

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



ABOUT SUMAGROULX BRAND OF PRODUCTS

The term “SumaGroulx” represents core ingredients (formulation) that is inclusive in all of its products. It is a patent pending array of naturally occurring soil microbes in a unique and unprecedented combination and concentration. This group of core SumaGroulx branded microbes includes multiple, friendly strains of Bacillus, Enterobacter, Pseudomonas, Stenotrophomonas, Rhizobium, Azorhizobium, and Trichoderma. Many of our crop or plant specific products will contain additional strains of microbes that are preselected to meet the needs of the particular plant, environment, or soil condition. For example, our forage products are designed to accommodate more extreme weather conditions while adding higher nutrient values and promoting longer grazing periods, while corn has higher needs for nitrogen and water uptake. Golf course greens are built on domes of pea gravel and sand with little, if any, organic matter to hold essential nutrients and water. The bottom line is this: Different crops (plants) have different needs and are grown in a wide variety of soil and climate conditions. In many of these situations, different formulations for application are required.

Microbes contained in all of our products are both eco friendly and user friendly, protecting both soil health and preventing nutrient leaching. The multiple strains of beneficial microbes uphold atmospheric nitrogen fixation and availability, phosphate solubilization and availability, plant nutrient cycling and uptake, phyto-hormone production, and act as biological control agents. Benefits from this soil-microbe interaction include enhanced plant root and shoot growth which results in higher yields and nutrient density and increases plant resistance to pests and disease. The microbial consortium act synergistically and have saprophytic competency in soil. This includes the ability to withstand extreme environmental conditions such as high or low soil pH, soil moisture issues, and sandy or heavy clay soils. The microbes are suspended in a 12% humic acid carrier, stabilized at a pH of 7.0, allowing SumaGroulx branded products to be used in diverse soil types. Application of SumaGroulx branded products increases humus content of the soil and provides for an improved soil CEC.

Advantages and Benefits Include:

- **Significant Yield Increase** in every crop that has been tested to date
 - Includes vegetable crops, row crops (corn, soybeans, rice, cotton, etc), forages, hay crops, and bio-fuel crops (Switchgrass, Cane).
- **Significant Fertilizer Reduction** or elimination in all crops tested.
- **Chemical Pesticide and Herbicide reduction** or elimination.
- **Better Germination Rates, Faster Germination, Earlier Flowering, Earlier Maturation.**
- **Increased Plant Nutrient Levels** - Brix, Chlorophyll, Plant Proteins and Minerals.
- **Better Stress Tolerance** - Drought, Insects, Disease, Transplant, Wind.
- **Better Water Holding** Capacity.
- **Prevents Fertilizer Runoff and reduces soil erosion.**
- **Builds Soil Organic Matter.**
- **Increases Carbon Sequestration.**
- **Converts bound soil phosphorus** into available phosphorus

Key Microbial Actions Include:

- Nitrogen Fixing Microbes - SumaGroulx contains literally billions of nitrogen fixing microbes that are a unique combination of symbiotic, non-symbiotic, free living, nodulating and non-nodulating microbes.
- Microbes that function as Phosphate solubilizers.
- Microbes that act as nutrient cyclers, making soil nutrients more bio-available to the plants.
- Microbes that encourage key plant phyto-hormones.
- Carried in a liquid humate base that serves to build soil organic matter, act as a soil pH buffer, and provides a carbon food source to the microbes.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



