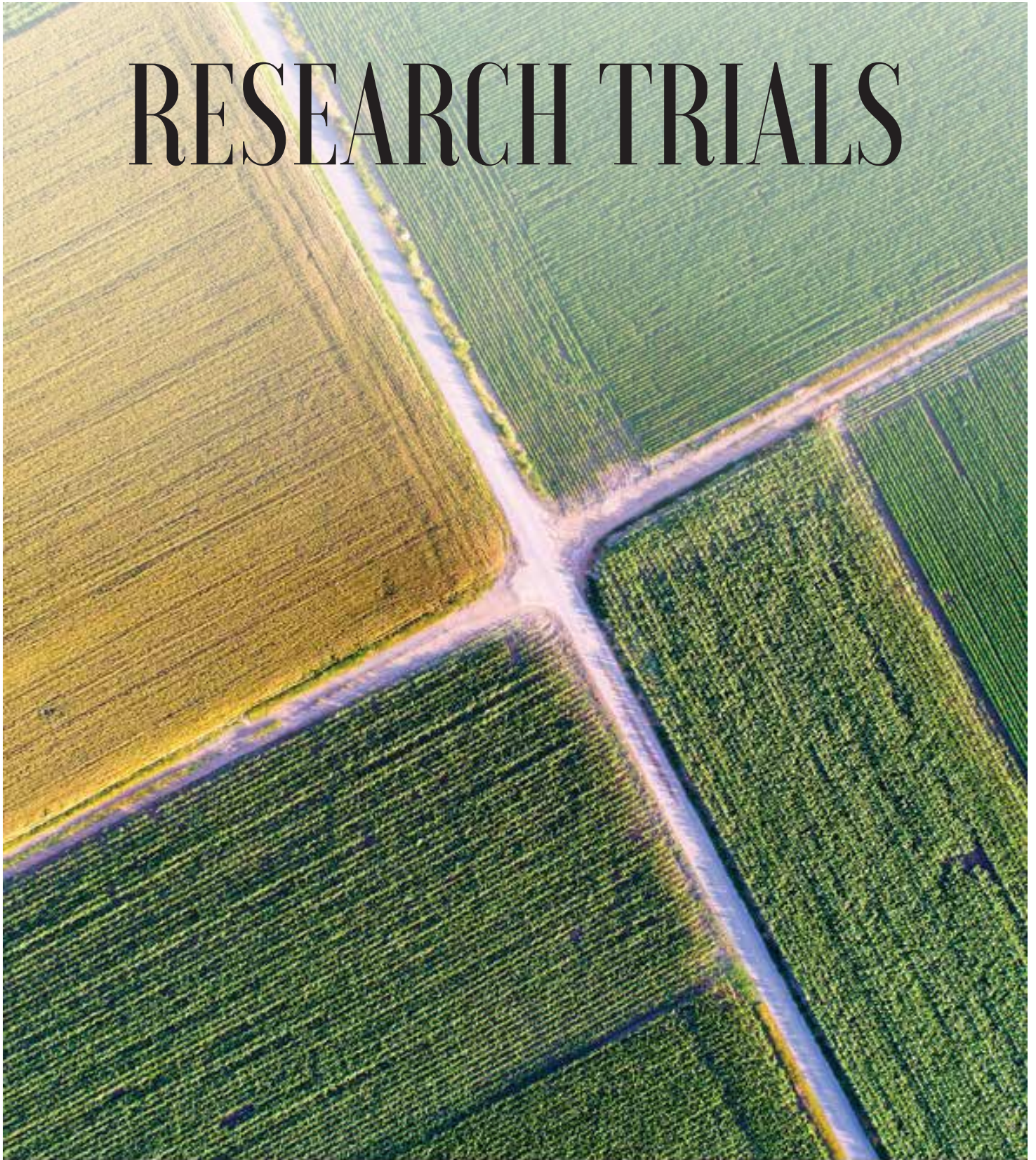




AGRITEC

RESEARCH TRIALS



Corn Trials

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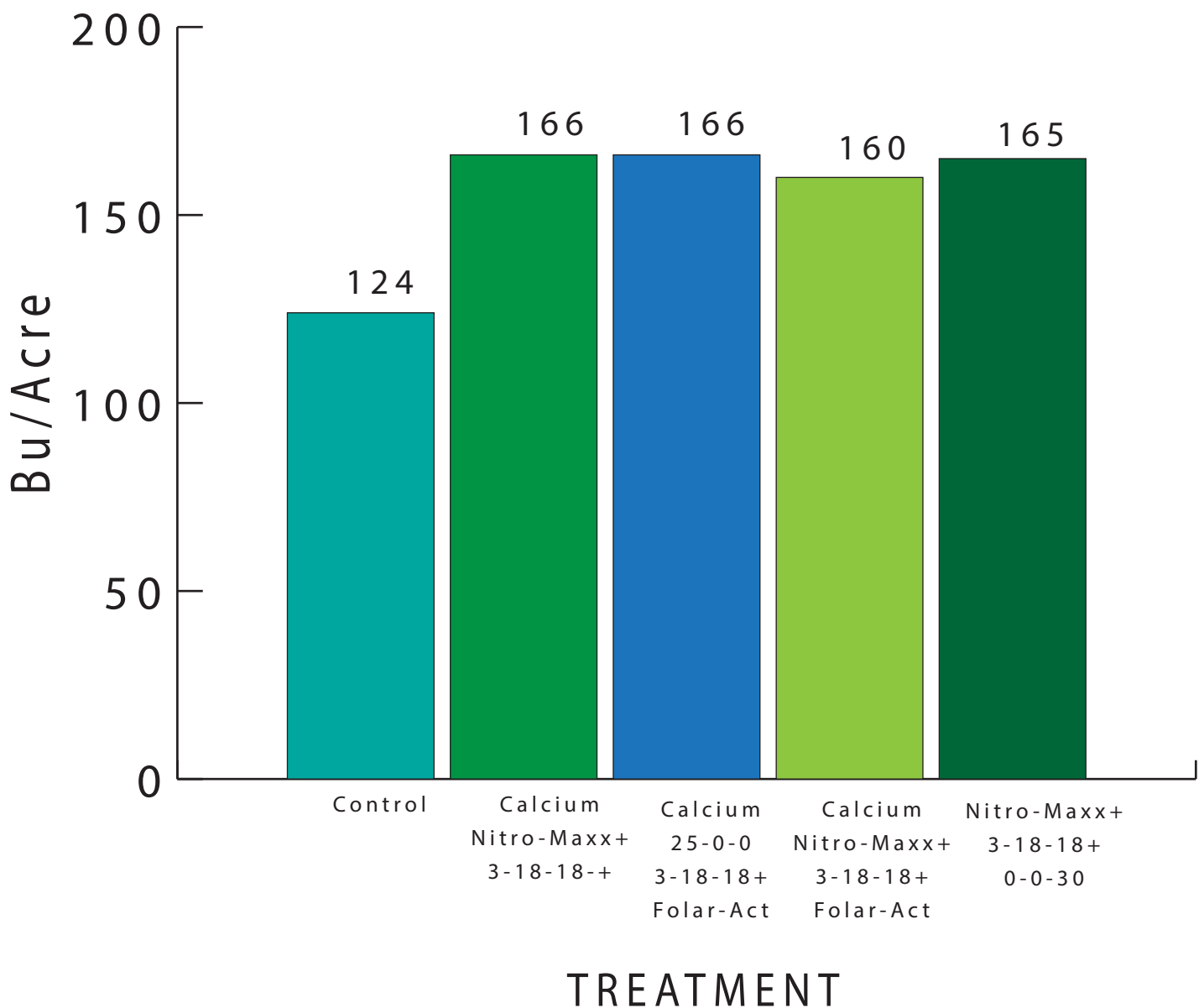
OBJECTIVE

Evaluate the impact that AgriTec International's general corn production recommendations have on soil profile characteristics.



OVERVIEW

Control plot received 200 units N, 50 units P, and 100 units K. There were 4 testing plots that received variations of AgriTec fertilizer programs.



SUMMARY



AgriTec's agricultural programs have demonstrated a substantial improvement, yielding an impressive increase of up to 33%. In comparison to the control group, which received a standardized application of 200 units of nitrogen (N), 50 units of phosphorus (P), and 100 units of potassium (K), each of AgriTec's four testing plots exhibited a significant augmentation in crop output. The specific nutrient compositions allocated to the testing plots are detailed as follows:

Testing Plot 1:

Calcium: 2 gallons per acre

Nitro-Maxx+: 5 gallons per acre (Pre-application)

Nitro-Maxx+: 4 gallons per acre (V4 stage)

Nitro-Maxx+: 4 gallons per acre (V8 stage)

Nitro-Maxx+: 4 gallons per acre (VT stage)

3-18-18+: 5 gallons per acre

Folar-Act: 0.5 gallons per acre

Testing Plot 2:

Calcium: 2 gallons per acre

25-0-0: 5 gallons per acre (Pre-application)

25-0-0: 4 gallons per acre (V4 stage)

25-0-0: 4 gallons per acre (V8 stage)

25-0-0: 4 gallons per acre (VT stage)

3-18-18+: 5 gallons per acre

Folar-Act: 0.5 gallons per acre



Testing Plot 3:

Calcium: 2 gallons per acre

Nitro-Maxx+: 6 gallons per acre (Pre-application)

Nitro-Maxx+: 4 gallons per acre (V4 stage)

Nitro-Maxx+: 4 gallons per acre (V8 stage)

Nitro-Maxx+: 4 gallons per acre (VT stage)

3-18-18+: 5 gallons per acre (In furrow application)

Folar-Act: 0.5 gallons per acre (VT stage)

Testing Plot 4:

Nitro-Maxx+: 5 gallons per acre (Pre-application)

Nitro-Maxx+: 4 gallons per acre (V4 stage)

Nitro-Maxx+: 4 gallons per acre (V8 stage)

3-18-18+: 5 gallons per acre

0-0-30: 1.5 gallons per acre

The aforementioned nutrient combinations deployed in AgriTec's testing plots played a pivotal role in facilitating the considerable yield improvements observed, providing empirical evidence for the efficacy of AgriTec's agricultural programs.

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Agricenter Trials

Agricenter Testing Facility is a highly reputable institution specializing in agricultural testing. With state-of-the-art facilities and a team of experienced scientists and technicians, they offer a comprehensive range of testing services for soil, seeds, pesticides, and more. Their advanced technology and adherence to stringent quality standards ensure accurate and reliable results. Agricenter Testing Facility holds prominent accreditations, certifications, and maintains a strong track record of serving diverse clients in the agricultural industry. Their expertise, industry reputation, and commitment to customer satisfaction make them a trusted partner for agricultural businesses and organizations seeking reliable testing services.

