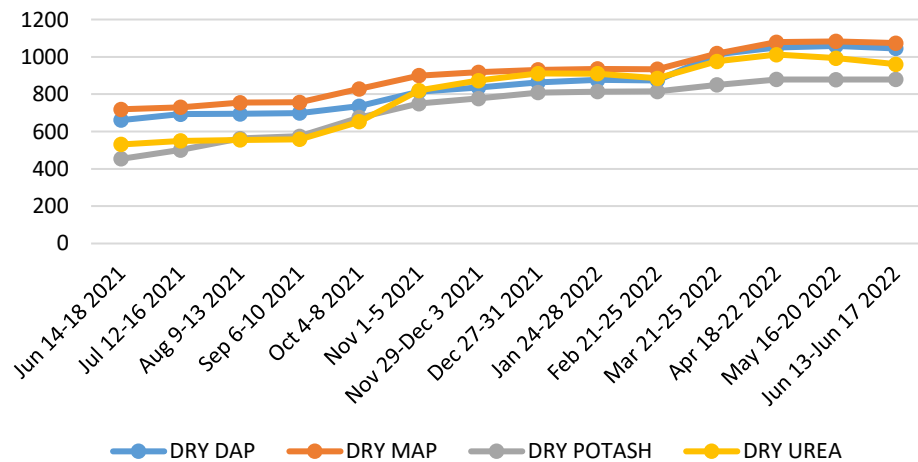
AllGro Compost: We participate in the Top 3 export agriculture products production (Almonds, Pistachios, Grapes/Wine - ~\$8 Billion Market)



Liquid Fertilizer Price Changes 2021-22



Dry Fertilizer Price Changes 2021-22

Nitrogen Vs AllGro Pricing Comparisons

- **Current UAN 32 pricing:** \$4.40/gallon, with each gallon equivalent to 3 lbs. of nitrogen which equates to a cost of \$1.50/lb.
- **Current 10-34-0 pricing:** \$750/ton. It contains 1.16 lbs. of nitrogen/gallon, equating to a cost of \$3.75/lb.
- **Current 11-52-0 (MAP) pricing:** \$880/ton. It contains 220 lbs. of nitrogen/ton, equating to \$4/lb.

AllGro

Using the average cost per ton for AllGro at \$22/ton:

- AllGro averages of 55 lbs. nitrogen/ton with a cost per pound of nitrogen of \$0.40/lb. Vs \$1.50/lb.

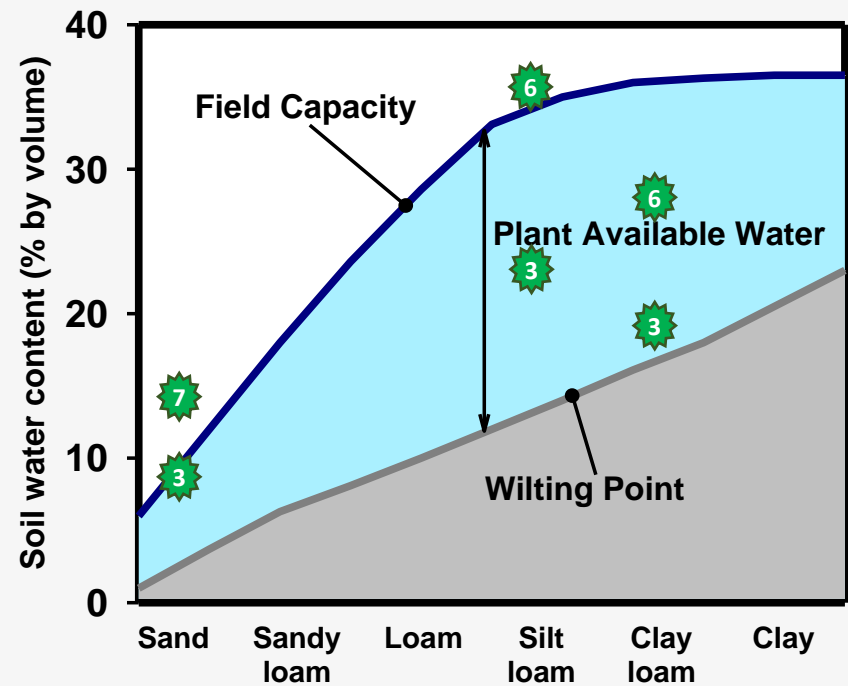
Summary: AllGro on average is a 75% cost reduction compared to one of the cheapest synthetic fertilizers (UAN 32).