Product Application Rates

Recommendations for Crops & Cultivation Practices

1. Organic Applications
2. Cotton
3. Field Corn, Sweet Corn, Miio
4. Soybeans
5. Summer Grasses (Grazing)
6. Summer Grasses (Hay)
7. Wheat, Oats, Rye, etc.
8. Okra, Pepper, Eggplant
9. Tomato
10. Beans: Lima, Green, Kidney, etc.
11. Leafy Greens
12. Cucumbers, Pumpkins, Squash, Watermelon, etc.
13. Irish Potato and Sugar Beet
14. Grapes, Blueberries, Blackberries, etc.
15. Strawberries
16. Peanuts
17. Rice
18. Trees and Shrubs
19. Seed Treatment, Seedlings and Transplants
20. Cassava Plants
21. Mango Trees
22. Durian Trees
23. Rambutans
24. Longan
25. Dragon Fruit
26. Rubber Trees
27. Annuals
28. Perennials
29. Pomegranates
30. Coffee
31. Sugarcane

NOTICE - FOR OPTIMAL RESULTS

- The standard application rate is 1 gallon per acre in sufficient water to apply the desired rate.
- **If already using N-P-K products:** It is recommended that N-P-K applications rates be reduced by 50% when using SumaGroulx products.
- **If Soil Organic Matter (OM) is low** (i.e. heavy sand or heavy clay soils) increase the initial application rate by 0.5 gallon for all applications.
- Avoid extreme temperatures. Store at 40°F-80°F.
- Always properly calibrate your sprayer prior to application to assure recommended application rate per acre is achieved.
- Apply in late afternoon or at sundown to ensure optimal absorption.
- For second application: Foliar application is suggested.

Co-Application

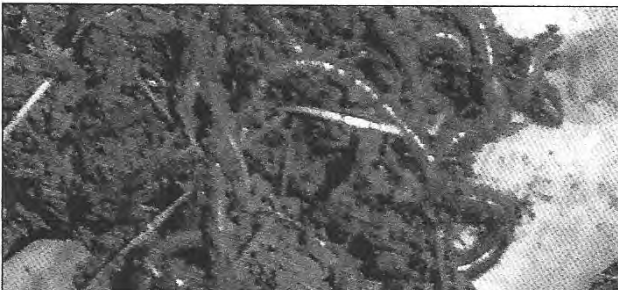
- SumaGroulx can be co-applied with your irrigation water through a metered irrigation system.
- Product can also be co-applied with liquid Nitrogen and with herbicides.
- **DO NOT CO-APPLY** SumaGroulx with fungicides or fumigants.

Agitation

- The product should be gently agitated prior to application. In smaller containers, simply shake the container prior to loading into sprayer.
- With bulk barrels and totes, agitate prior to transferring to sprayer (can use air wand or paddle agitator).

NOTE: Loosen caps on containers upon receipt of product so that microbes can receive oxygen. Leave caps loose until product is applied.

Earthworms Thrive in High Microbial Activity Soils.



Forage Stand Density and Diversity in High Microbial Activity Soils



RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



1. Organic Applications

In organic operations, it is recommended that all application rates be increased 100% of traditional applications for conventionally grown crops. (Conventional rate of 1 gallon per acre will increase to 2 gallons per acre for organic crop).

This increase is recommended because the build-up of soil nutrients in organic fields is typically significantly less than that found in conventionally fertilized fields. Additionally, organic fertilizer products tend to have a slow release of nutrients compared to that of chemical fertilizers. Number and frequency of applications may also have to be increased for the same reasons.

2. Cotton

Step 1: Apply 0.5 gallon (2 Liters) per acre at "Planting". Preferably "In Row".

Step 2: Apply 0.5 gallon per acre at "Pin Head" square.

3. Field Corn, Sweet Corn, Milo

Step 1: Apply 1 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre approximately 4 weeks after planting.

Step 3: Can make optional third application just prior to silking (7-10 days prior). This application would be best made aurally.

4. Soybeans

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre approximately 4 weeks after initial application.

5. Summer Grasses (Grazing)

Step 1: Apply 0.5 gallon per acre around Spring green-up.

Step 2: Apply 0.5 gallon per acre 4 to 6 weeks later.

6. Summer Grasses (Hay)

Step 1: Apply 0.5 gallon around Spring green-up.

Step 2: Apply 0.5 gallon after each cutting.