Alfalfa Trials

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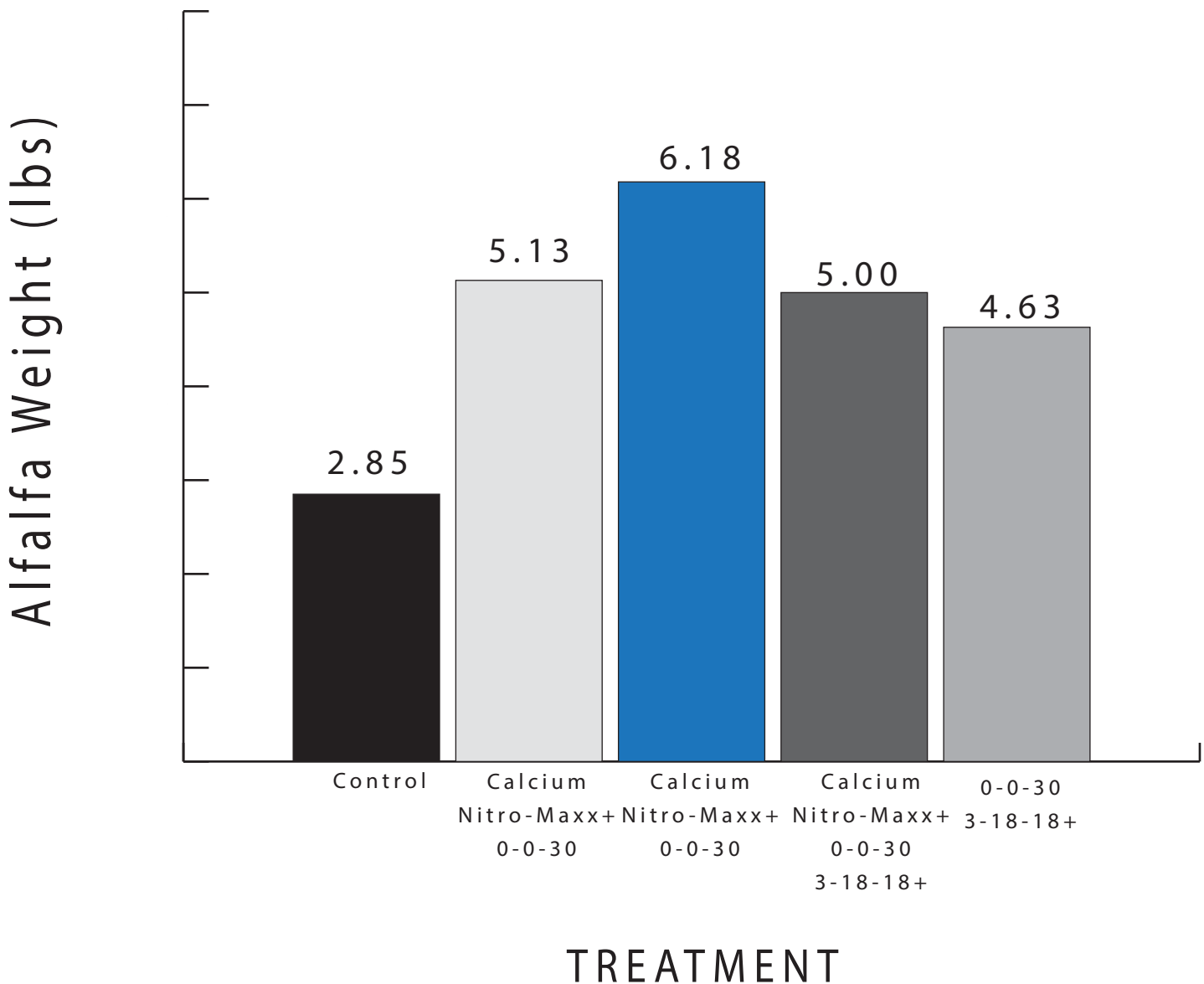
OBJECTIVE

Evaluate the impact that AgriTec International's general alfalfa production recommendations have on soil profile characteristics.



OVERVIEW

Control plots were untreated. There were 4 AgriTec plots that were treated with variations.



Wheat Trials

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OBJECTIVE

Evaluate the impact that AgriTec International's liquid calcium & general fertilizer recommendations has on soil health and production.

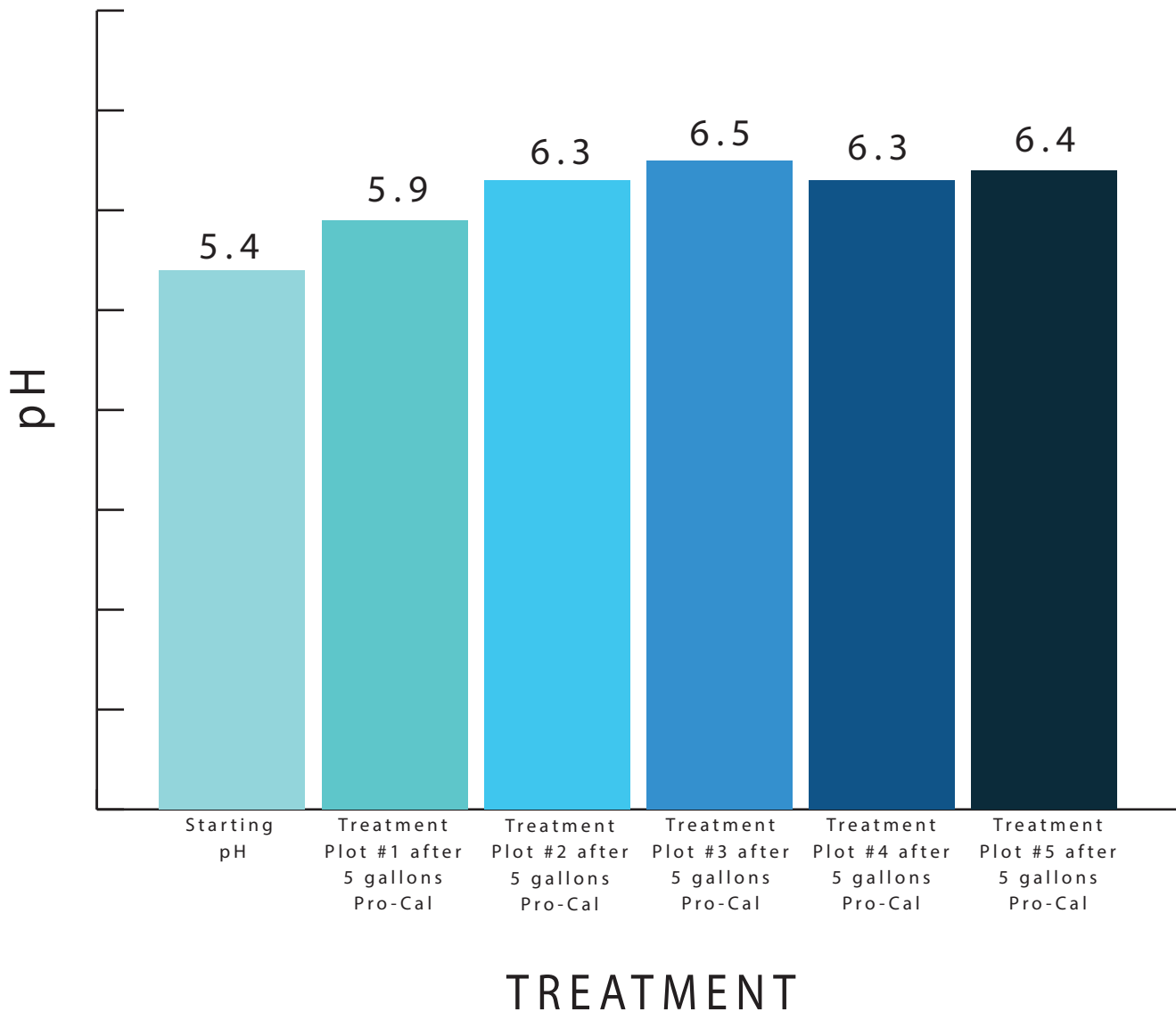


OVERVIEW

The trials were conducted on 5 different plots with one control plot. All plots started with a 5.4 pH.

Trial Date: 11/17/2021 to 06/21/22

The Effects on pH During Treatment



Application Rates



Control Plot:

Applied: 80 units of Nitrogen per acre

Plot 1:

Applied: 5 gallons per acre Pro-Cal

pH: 5.9

Yield: 88.1 bushels avg.

Plot 2:

Applied: 5 gallons per acre Pro-Cal, 1/2 gallons Form-14

pH: 6.3

Yield: 88.1 bushels avg.

Plot 3:

Applied: 5 gallons per acre Pro-Cal, 3 gallons Nitro-Maxx+

pH: 6.5

Yield: 88.6 bushels avg.

Plot 4:

Applied: 5 gallons per acre Pro-Cal, 7 gallons 3-18-18+

pH: 6.3

Yield: 93 bushels avg.

Plot 5:

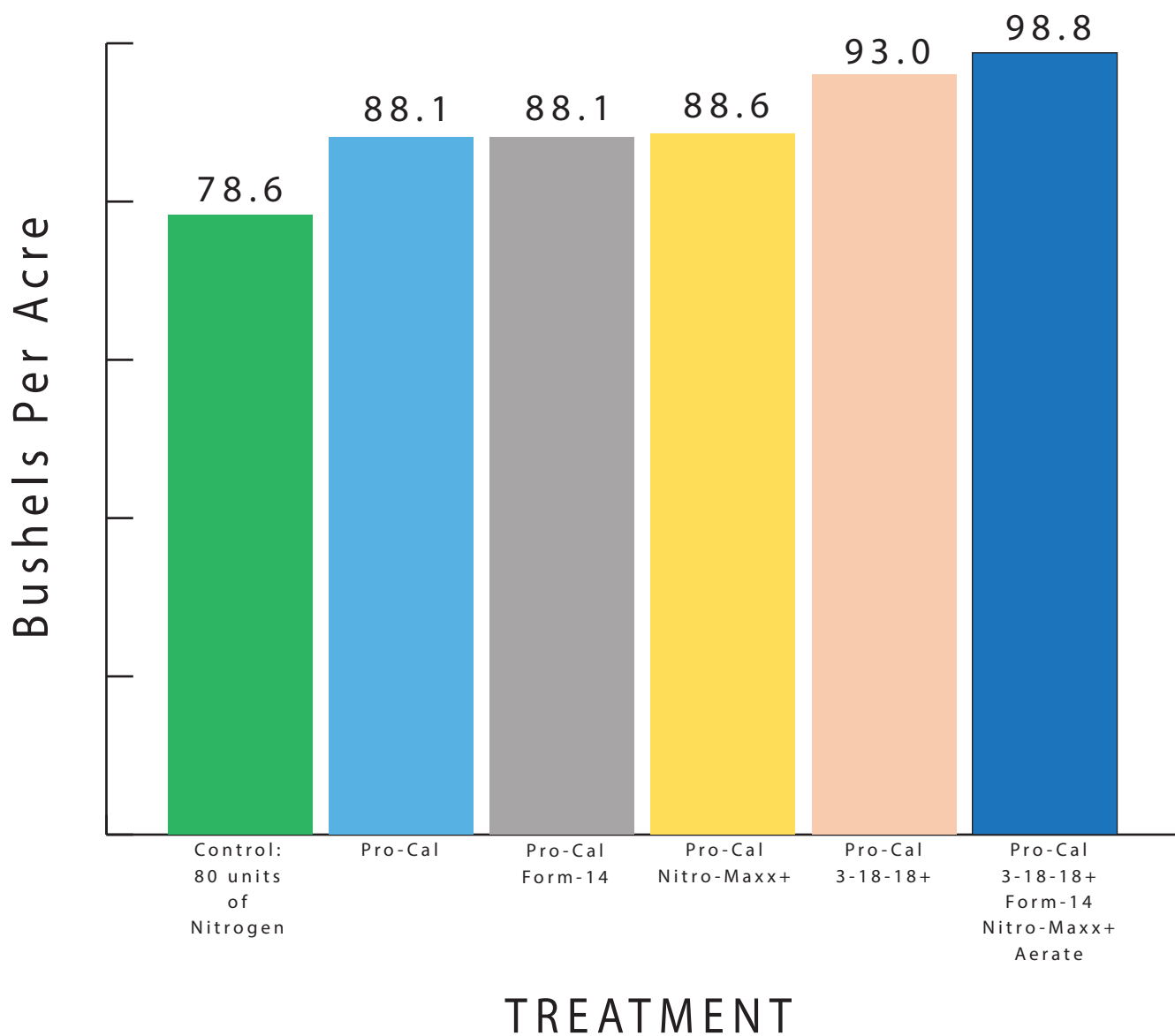
Applied: 5 gallons per acre Pro-Cal, 1/2 gallons Form-14, 3 gallons Nitro-Maxx+, 7 gallons of 3-18-18+, 14 ounces Aerate

pH: 6.4

Yield: 98 bushels avg.