** Even considering AllGro's complexed nitrogen release over time we are still offering a significant cost benefit to the grower.*

Water Cost

- South Central Valley water alone can cost >\$1,000/Acre/Ft for growers
- Water application cost - adding 1 Acre inch of water per acre is between \$242 - \$525 in energy alone.

ALLGRO - Soil Type % & Resulting Water Retention



Compost Water Conservation

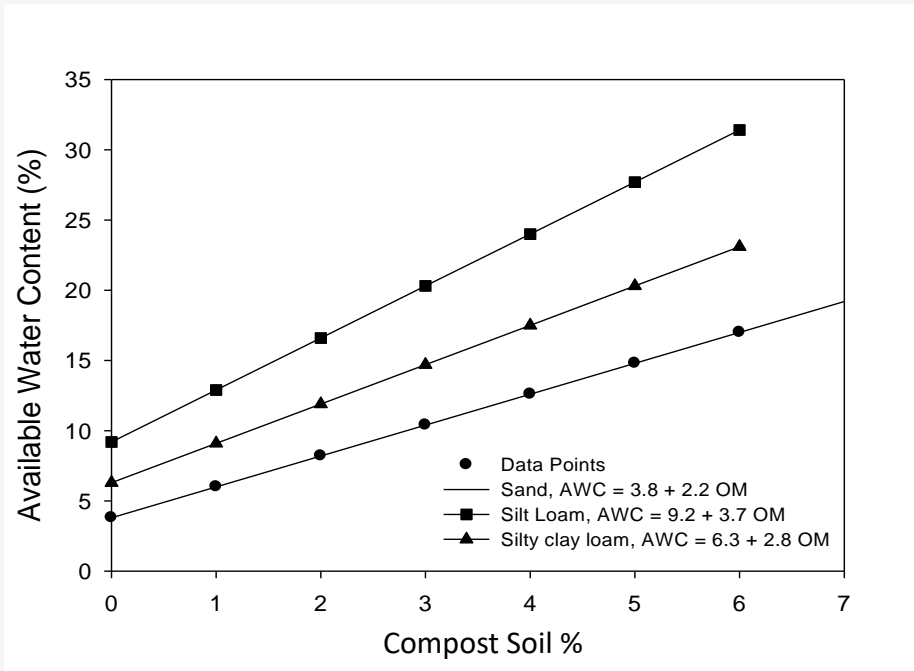


Figure . Available soil water content in a sand, silt loam, and silty clay loam soils relative to organic matter content. (Adapted from Hudson, 1994).

- ❖ If all the compost currently produced in the state was applied to the soil, water retention would increase by 3.7 billion gallons annually, according to Cal Recycle.
- ❖ It would reduce California Grower's water needs by 25 percent ! “Every little bit helps.”



- Granulite fertilizer is produced through an advanced heat drying and pelletizing process in which municipal biosolids are heated and dehydrated to create a BioSource fertilizer that meets the U.S. Environmental Protection Agency's (EPA) Exceptional Quality standards.
- Granulite fertilizer has been used successfully for years on landscaping flowers, lawns and by sod growers, golf courses and sports fields with a NPK of 5-4-0

In addition to, crops such as:

- Citrus, Corn, Cotton – 130mi from LA
- Fruits, Rice, Soybeans
- Vegetables & Wheat

Granulite® fertilizer can ship to your location from:

Sacramento Organic Fertilizer Company (SOFCO)
8600 Laguna Station Rd.
Elk Grove, CA 95758

- *To enhance the nutrient value of your soil blends or green waste compost, combine with Granulite organic based fertilizer with complexed macro and micro nutrients to produce a enhanced analysis for an increased value product.*



A Natural Organic-Based, All-in-One Solution

Stop Spending and Start Putting Money in the Bank



AllGro compost is generated from various organics in a tightly controlled process to provide growers with a high-value, Class A, Exceptional Quality, STA-Certified compost that:

- Provides significant water and nutrient savings while increasing yield benefits in a variety of applications;
- Improves water retention as much as 20% on irrigated and non-irrigated land, keeping water where it is needed;
- Improves yields while helping to abate certain plant diseases and pests; and
- Provides critical slow nutrient release over time, including micronutrients at a 25%-plus cost savings vs. chemical fertilizers.

THANK YOU!

To learn more, contact Robert Ford by phone at 1.323.843.7265 or by email at robertford@synagro.com



Synagro participates in the United States Composting Council Seal of Testing Assurance program.



US Composting Council®
Proud Member
I'm a Soilbuilder!



Water Environment Federation®
the water quality people®