7. Wheat, Oats, Rye, etc.

Step 1: Apply 0.5 gallon at planting.

Step 2: Apply 0.5 gallon at flag leaf emergence.

8. Okra, Pepper, Eggplant

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre 3 to 4 weeks after initial application.

9. Tomato

Step 1: Apply 0.5 gallon per acre at planting.

If transplanting, dip roots in solution equivalent to 6 oz. SumaGroulx per gallon of water prior to transplanting.

Step 2: Apply 1 qt. per acre every 7 to 10 days through peak harvest.

10. Beans: Lima, Green, Kidney, etc.

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre 3 to 4 weeks after initial application.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



11. Leafy Greens

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre 3 weeks after emergence.

12. Cucumbers, Pumpkins, Squash, Watermelon, etc.

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon 3 to 4 weeks after initial application

13. Irish Potato and Sugar Beet

Step 1: Apply 0.5 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre 3 to 4 weeks after initial application.

14. Grapes, Blueberries, Blackberries, etc.

Step 1: Apply 0.5 gallon per acre at early bud break.

Step 2: Apply 1 qt. per acre at "Bloom Stage".

Step 3: Apply 1 qt. per acre at "early Fruit Set".

15. Strawberries

Step 1: Apply 1 gallon per acre at planting.

Step 2: Apply 1 qt. per acre at 4 leaf stage.

Step 3: Apply 1 qt. per acre at first bloom and every 7 days through peak harvest.

16. Peanuts

Step 1: Apply 1 gallon per acre at planting.

Step 2: Apply 0.5 gallon per acre at "Pegging".

Step 3: Apply 0.5 gallon per acre at "Bloom Set".

Step 4: Apply 0.5 gallon per acre at "Nut Set".

17. Rice

Step 1: Treat 80 to 100 lb. **sprouted seed** with 0.5 gal. SumaGroulx product mixed in solution.

Step 2: Apply 1 gallon per acre 30 days after broadcast/drilling.

Step 3: Apply 0.5 gallon per acre at Flag leaf/Boot leaf/pre-flowering stage.

NOTE: Please refer to Item #19. Seed Treatment, Seedlings and Transplants.

18. Trees and Shrubs

Step 1: Mix equivalent of 3 oz. per gallon and spray from trunk to drip line.

Step 2: This application should be made in Spring at bud stage, Summer, and Fall.

19. Seed Treatment, Seedlings and Transplants

SPROUTED SEEDS

At Planting (Drill or Broadcast): Treat seed prior to planting @ 0.5 gallon / 100 lbs. seed

At 30 Days: Apply 1 gallon / acre

At Flag Leaf/Boot Leaf/Pre-Flower Stage: Apply 1/2 gallon / acre

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



SEEDLINGS - TRANSPLANT (25 day old seedlings)

At Transplant: Root dip seedlings in equivalent of 1 gallon /acre
(Dilution solution equivalent to 6 oz. SumaGroulx per gallon of water)
At 30 days: Apply 0.5 gallons / acre
At Flag Leaf/Boot Leaf/Pre-Flower Stage: Apply 0.5 gallons / acre

SINGLE TREATMENT PER SEASON:

Sprout seed in 1 gallon / 40-80 lbs. seed

Step 1: Pre-soak seeds in 1 gallon product (6 oz. per gallon of water).

Step 2: Soak for 24-36 hours, drain, place seed in wet cloth sack

Step 3: Over the next 24 hours, turn cloth sack occasionally keeping moist. Keep sack in shady, warm area.

Step 4: Seed can be broadcast/drilled after 24 hours.

20. Cassava Plants

Two gallons per acre

Step 1: Apply 0.5 gallon per acre at planting

Step 2: Apply 0.5 gallon per acre 15 days after planting

Step 3: Apply 0.5 gallon per acre 30 days after initial planting

Step 4: Apply 0.5 gallon per acre before flowering.