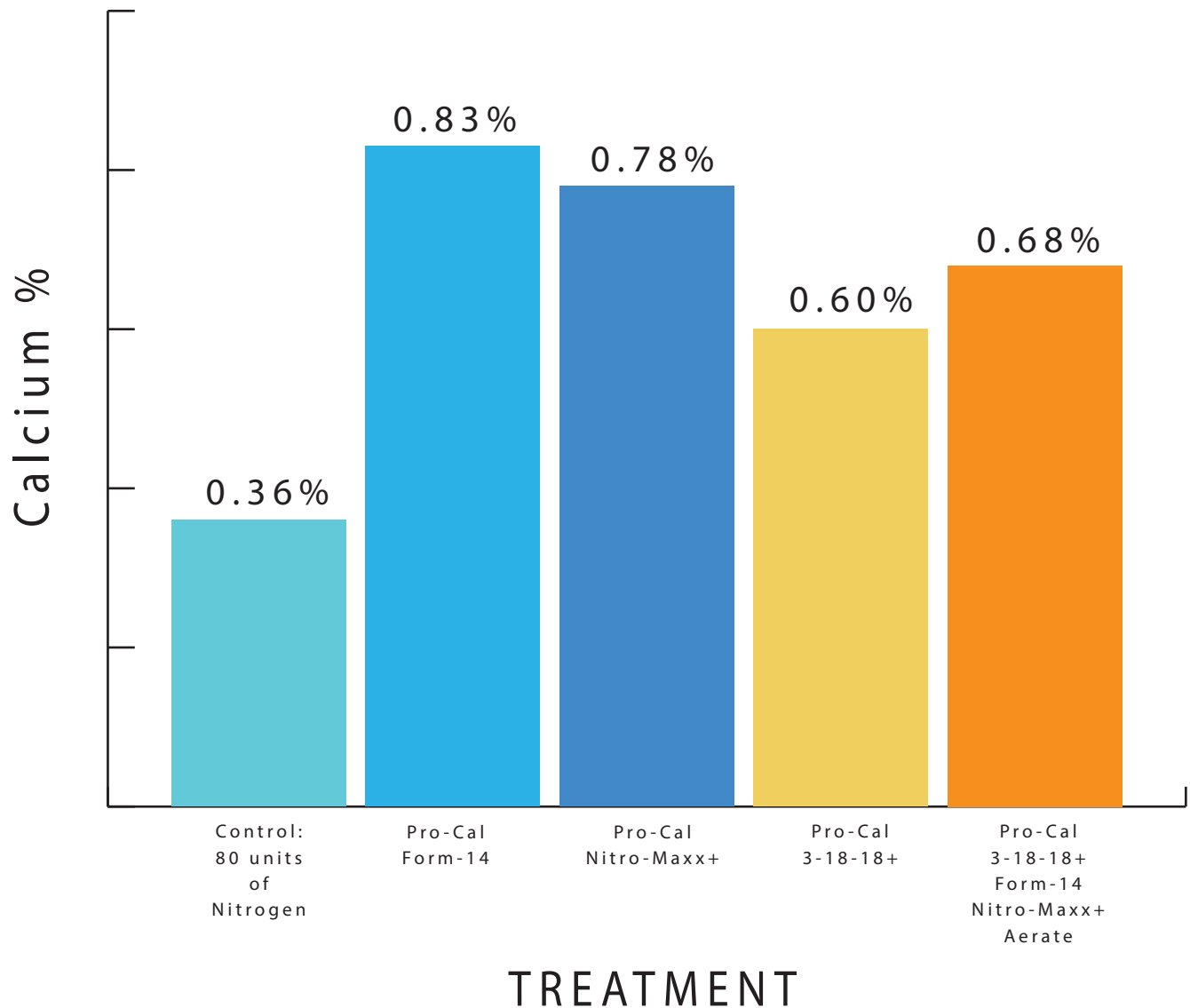


Average Wheat Production From Each Trial



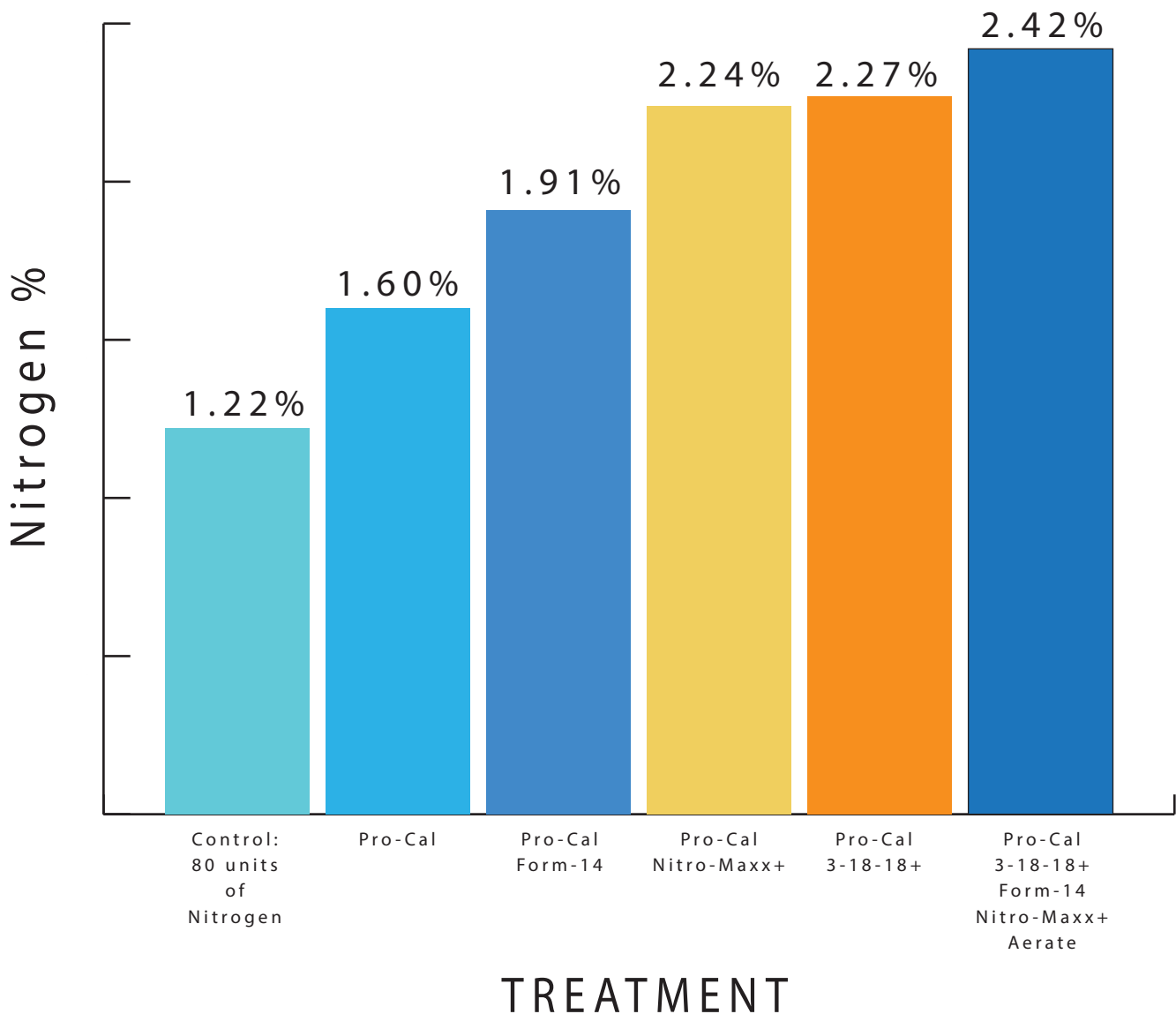


Calcium Intake % Change



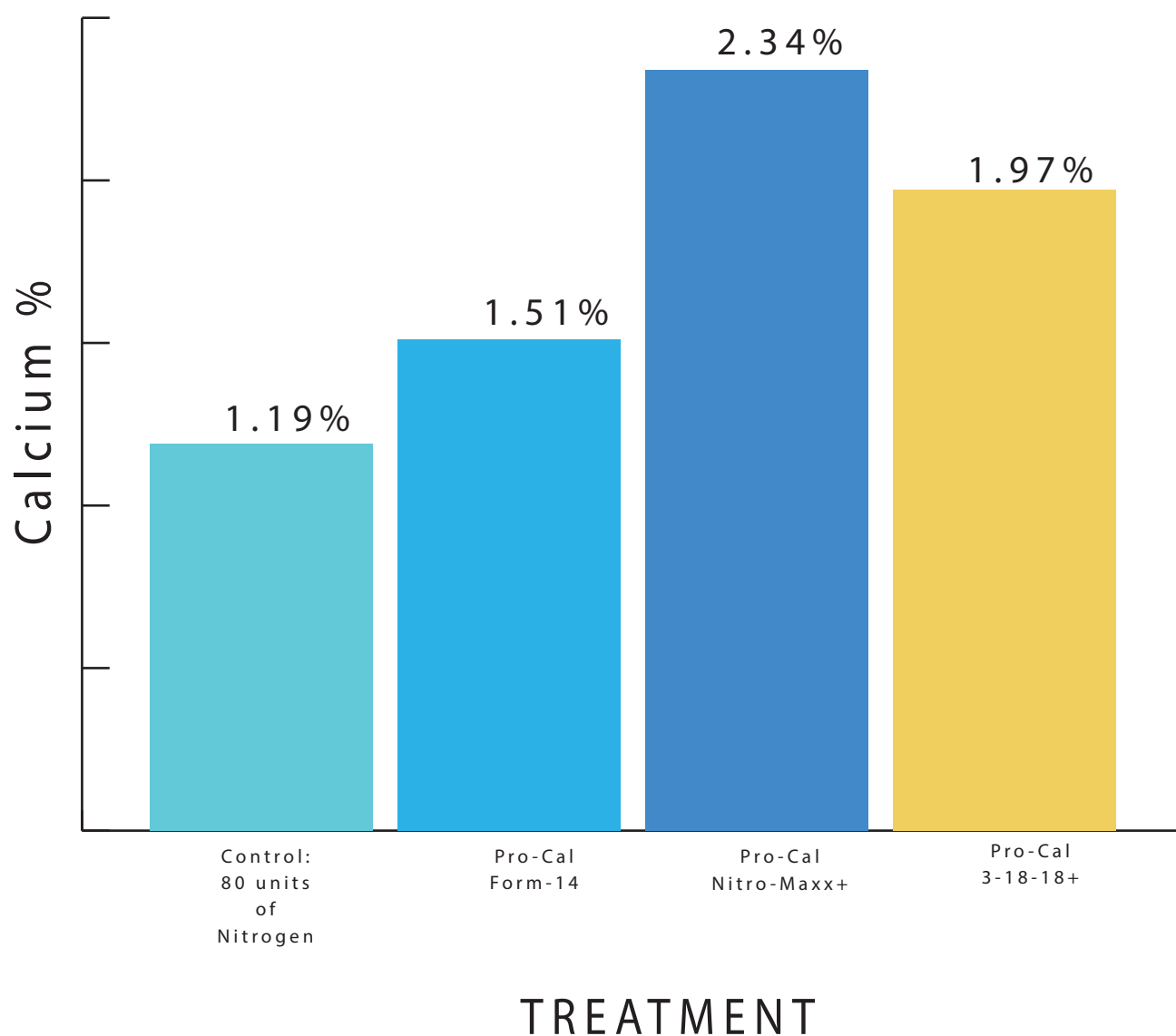


Nitrogen Intake % Change



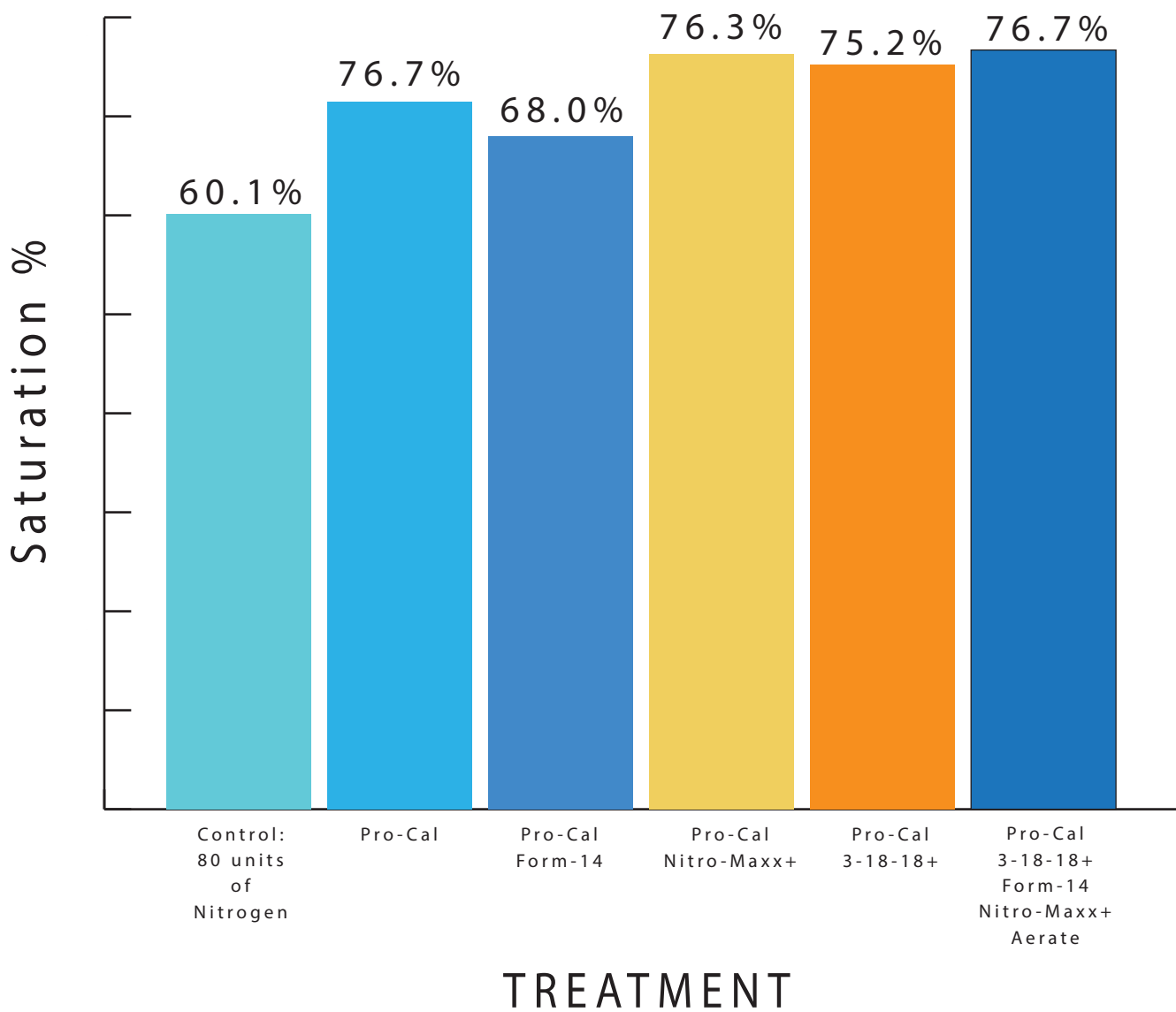


Potassium Intake % Change



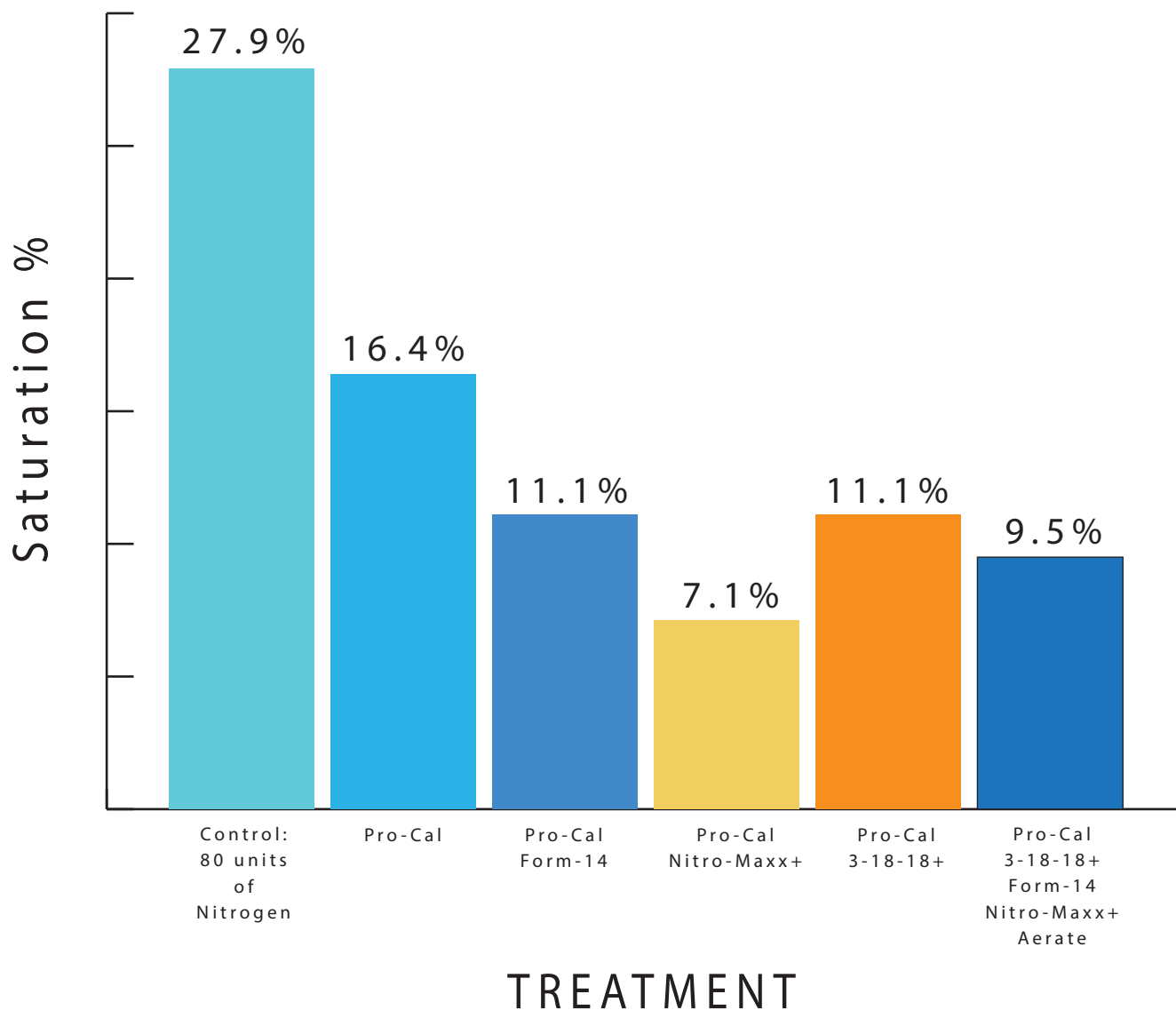


Calcium Saturation % Change



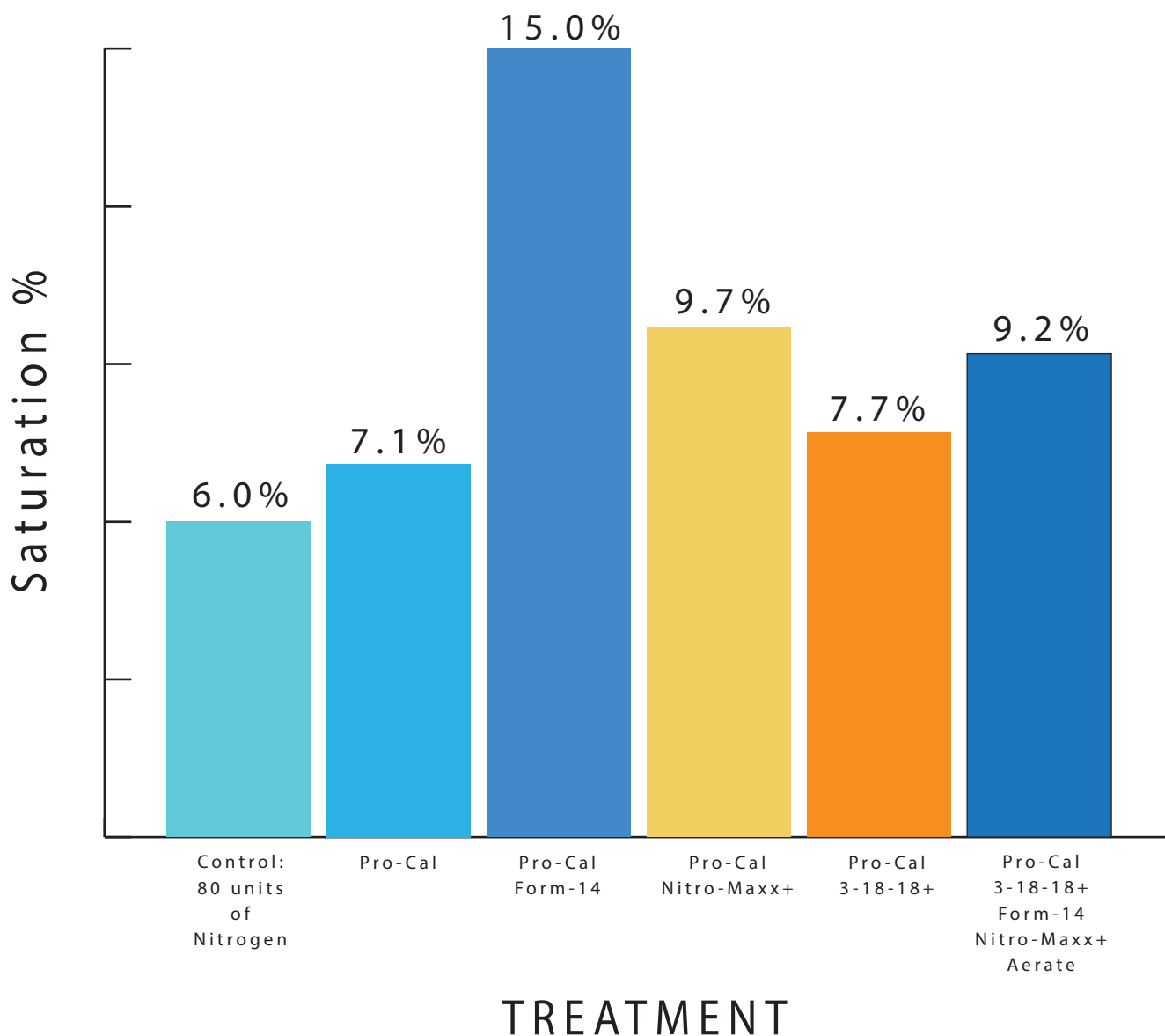


Hydrogen Saturation % Change



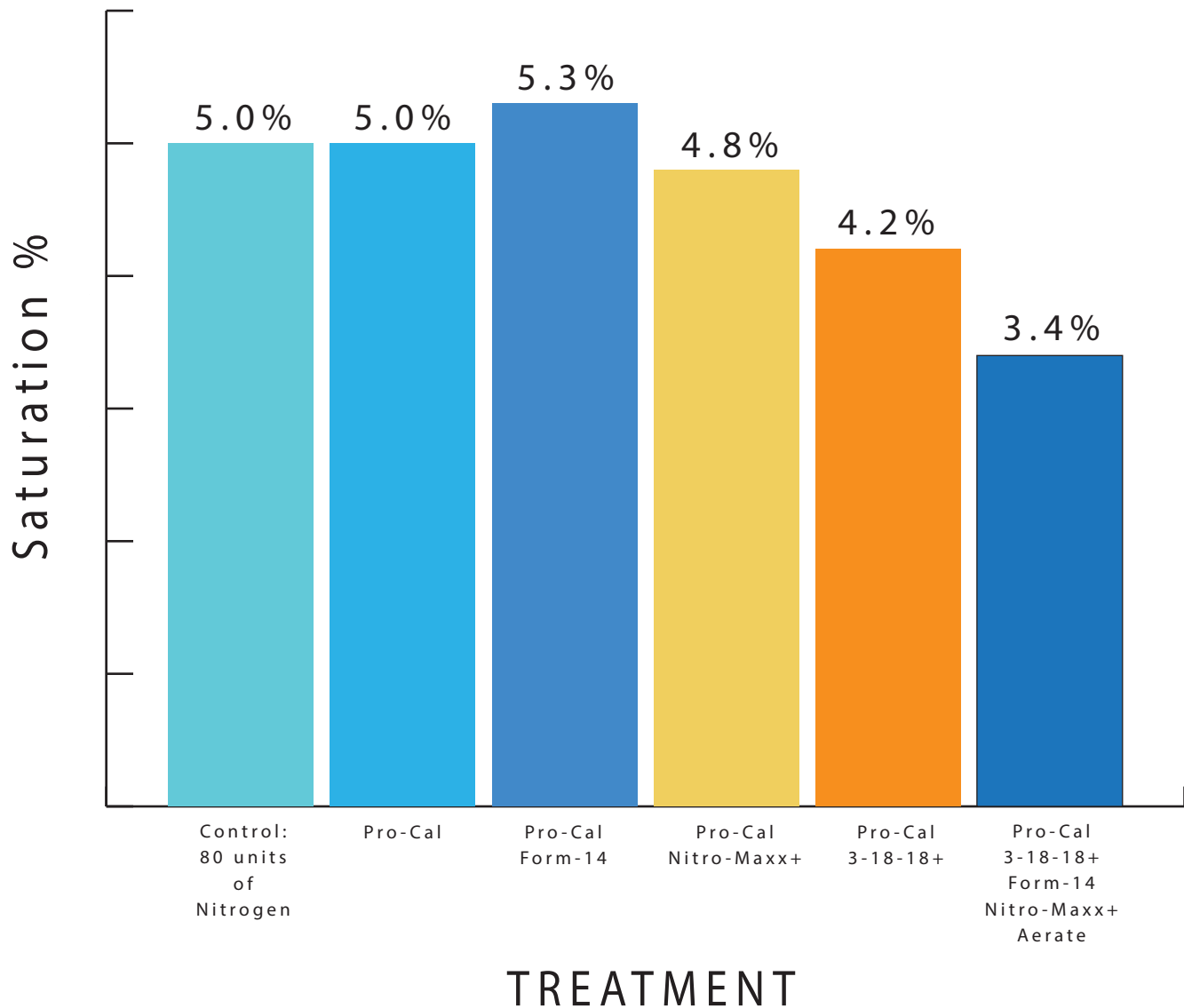


Magnesium Saturation % Change





Potassium Saturation % Change





Summary

The soil on these plots started with a higher concentration of nitrogen, which is why little was applied during application. Each plot had four sections that had individual yields. What you see above is the average between these four sections. Plot 5 had an average yield of 98 bushels, but the highest yield in that section was 104 bushels. According to the USDA, the national average for winter wheat in 2021 was 47.9 bushels per acre. With the right application of nutrients, AgriTec, with the full program, was able to double the yield of the national average.

On AgriTec's testing plots, magnesium, potassium, and calcium all increased in saturation when compared to the control. Additionally, hydrogen saturation decreased significantly on the AgriTec plot.

On the impact of soil pH, it's evident that AgriTec's interventions were transformative. Starting with a universal pH of 5.4 across all plots, the application of AgriTec's Pro-Cal consistently raised the soil pH. Plots treated with Pro-Cal experienced pH values ranging between 5.9 to 6.5. The control plot, in contrast, retained its original pH of 5.4. These findings underscore the efficacy of Pro-Cal in not just raising soil pH, but in contributing to increased yields as well.