21. Mango Trees

Step 1: Apply 0.5 quart per tree in the planting hole

Step 2: Apply 1 gallon per tree each year in split applications at stages (example: at beginning of rain season, pruning, flowering, fruit)

22. Durian Trees

Usual density is 100-150 trees per hectare

Step 1: Apply 1 quart per tree each year for first 3 years

Step 2: Apply 1 gallon per tree during fourth year in 3 to 4 split applications

Step 3: Apply 0.5 to 1 gallon per tree during fruit-bearing years.

23. Rambutans

Step 1: Apply 0.5 quart per tree at planting

Step 2: Apply 1 gallon per acre before flowering and after initiation of fruit

24. Longan

Application times suggested are one month before harvest, before flowering, at fruit development stage, and right after harvest.

Step 1: Apply 0.5 quart per tree in two split applications per year for trees less than 3 years old

Step 2: Apply 1 gallon per tree in four split applications per year for trees greater than 3 years old

25. Dragon fruit

Step 1: Apply 1 quart per plant at time of planting

Step 2: Apply 1 quart in two split applications (one month after planting and at six months)

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



26. Rubber Trees

Step 1: Apply 2 gallons per acre while planting

Step 2: Apply 1 gallon per year until ready for tapping

Step 3: Apply 1 gallon after each tapping

Application method: Apply uniformly in circular bands of 30cm width all around the plant (where the roots are active) leaving 7cm from the base followed by slight forking into the top 5-8cm of soil. In the second year, apply in circular bands of 45cm width leaving 15cm around plant base. Continue applications in steadily increasing widths until the distance from tree is equivalent to twice the canopy.

27. Annuals

After planting, apply a SumaGroulx solution of one small disposable coffee cup per gallon of water every two weeks. Spray over entire growing bed.

28. Perennials

After planting, apply a SumaGroulx solution of one small disposable coffee cup per gallon of water once a month. Spray around base of plants in growing bed. One application prior to flowering is mandatory.

29. Pomegranate

Step 1: Apply 2 gallons per acre or per 100 trees (or 3 ounces diluted in 2 gallons of water per 1,000 sqft)

Step 2: Repeat application every 10 days for one month

30. Coffee

For Coffee Bean germination process Apply at a rate of 0.5 gal per number of seeds intended to cover one acre of land.

Coffee seeds in nursery beds When coffee seedlings reach approximately 30-40 cm tall, the plant should be dipped in SumaGroulx for 2 minutes prior to planting. Apply the remaining product to the soil.

Application Interval

Step 1: Apply at a rate of .25 gallon per acre one month after transplanting and every four months until pre-flowering (approximately 4 years).

Step 2: Once flowers are fertilized to produce pods, spray at a rate of .5 gallon per acre.

Step 3: Continue application of at a rate of 1 gallon per acre during the following stages: harvesting, pruning, flowering and pod formation.

Note: Judge the size of your coffee plant. If the tree is tall with an open canopy, application should be at the drip line to feed the feeder roots.

31. Sugar Cane

Note: Planting sugar cane Setts/stem/slips/cuttings - In planting cane fields, mature cane stalks are cut into sections and laid horizontally in furrows. In continental United States, sections with several nodes are laid while in tropical countries sections with two or three nodes commonly used.

Step 1: One gallon per acre at time of planting - Dip sugar cane cuttings in SumaGroulx for 5 minutes prior to planting. Dipping should be done in such a way that nodes are completely immersed. Supplement the soil prior to planting with remaining SumaGroulx.