Soybean Trials

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OBJECTIVE

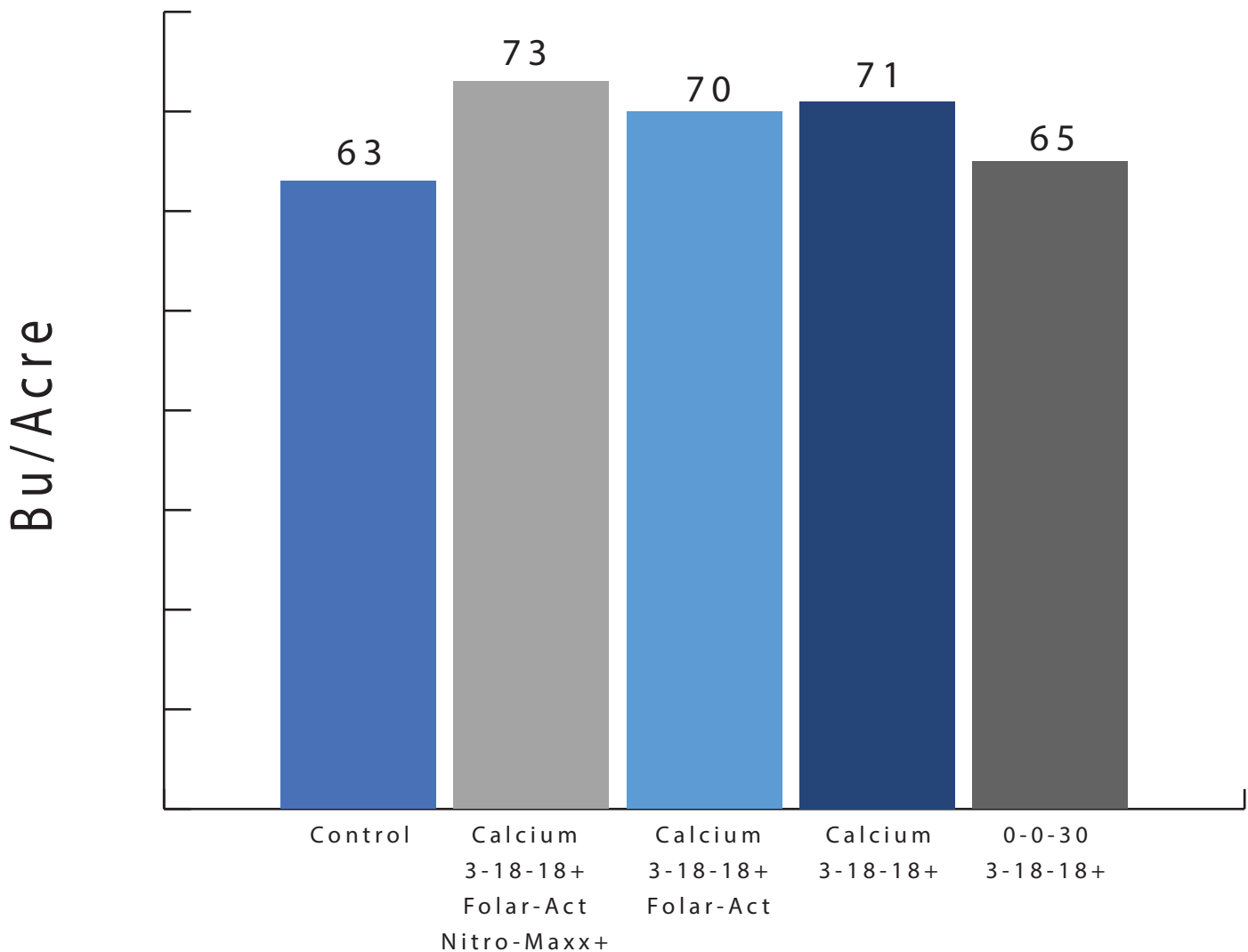
Evaluate the impact that AgriTec International's general soybean production recommendations have on soil profile characteristics.



OVERVIEW

Control plot received 30 units of P and 90 units of K. There were 4 testing plots that received variations of AgriTec fertilizer programs.

Soybean Production



TREATMENT



TUSKEGEE
UNIVERSITY

Tuskegee University Trials

Tuskegee University is a prestigious institution renowned for its contributions to agricultural research and education. Possessing cutting-edge laboratories and a dedicated faculty of seasoned academicians and researchers, the university specializes in a myriad of agricultural disciplines. Tuskegee University boasts notable accolades, significant historical contributions, and is recognized as a leader in promoting innovative agricultural practices. Their profound expertise, respected standing in the academic community, and unwavering dedication to agricultural advancements solidify them as a foremost ally for enterprises and entities seeking collaborative research endeavors.

OBJECTIVE



Evaluate the impact that AgriTec International's general hay production recommendations have on soil profile characteristics, hay nutrient profile, and biomass produced.

ENVIRONMENTAL CONDITIONS:

After the application, the experimental site was classified as experiencing abnormally dry conditions with extremely high temperatures.

Treatments

10-20-10+; 4 gallons per acre

10-20-10+ was applied at a rate of 4 gallons per acre. A decrease was observed in nitrogen/lbs. per acre. This decrease was not a significant change. In both 10-20-10+ treatments, nitrogen/lbs. per acre decreased. Calcium increased while the potassium concentration decreased. Soil pH remained similar across the 30 day experimental period (slight decrease). None of the changes observed with this treatment with respect to soil samples were significant. More details will be discussed in the hay nutrient profile and biomass production section.

Collection Time	N/ lbs. Per Acre	Calcium	Potassium	Soil pH
Initial	73	634	102	5.7
Day 30 Samples	38	574	94	5.6



Nitro-Maxx+; 4 gallons per acre

Thirty days after application, nitrogen/lbs per acre increased from 21.5 to 25.475. Soil pH remained at 5.8. Soil calcium concentration decreased from 784.5 to 747; potassium concentration tended to increase in all samples from 58.5 to 87.5.

Collection Time	N/ lbs. Per Acre	Calcium	Potassium	Soil pH
Initial	22	785	59	5.8
Day 30 Samples	26	747	88	5.8

Nitro-Maxx+; 6 gallons per acre

Thirty days post application, a significant increase in pounds of nitrogen was observed; 10 to 34.25 pounds per acre. CEC, calcium, and organic matter concentration values increased for all replications; however, these were not significant but should be noted. Potassium concentration tended to increase for all replications.