Step 2: 0.5 gallon per acre approximately one after sugar cane has begun to sprout. (Spray application focusing on base of stalk)

Step 3: 0.5 gallon per acre one month after second application

* For organic farming-A 50% reduced application rate of commercial organic composts can be added if needed.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



SumaGroulx Benefits

Primary Agricultural Industry Concerns:

- Continual rise in input costs - particularly fertilizers, fuel, chemical pesticides and herbicides, and seed.
- Environmental Concerns - Sustainability, Water Quality, Runoff issues, chemical residue in soil.
- Rapidly shifting consumer food perceptions and preferences
 - o Consumer wants foods that are safe, healthy, and environmentally friendly
 - o Consumer wants to know more about how their foods are produced - They want the “story” surrounding their food products.
 - o Consumer wants greater nutrient density, better taste and texture, and truth in labeling.

Natural and Organic Foods:

- An \$31 billion market in 2010.
- Growth in the natural and organic food sector is triple that of growth in the commodity foods sector - 10% vs 3.2%.
- Over 83% of households purchase natural foods and over 61% purchase organic foods.

What Do Farmers and Ranchers Need?

- Reasonable solutions to difficult problems.
 - o Must be feasible and able to implement
 - o Must be sustainable and profitable
 - o Must have production systems and strategies that address issues
 - o Must have dependable products that address issues

Farmers and Ranchers Need Products That:

- Increase plant growth & Yield, yet decrease input costs.
- Reduce or eliminate need for fossil-fuel based and chemical fertilizers.
- Reduce or eliminate need for chemical pesticides, herbicides, fungicides, etc.
- Improve Soil Health & Build Soil Organic Matter.
- Increase Water & Nutrient Uptake by Plants.
- Increase Macro- and Micro-Nutrient availability.
- Are Environmentally Friendly.

A Healthy Acre of Soil Should Have:

- 2600 lbs of soil bacteria
- 2600 lbs of soil fungi
- 830 lbs of favorable insects and arthropods
- 445 lbs of earthworms
- 90 lbs of algae, 90 lbs of protozoa, and 45 lbs of nematodes

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



Importance of Soil Microbes:

- Profound importance in every chemical transformation in soil.
- Play key role in soil fertility and crop yield.
- Increase Nitrogen and Phosphorus availability to plants, as well as micro-mineral availability.
- Key role on production of plant vitamins and hormones.
- Inhibit Plant Pathogens - Pest insects and disease.

SumaGroulx is NOT:

- A Fertilizer.
- A synthetic growth hormone.
- A compost tea.
- A Genetically Modified Organism (GMO).

What is SumaGroulx:

- Patent pending array of over **30 strains** of naturally occurring soil microbes.
- **Unique and Unprecedented combination and concentration** of soil microbes.
- **Key Microbes** include multiple, friendly strains of **Bacillus, Enterobacter, Pseudomonas, Stenotrophomonas, Rhizobium, Azorhizobium, and Trichoderma.**
 - o Past Products have typically had only a small number of microbes in a much weaker concentration.
 - o Soil Microbiology Scientists at **Michigan State University** have been able to develop SumaGroulx that has:
 - **Over 30 strains** of soil bacteria and fungi compared to **less than 10** in most competitor products.
 - Unique concentration of over **10¹²** which is the microbial life in healthy soils. This means there are over **One Trillion** soil microbes in every milliliter of SumaGroulx.
- This product is **OMRI Listed with no restrictions.** It can be applied to any organic operation without restriction.

Key Microbe Actions:

- SumaGroulx Formula contains microbes that perform the following functions:
 - o Nitrogen Fixing Microbes - SumaGroulx contains literally billions of nitrogen fixing microbes that are a unique combination of symbiotic, non-symbiotic, free living, nodulating and non-nodulating microbes.
 - o Microbes that function as Phosphate solubilizers.
 - o Microbes that act as nutrient cyclers, making soil nutrients more bio-available to the plants.
 - o Microbes that encourage key plant phyto-hormones.
 - o Microbes that act as biological control agents.
 - o Carried in a liquid humate base that serves to build soil organic matter, act as a soil pH buffer, and provides a carbon food source to the microbes.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



Advantages and Benefits of SumaGroulx:

- **Significant Yield Increase** in every crop that has been tested to date
 - Includes vegetable crops, row crops (corn, soybeans, rice, cotton, etc), forages, hay crops, and bio-fuel crops (Switchgrass, Cane).
- **Significant Fertilizer Reduction** or elimination in all crops tested.
- **Chemical Pesticide and Herbicide reduction** or elimination.
- **Better Germination Rates, Faster Germination, Earlier Flowering, Earlier Maturation.**
- **Increased Plant Nutrient Levels** - Brix, Chlorophyll, Plant Proteins and Minerals.
- **Better Stress Tolerance** - Drought, Insects, Disease, Transplant, Wind.
- **Better Water Holding Capacity.**
- **Prevents Fertilizer Runoff and reduces soil erosion.**
- **Builds Soil Organic Matter.**
- **Increases Carbon Sequestration.**
- **Converts bound soil phosphorus** into available phosphorus

Advantages of High Brix Content in Plants:

- Significant increase in plant **sugars, proteins, amino acids, minerals, and vitamins**
- Higher **dry matter content** which increases plant, vegetable, or fruit nutrient density
- More pleasing **aroma, taste, and texture** in high brix fruits, vegetables, forages
- Increased resistance to **harmful plant pests**
- Increased resistance to **plant diseases** such as rusts and wilt.
- Higher tolerance for **environmental stressors** such as **plant lodging** due to **high winds, drought, and transplant.**
- **Healthier** plants.

Ease of Use:

- Stores at Room Temperature.
- One formula has a broad range of applications.
- Cannot harm the environment.
- Ability to Co-Apply with other products - fertilizers, herbicides, irrigation water.
- Available in Liquid or dry form.
- Inexpensive to Transport.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



Summary:

- **SumaGroulx Increases:**
 - Quantity of Production - Higher Yields
 - Quality of Production
 - Profitability & ROI
 - Nutrient Value - Higher Brix, nutrients, better taste, texture
- **SumaGroulx Reduces:**
 - Input Costs - Fertilizer, other chemicals
 - Time to Germination
 - Time to Maturity
 - Distribution Costs
- **SumaGroulx Eliminates:**
 - Price Instability
 - Groundwater pollution
 - Soil Depletion
- **SumaGroulx Creates:**
 - A new and beneficial way of improving and increasing food production
 - Healthier Soil
 - A New Food Production Paradigm

- SumaGroulx can be co-applied with your irrigation water through a metered irrigation system. SumaGroulx can also be co-applied with liquid Nitrogen and with herbicides.

CAUTION: When co-applying with herbicides, apply mixture within 24 hours of mixing.

DO NOT CO-APPLY SumaGroulx with fungicides, or fumigants.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



One of SumaGroulx's primary claims is that our SumaGroulx's products will mobilize and solubilize phosphorous (P) at both high and low soil pH environments and make it available for plant uptake.

Experimental set-up:

- Ten grams of the soil sample was weighed and put into a 1000mL Erlenmeyer flask.
- 500mL of SumaGroulx liquid was added and incubated on an Orbital Shaker for 2 weeks at 30°C.
- After 2 weeks, the treated soil was filtered using sterile gauze and the residual soil was dried in an incubator at 40°C. The drying continued until a constant weight was achieved.
- The untreated (control) soil, the dried SumaGroulx soil, and the liquid filtrate were sent to EDL Labs, Inc. for total P content analysis. The results are presented here::

Soil Analysis:

<u>Treatments</u>	<u>Total P</u>	<u>% decrease over control</u>
1. Untreated soil (control)	33.5	N/A
2. Treated soil (SumaGroulx) after 2 weeks (dry matter)	11.5	65.67%
3. Supernatant SumaGroulx (liquid)	3.8	88.66%

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



There are numerous advantages to a higher brix level. Ag-USA (<http://www.ag-usa.net/brix-test-meaning-hUn>) states:

“The higher the carbohydrate in the plant juice, the higher the mineral content of the plant, the oil content of the plant, and the protein quality of the plant.

For example, if you were to have 100 pounds of alfalfa that has a Brix reading of 15 it would mean that there would be 15 pounds of crude carbohydrates if the alfalfa was juiced and dried to 0 percent moisture. By dividing 15 by 2 it tells us that the actual amount of simple sugar would be equal to 7.5 pounds.

Crops with a higher refractive index will have higher sugar content, higher protein content, higher mineral content and a greater specific gravity or density. This adds up to a sweeter tasting, more mineral nutritious feed with lower nitrates and water content and better storage attributes.

Crops with higher Brix will produce more alcohol from fermented sugars and be more resistant to insects, thus resulting in decreased insecticide usage. For insect resistance, maintain a Brix of 12 or higher in the juice of the leaves of most plants. Crops with a higher solids content will have a lower freezing point and therefore be less prone to frost damage.

Brix readings can also indicate soil fertility needs. If soil nutrients are in the best balance and are made available (by microbes) upon demand by plants, readings will be higher.

The brix scale is correlated with taste and is a proxy for nutrient density. Cattle, and other animals, will always prefer the forage with the higher brix levels. This has been proven many times by seeing which hay cattle eat first when offered a choice.

In conclusion, Brix has become the gold standard to measure plant quality.



Dr. Allen Williams

Dr. Allen Williams

Dr. Allen Williams, who supervised the testing with Tallgrass Beef Company, is a prominent figure in the rapidly expanding grass-fed beef industry. He is consultant to 10 different branded beef programs and more than 400 individual beef producers nationwide.

Formerly an animal scientist with Mississippi State University, Williams is founding partner and vice president of The Jacob Alliance LLC, Rose Bud, Arkansas. The company specializes in the use of Beef Imaging Analysis software, an ultrasound scan of live animals to test for various qualities including tenderness, which Williams developed.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



Table 4: Brix Results - Tall Fescue



METRIC CONVERSION RECOMMENDATION

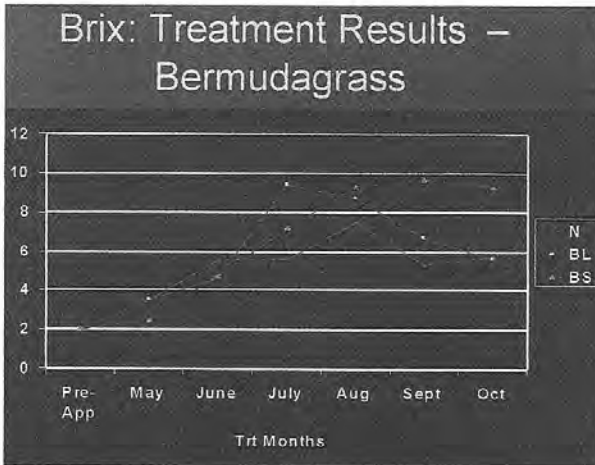
For conversion application from U.S. Gallons to Metric Liters,
please use the following equivalents:

0.5 Gallons = 2 Liters

1.0 Gallons = 4 Liters

10 Liters Per Hectare

Table 5: Brix Results - Common Bremuda grass



Finally, over the 150-grazing period, soil microbial treated pastures provided 21 more grazing days compared to the liquid broiler manure and 33 more grazing days than the nitrogen treated pastured. We can see the impact of enhanced soil microbial activity in an increased earthworm and insect populations (Figure 2 and Figure 3) and increased forage density and diversity (Figure 4).

Figure 2: Earthworm Castings and Insect Population in High Microbial Activity Soil



Dr. Allen R. Williams is founding partner and President of Livestock Management Consultants, LLC, a livestock industry consulting firm specializing in building natural branded food programs, facilitation of values based value chain food production and management, and ranch/farm grazing management and business planning. He has worked extensively in the grass-

fed livestock sectors and serves as chairman of the board of directors for the Association of Family Farms.