Collection Time	N/ lbs. Per Acre	Calcium	Potassium	Soil pH
Initial	10	753	51	5.9
Day 30 Samples	34	939	67	6.1



10-20-10+; 6 gallons per acre

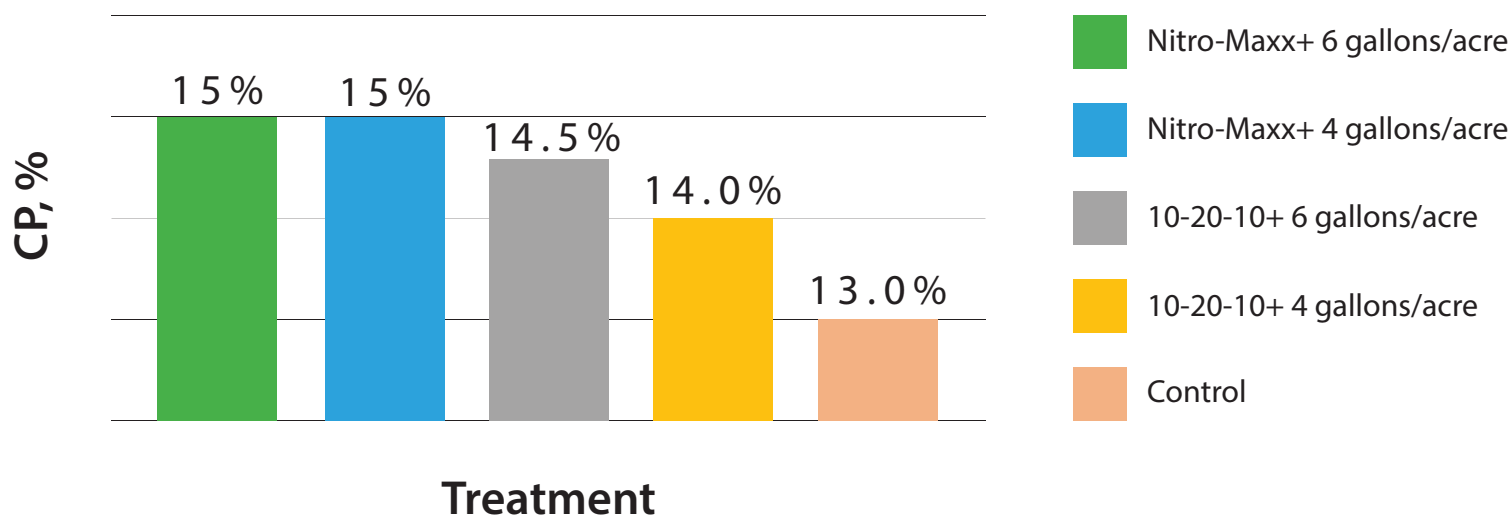
Thirty days post-application, CEC values increased significantly across the replications from 3.300 to 3.675. Nitrogen/lbs per acre tended to decrease across the replications from 56.25 lbs per acre to 16.75 per acre. Calcium concentration and soil pH tended to increase over the 30 day period. **This treatment contained the most statistically robust results.**

Collection Time	N/ lbs. Per Acre	Calcium	Potassium	Soil pH	C.E.C.
Initial	56	3	301	5.1	3.3
Day 30 Samples	17	7	411	5.5	3.7

Nutrient Profile

Crude Protein

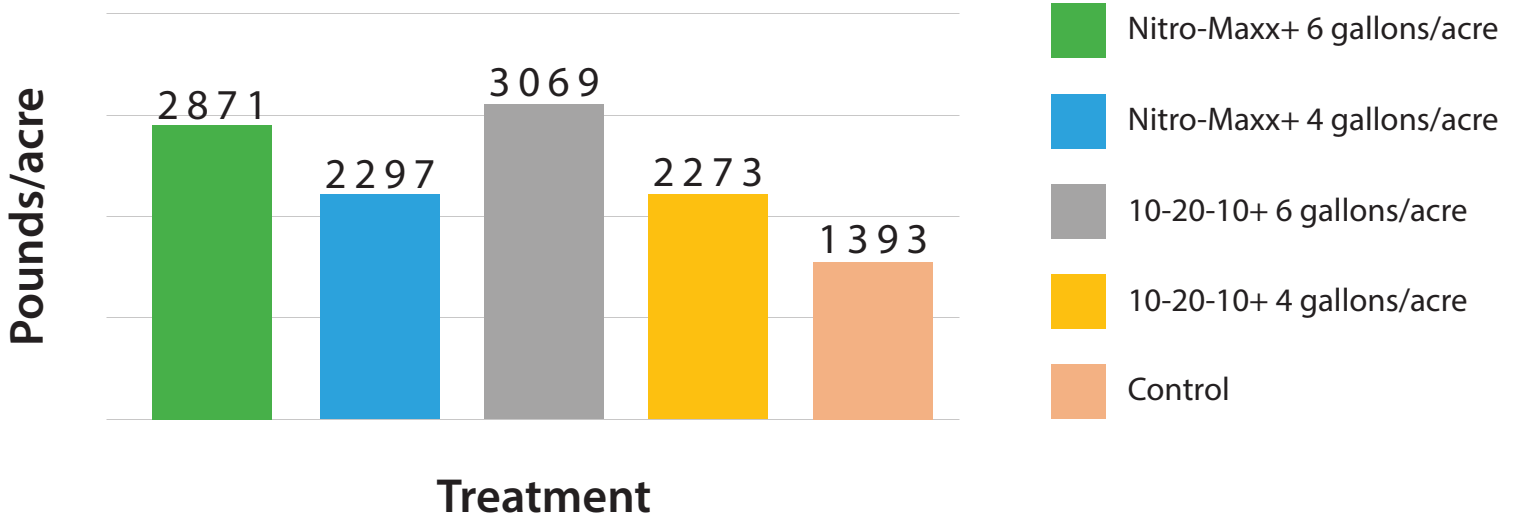
Crude Protein values of hay harvested from field treated with AgriTec International general recommendations



Biomass Produced



Bio Mass Produced from Field Treated with AgriTec
International General Recommendations



Advanced-Cal Trials



Plot 1: 4 gallons per acre

Starting pH: 5.2

Ending pH: 5.8

Plot 3: 4 gallons per acre

Starting pH: 6.6

Ending pH: 7.0

Plot 2: 3 gallons per acre

Starting pH: 4.7

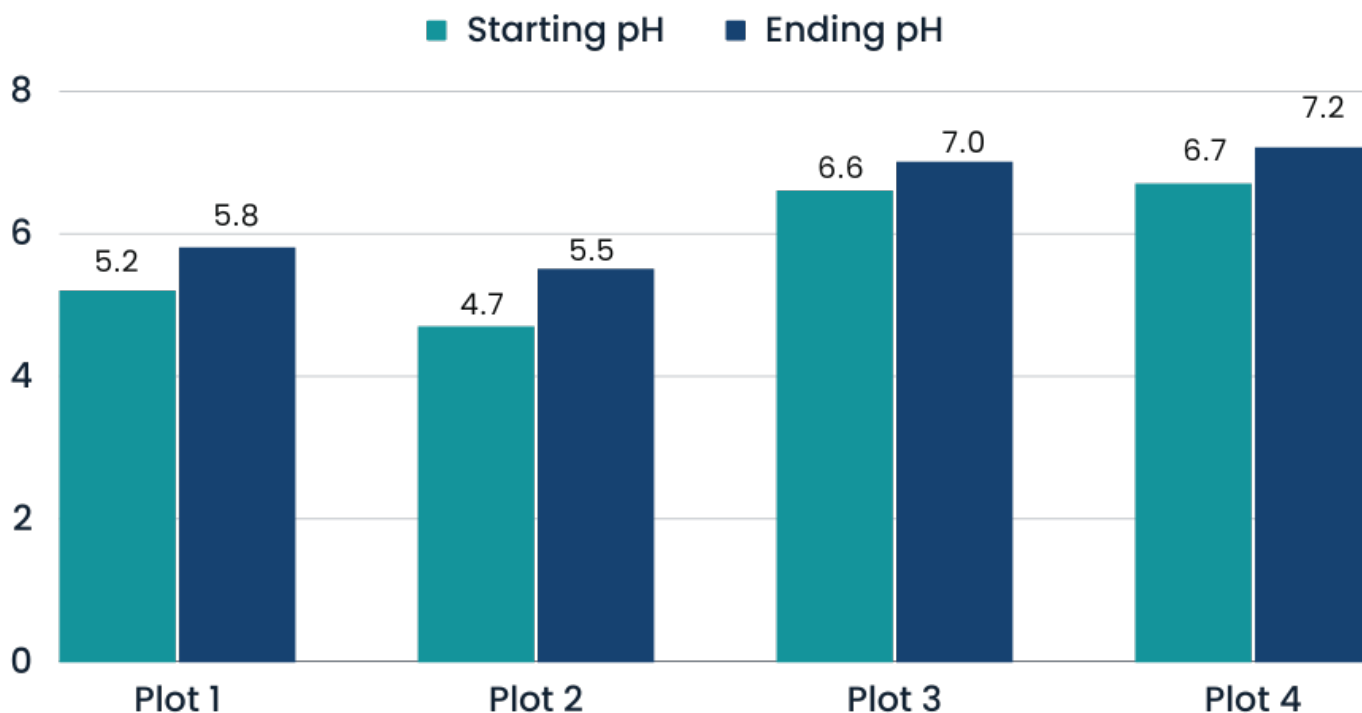
Ending pH: 5.5

Plot 4: 4 gallons per acre

Starting pH: 6.7

Ending pH: 7.2

Tuskegee Trials: Advanced-Cal Effects on pH



*Research performed by Tuskegee University 2023

Pro-Cal Trials



Plot 1: 3 gallons per acre

Starting pH: 5.5

Ending pH: 6.0

Plot 6: 3 gallons per acre

Starting pH: 6.1

Ending pH: 7.3

Plot 2: 3 gallons per acre

Starting pH: 5.8

Ending pH: 7.0

Plot 7: 3 gallons per acre

Starting pH: 5.2

Ending pH: 6.5

Plot 3: 3 gallons per acre

Starting pH: 4.8

Ending pH: 7.0

Plot 8: 5 gallons per acre

Starting pH: 5.5

Ending pH: 6.4

Plot 4: 3 gallons per acre

Starting pH: 4.9

Ending pH: 5.8

Plot 9: 4 gallons per acre

Starting pH: 6.3

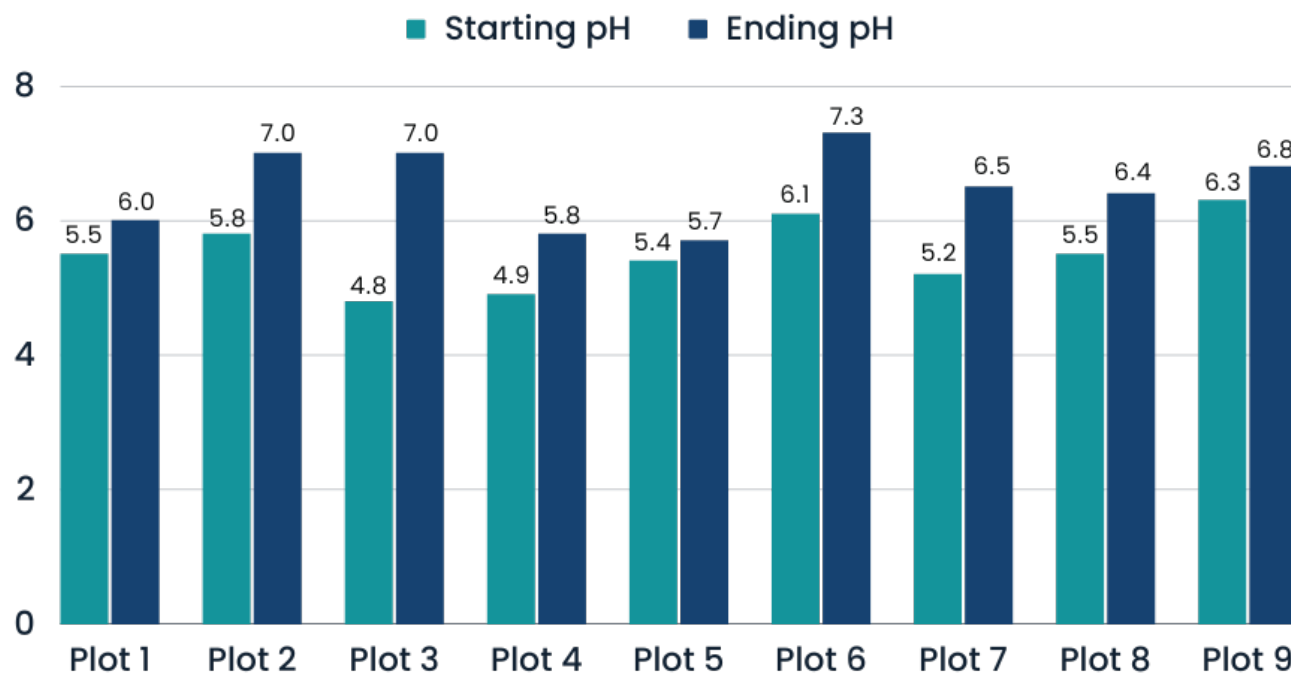
Ending pH: 6.8

Plot 5: 3 gallons per acre

Starting pH: 5.4

Ending pH: 5.7

Tuskegee Trials: Pro-Cal Cal Effects on pH



*Research performed by Tuskegee University 2023



**College of Agriculture, Environment
and Nutrition Sciences**
Department of Agricultural and Environmental
Sciences

September 6, 2022

Rob and Nate,

Thank you so much for taking the time to visit with us at Tuskegee and the producers serviced by our Cooperative Extension Program. We enjoyed learning about your company, vision, and the desire to provide affordable, research-proven products to small producers across the United States.

The preliminary research results from Tuskegee and our producers' farms indicate that your products are promising. For instance, your liquid calcium products have increased soil pH here at the University. While these results are anecdotal, they provide clear indications of the positive impacts your product can have. We want to work with you to research further your products and how small producers can utilize them to improve productivity while decreasing the cost of production.

We are grateful for your support of our growing and developing 4H youth livestock program. Moving forward, we would like to establish an MOU between Agritec International and Tuskegee University. This will allow us to conduct field trials together on peanuts, sweet potatoes, and forages. Providing the opportunity for us to both grow together. The opportunities will be endless!

Once again, we appreciate the time you have taken to work with us and to serve small producers across the Southeastern United States. If you have any questions as we begin this process, please do not hesitate to contact us.

Sincerely,

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Customer Testimonials



Hay Trials



TUSKEGEE
UNIVERSITY



Advanced-Cal pH Trials



TUSKEGEE
UNIVERSITY





"I put some of my leftover calcium on a corner of my dad's ground. He called me and said you can see exactly where you put that Pro-Cal. It's 2 feet taller right there than everywhere else."

Garrett K. | 2023

"We applied 4 gallons per acre of the Pro-Cal as a test on 14 acres of orchard grass in the beginning of spring and boy we got some great results. Weed pressures are way down and production is better than it has ever been on this rented farm that has been run down for years."

Mark Z. | 2023

"I applied 3 gallons of Pro-Cal on my alfalfa ground in test strips early spring and you can tell a night and day difference in the alfalfa. The ground I treated is thicker and much taller than the ground I didn't. Also applied some on my corn ground and even with the drought we are in the ground I treated looks way healthier than the ground I didn't."

Sam B. | 2023

"I purchased Pro-Cal from you last year. We had an extraordinary crop this spring. Got as much off of first cuttin gas we did all three last season."

Randy D. | 2023

Pro-Cal pH Trials



TUSKEGEE
UNIVERSITY





“So I attached my invoiced (0-0-30 & Pro-Cal) of what I applied after 3rd crop last year on my now 3rd year grassy alfalfa field. This all went on 28 acres. I planted this field at 40% alfalfa, 30% timothy grass, and 30% orchard grass. This year the grass gone nuts like I’ve never seen it before. It’s taller and much thicker than previous 2 years. I am hoping to cut next week hopefully and will be interested to see how many more bales I get.” TWO WEEK FOLLOW UP FROM CUSTOMER: “So I baled last Friday, got a new record for number of bales. I got 52 big squares 3x3x8’s off 28 acres. My previous record was 42 on second crop the 1st year. Normally I’m around 30-40 with 1st and 2nd crop so I’d have to say it worked as it was the tallest and thickest I’ve seen yet and this is the 3rd year of this stand.”

Kevin F. | 2023

“I used your Pro-Cal and Advanced-Cal in the fall of 2020. I hadn’t limed this ground in years and you could tell how much of a difference it made. It’s only the middle of march and my ground is already greened up and growing and my neighbors still haven’t.”

Clinton H. | 2023

“Last year the rain was terrible but despite the rain we made 1.8 bales per acre per cutting despite no rain. We applied 4 gallons of Pro-Cal per acre and 4 gallons of Nitro-Maxx+. Our hay was greener than anyone else in the area. The grass was super healthy and it looked amazing. The rain did hold us back a lot but we did better than anyone in the area. Another thing to note, you could

tell a huge difference in the weeds. Seemed to cut our weeds way down and we barely needed any 2-4D.”

Travis A. | 2023



“I used the Pro-Cal on my hay ground and it worked so well that I was having trouble getting the bales off. I want to run your fertilizer this year.”

Billy T. | 2023

“I got 2 drums of the Pro-Cal 3 years ago and that stuff worked great. I am ready to get some more coming.”

Bill C. | 2023

“When we first bought your Pro-Cal, we called it Foo Foo Juice cause we didn’t think it would do anything. But man, that stuff really works. You could see exactly where the sprayer stopped. It was a night and day difference.”

Moose M. | 2023

“I’ve had this place for over 20 years. I have wasted so much money on fertilizer over the years and my fields have never looked this good. I put Pro-Cal on 2 years ago and it cleaned up my weeds. I produce more hay than ever. I just can’t say enough about this product.”

Kenneth S. | 2022



"I used a tote of Pro-Cal last year. The sand burs in this field were so thick it wiped those out and made such a difference on our grass. I was shocked."

Daryl G. | 2022

"I wasn't sure if this would work so I tried out a drum last year on just part of my ground and that piece you could see a huge difference. It made almost twice as much hay on that ground and all I applied was the Pro-Cal."

Travis A. | 2022

"Our pH jumped over a point everywhere we put the Pro-Cal. All our customers loves the results they got from it as well."

Kyle F. | 2022

"I got Pro-Cal from you last fall and put it on my pasture and I got grass coming out of my ears. That works so well. I need to get some stuff for my hay field now."

Ernie D. | 2020

"I used Pro-Cal for the last two years. My hay is thicker and more per acre since I have started using it. It is hard to send pictures but this spring my brother and I put it on 200 acres and we averaged 7 to 8 bales (4x5 size of bales). We did not put it on 20 acres and it made 4.5 bales to an acre."

Gary B. | 2021



"I purchased 75 gallons of Pro-Cal and had great results with it. I had one field that was thick with the broomsedge that's now a thing of the past. I have been telling any and everyone how great my results were."

Bill B. | 2021

"I applied Pro-Cal last year to some hay ground and some corn ground. We did before and after soil tests and the pH balanced out and it made great hay. And now this year I can see exactly where I sprayed and where I didn't. I'm not gonna lie to you, I thought this stuff wouldn't work but I was wrong. It worked great! Crazy to think this did the same as 2 tons of lime with so much less."

Richard M. | 2021

"We used Pro-Cal last time. We had some results not as much on the yield aspect but on the quality of the grass. The quality was amazing and we saw our broomsedge go away. We will be using the Advanced-Cal this year to get that yield increase."

Jim P. | 2021

"We hadn't limed in years and we used the Pro-Cal and it doubled our hay field."

Clarence W. | 2021



"I put that Pro-Cal out last year. I have a place that has very low pH and I have tried everything and can't grow anything on it. I put the Pro-Cal on and planted wheat. I was able to run 84 head of cattle on that 91 acres all winter long. I was shocked. That ground has never been able to grow like that."

Kenneth B. | 2020

"I have never seen my pasture this thick. I have doubled my yield. I used the Pro-Cal and it worked great. Then we put Nitro-Maxx+ on it and I can almost watch the grass grow. It's growing so fast."

Robert H. | 2020

"I used the Pro-Cal last year and it worked great on my bermuda. I love that stuff. I want to try the Nitro-Maxx+ now."

Chad M. | 2020

"I sprayed on everything. Worked great just needed put some nitrogen out this year."

Paul M. | 2020

"I used the Pro-Cal in 2018. Since using the product we now get 4 cuttings per year and I have noticed the grass is greener."

Bob L. | 2019



"I bought a drum of Pro-Cal and a drum of Advanced-Cal to test out on separate fields and both products blew me away. My 2nd and 3rd cuttings after applying liquid calcium on both fields were the best they have been in years even with the poor growing conditions."

K. Robinette | 2021

"I put down 5 gallons of Advanced-Cal to the acre in the second week of June and cut 2nd week of July. Where I put the Advanced-Cal I produced 3 extra round bales to the acre."

Aaron R. | 2021

"The Advanced-Cal definitely increased my tonnage and knocked back my weeds. Compared to lime it's much easier to apply so you guys made a believer out of me."

David F. | 2021

"I bought the Advanced-Cal for my food plots but once I saw the results in just a few weeks on those, I applied it to my pastures too and after seeing how it took out the weeds in my pastures, I'll apply to the rest of my fields come spring."

Tyson H. | 2021



“The liquid calcium worked better than I thought it ever would. I applied 3 gallons to my pasture land and I took before and after pictures at 6 weeks to make sure and you could tell the difference right away.”

Darla G. | 2021

“The Advanced-Cal liquid calcium got me my best food plots yet. I applied last year and the deer are still tearing up those same plots. You’ll be blown away by the before and after pictures. Thanks a ton.”

Allen T. | 2021

“Worked really well. We had calcium deficiency in apples caused by drought. Making my fruits epidermose breakdown. The calcium fixed it completely. It almost looked like stink bug damage. The Advanced-Cal is making my orchards look amazing!”

Seth W. | 2021

“I can tell you it worked. The OMRI calcium we used last year got rid of broom sedge in most of our fields. They are looking really nice. We are going to try some Advanced-Cal that has the Bio-Act.”

2021



“I run a lawn company and I tested some of your Advanced-Cal last year with one of my trucks. It worked great. The yards perked up nicely. My applicator absolutely loved how easy it was to handle in comparison to lime. This year we are going to switch our whole system to using Advanced-Cal and Humic Acid. It works great with our program.”

Jon O. | 2021

“First cutting on our alfalfa last year yielded about 2.75 tons. This year after using Advanced-Cal and 3-18-18+ we got 3.5 tons on the first cutting and the second cutting is looking really good. We are going to use your products on all our different fields.”