He holds a Ph.D. in Animal Breeding and Genetics/Reproduction from Louisiana State University, Baton Rouge, La., and an M.S. and B.S. in Animal Science from Clemson University, S.C. His expertise and responsibilities have included research and business interests centered on farm and ranch financial analysis, development and facilitation of values based food marketing, livestock reproduction and genetics, forage/grazing management, meat science, and cutting edge ultrasound technology. Dr. Williams has worked with the USDA FSIS MPI, and has an extensive farm and ranch background.

He has served on national scientific and industry committees, and has been an invited speaker to over 500 regional, national, and international conferences and symposia. He has published over 50 scientific journal articles and abstracts, as well as over 200 industry publication articles.

RRR SUPPLY INC.

2009 Colberg Lane
Munger, Michigan 48747
WWW.RRRSUPPLY.COM

800-547-6859
989-659-2250
Fax: 989-659-2694



SumaGroulx BIOSOIL ENHANCERS CUT FERTILIZER COST AT LEAST 50% IN THE FIRST YEAR UP 100% THE SECOND YEAR ENJOY 5% - 35% YIELD INCREASES

In order to make the most of the growing season, farmers and gardeners are turning to a natural soil inoculant, to boost their success. Those who have used SumaGroulx based products have had yield increases of at least 20% simply by using it along with their traditional fertilizer program. Other growers, however, have decided to take it a step further and eliminate chemical fertilizers altogether.

SumaGroulx a sustainable, organic all natural, environmentally friendly, non-GMO, non-pathogenic microbial "cocktail" in a base of liquid humates SumaGroulx has had excellent results on a variety of crops, in multiple soil types, increasing yield and nutrient value while reducing and / or eliminating fertilizer SumaGroulx makes the soil healthier, so it works in all environments. This allow crops to reach their full genetic potential-increasing crop yields; decreasing inputs and bio remediating soil.

SumaGroulx can also mobilize and solubilize phosphorus in both high and low pH environments which makes it available for plant uptake.

At **Michigan State University**, with their highly respected agricultural program, one of the many tests conducted over three years showed chlorophyll in clover (and other crops) increasing by 25%. Chlorophyll is a good indicator of grass health and nutrient quality.

Bob Groulx, a farmer in Michigan realized a 40% yield increase in 2009 while reducing fertilizer expenses by 50%. Additionally the crop matured about 10 days earlier allowing him to get a 35 cent a bushel premium from the local ethanol plant. In 2010, he used the same treatment for all 700 acres with the exception of a few test plots.



ADVANTAGES and BENEFITS INCLUDE:

- Significant Yield Increase in every crop that has been tested to date
- Includes vegetable crops, row crops (corn, soybeans, rice, cotton, etc), forages, hay crops, and biofuel crops (Switchgrass, Cane).
- Convert bound soil phosphorus into available phosphorus.
- Significant Fertilizer Reduction or elimination in all crops tested.
- Chemical Pesticide and Herbicide reduction or elimination.
- Better Germination Rates, Faster Germination, Earlier Flowering, Earlier Maturation.
- Increased Plant Nutrient Levels - Brix, Chlorophyll, Plant Proteins and Minerals.
- Better Stress Tolerance - Drought, Insects, Disease, Transplant, Wind.
- Better Water Holding Capacity.
- Prevents Fertilizer Runoff and reduces soil erosion.
- Builds Soil Organic Matter.
- Increase Carbon Sequestration.



SumaGroulx products have been used on a broad variety of plants ranging from fruits and vegetables to grasses and flowers, and the results have been consistent. To find out what SumaGroulx can do for you call 800-547-6859 and ask for Jeff, or email lorigroulx5@hotmail.com.

RRR Supply Inc., in Munger, Michigan is a distributor of:



CALL: (800) 547-6859 For More Information.