Ethan W. | 2021

“When we started our pH was at 5.8 . We applied 3 gallons of liquid calcium. Our current samples are at 6.8. This stuff worked like a champ.”

2021

“Everything I used from the Advanced-Cal and Nitro-Maxx+ worked well. Cows liked it and growth was great.”

2021



"It is looking good. We still have a few weeds but not that much. The grass is knee high and looking good. We are getting ready to cut again."

2021

"I used Advanced-Cal and 3-18-18+ on my pastures last year and this year and this is the greenest I've ever seen my fields look. The year before my yield dropped from 300 bails to 98 due to the dry summer and your products got it back up in the 300's. I even have a board horse that will never eat first cutting but he loves the first cutting this year. One happy camper!!"

Susan O. | 2021

"I used your Advanced-Cal on one of my pastures last year and got rid of all my thistle like you said it would so I'm using it again this year to see if it will do the same for my burrs."

Jan B. | 2021

"On a side note, I sprayed my small plots two weeks ago and the results are amazing!! I have plants that were golden and yellow because the soil was deficient. I got my soil sample results back and that spot was a 4.8 pH. So horrible soil. Two weeks after spraying the plants have turned green again and have started putting on inches of growth. We have not had more than a 1/4 inch of rain in a month so it is the worth growing condition and yet Advanced-Cal has saved my plot! I am making a video on that here soon. So I



am a believer... this stuff works! Even if a guy threw down lime... there is now way you could expect results in 2 weeks like that. Game changer! Oh and the clover grew about 6-12 inches taller in two weeks!"

Nathan V. | 2021

"I applied 2 gallons of Advanced-Cal and 6 gallons of 3-18-18+ on my alfalfa and got 10 bales off of each acre on a field I normally get 5-6 bales off of."

Mark Z. | 2021

"I do custom food plots for people all around MN and I used your product for the first time in 2019 and those plots still out performing my other plots I dind't apply your calcium to two years later."

Troy C. | 2021

"I usually get 35 round bales after applying Advanced-Cal this year I got 64 round bales. This stuff really works."

Sam S. | 2021

"So 2 weeks ago I sprayed Advanced-Cal on those plants that were yellowing in my plot. Now the plot has turned green and things are growing great!!!"

Nathan S. | 2021



"I bought the Advanced-Cal and used it on my clover and soybean plots and got the best growth I've ever had on those 4 acres. So I'm buying enough to do all 10 acres this year and expecting phenomenal growth again."

Mike F. | 2021

"My food plots looked like should be in a magazine. I used this Advanced-Cal on a brassica field a turnip plot and it's the best plot I've ever had the deer are still kale from last season."

Craig K. | 2021

"I put the Advanced-Cal on beets and turnips this year and I was blown away. They were twice the size as they normally are and the food plot had little to no weeds in it!"

Eric M. | 2021

"When we started our pH was at 5.8. We applied 3 gallons of liquid calcium. Our current samples are at 6.8. This stuff worked like a champ."

2021

"I used the Advanced-Cal on 7 acres that he usually gets 200 bales off that 7 acres."

Benny S. | 2021



“Had signs of acidic soil last year. Put Advanced-Cal on at 4 gallons to the acre. Got our samples back. pH at 6.5. Ca saturation at 76.1%. Getting 10-20-10+ this year.”

2021

“I’m really happy with it. We usually do 4 ton of chicken litter every year. We decided to just spray the Advanced-Cal on this year. Our weeds were reduced significantly and we had great growth. We were tickled to death over the results.”

2021

“I cleared cider trees in the area. I applied 3.5 gallons of the calcium too. It was at a 4.6 pH before I applied and after we applied a hay crop looked phenomenal and pH shot up to 5.9.”

Tanner W. | 2020

“I used Advanced-Cal on my corn ground and even with little rain we got this year my fields look great.”

Keith J. | 2020

“We applied some of your bio-liquid calcium in march. We just got some after samples and our pH is looking great. We need to get some fertilizer from you now.”

David | 2020



“Normally we get 30 to 40 5x5 round bales on our property. We switched to 4x5 this year which usually gets 40-50 bales. This year we used Pro-Cal and we pulled off 65 4x5 round bales. I am a believer in this product and will be getting more.”

Henry | 2020

“This field had a bad goat head weed problem. We put Advanced-Cal on this field and it is looking good. All the goat head has died.”

Adam | 2020

“Our yields increased 40% in our perennial peanut fields from the previous year after using Pro-Cal and 3-18-18+. It was the best year we have ever had. I need more fertilizer and am going to be using your products on my hay ground.”

Phil M. | 2020

“I have been showing several farmers my fields that I put the Advanced-Cal on. They are impressed as I am so you should be getting some more calls. Jim B., the guy that ordered the Advanced-Cal after me said he was going to order a tote of the Nitro-Maxx+ too. I will be ordering again next year. Also please email me the invoice for the Nitro-Maxx+. Thanks again very impressed with the Advanced-Cal and hopefully will be the same with the Nitro-Maxx+.”

Bill | 2021



"I can't complain, it did really well. Let me get a tote of it this time."

Tim | 2020

"This worked way better than liming would have done. I went from a 4.0 pH to a 6.0 pH in a year's time after using the Advanced-Cal. I'm getting the Nitro-Maxx+ to try out this year."

Derek | 2020

"This Advanced-Cal worked amazing last year. I have no weeds left! My hay production and quality greatly improved. Go ahead and send me two more. This stuff is great!!"

Gary | 2020

"It went well we applied in 2018. We didn't get the moisture we needed last year but this year we are switching our grass up. Definitely going to need some more product. As far as the AgriTec's calcium it worked great!

2020

"Wish I had before soil samples of my pasture as it had not been limed in 20 years. After base application last spring, I was showing .25-.5 tons needed. I added chicken litter and granular to jump my properties up and my bahia out ran my cattle. I mowed my pastures 2 times with cows in them. 30 cows/calves on 26 acres and no over grazing. Going rotational this next year and cutting my own hay . Need to order another drum from you for spring."

Preston | 2019

“Applied 3.5 gallons of Advanced-Cal. Best hay crop I’ve gotten in 15 years of working this land.”

Gary B. | 2020



“My family farm land hasn’t been worked since 1919 and was in horrible condition. I applied 3 gallons per acre of Advanced-Cal and some organic matter and it looks like a fresh field again. I was able to sell the land at top price per acre.”

Doug W. | 2020

“One month after application of Advanced-Cal and the deer are only going to the spot where I applied. Very happy with this product!”

David F. | 2020

“The two pastures I treid it on far out grew my other two. I’m very happy with the Advanced-Cal and would like another 55 gallon drum.”

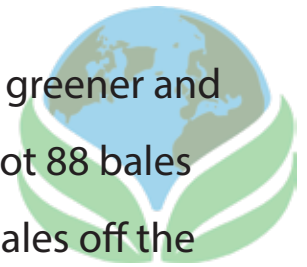
Richard T. | 2020

“We need more of the liquid calcium. It works like magic. 3 inches of growth in 3 days on coastal. We also want to get some of the Nitrogen fertilizer as well.”

2019

“We will definitely be getting more calcium we had a great year after using it.”

2019



"I used Advanced-Cal on my fields and it worked wonders. It was greener and taller and just flat out grew better. The year before I applied it, I got 88 bales off of my property. I applied in the fall the next spring I got 110 bales off the same fields. The 2nd year I got 138 bales. The 3rd year I got 132 bales. I was going to reapply last fall just got too busy then never got around to it this spring. So this is the 4th year and production went down to 70 bales. I should have applied this past fall like recommended but I am definitely putting it out now."

2019

"I bought Pro-Cal last year and 3-18-18+ a month ago. You can really see a difference in my fields. Especially my west field. Last year weeds were taking over now the grass is taking over the weeds without use of herbicides. Something in your products are really helping. I'm going to try some Advanced-Cal this year to push the growth even more."

Eric | 2019

"I bought Advanced-Cal in mid-March it is now June. I can already see a real difference on my pastures. I'm getting another drum to boost it even more this season."

Jalinda | 2019

"From last year to this year I saw massive improvements on my fields. I just got done cutting where I put your Advanced-Cal and it was much better than last year."

David | 2019

"This field was horrible and hasn't been taken care of in years. After using your calcium and fertilizer, it is starting to show real improvement. Applying more of your calcium and fertilizer to bring it back to where it should be."



2019

"We sprayed a small test strip right where we redid our ditch line. We noticed our weeds reduced and the moss disappeared. We are spraying on the rest of our property."

Sarah | 2019

"Oh man this stuff works great. I applied Advanced-Cal last year to part of my hay fields and they look amazing. Some of the fields have never had anything and they look fabulous now. I'm ordering more this year for the rest of my fields."

2019

"Last year I put your Pro-Cal out on 2 acres of my hemp fields. We had a great growing season and a lot of it had to do with your product. We are buying a tote this year to do the rest of our property."

2019

"Last year the weather was terrible. We had a hard winter and record-breaking rains. Overall considering the weather the product did very well. Our pH went from a 5.1 to a 5.7 this year and that was with us only applying just over 2 gallons to the acre. Looking forward to seeing what 3



gallons to the acre will do this year along with the orthophosphate 9-19-9 fertilizer.”

Cliff | 2019

“The piece of property I put your 55 gal Advanced-Cal on had not been touched in 10 years. You could clearly see the difference where your product was applied and nothing was done. The broomsedge was gone and the grasses grew like crazy. I am going to be getting 2 totes this year to cover the rest of my property.”

Jeff | 2019

“Our fields were doomed. We had a drought from February to the beginning of August. So we didn’t want to put the stuff out. Come end of August, we started getting some rain. We put out the Advanced-Cal and the F-14. Our fields turned around dramatically. It greened up grew thick and tall. Was actually able to get a good cutting off of it. My neighbor also used it on his Tifton grass and it was thick up to his knees in no time.”

Ronnie C. | 2019

“This stuff worked like a champ! We put it on all fields but two and the ones without your product were yellowish and didn’t want to grow. People saw the fields with your stuff on them and said it was like the fields you would see in a TV commercial.”

Kelly M. | 2019



"I can't say enough about how great the liquid calcium has worked. As an organic farmer, it is so hard to get rid of weeds. I was shocked how little weeds I had after using your product."

Mike W. | 2019

"After applying Advanced-Cal to my food plots, I noted my crops especially clover shot up 3 weeks after I applied. The coverage is much better and the deer seem to be loving it."

John S. | 2019

"I applied Advanced-Cal at a rate of 2.5 gallons per acre. We got an extra bale per acre on my 130 acres of hay."

John M. | 2019

"You told me this stuff was going to wonders for my field. SO I put some of this crap on half my field and dammit it worked even better than you said. It is a night and day difference between the half I sprayed and the half I didn't. I need to order for the rest now."

Robert H. | 2020

"Raised my soil pH right to where it needed to be. The product worked great just like you said."

Jason U. | 2020



"I applied Advanced-Cal to my hay ground. One field that normally produces 45 bales went up to 73 bales and my other field that normally produces 60 bales produced 80."

Sam K. | 2019

"We applied the Advanced-Cal two years ago and I have never seen anything like it. It came up quicker than anything I have seen before and the hay was so thick it was curled over because it was too heavy to stay up straight. I went over my field with the calcium right after our application of 200lbs to the acre of nitrogen. This year the effects of the calcium started to wear off because I have a more sandy soil and I put 200lbs to the acre of nitrogen and the difference between when I applied the calcium and now is night and day."

Brett H. | 2020

"We applied 3 gallons of Advanced-Cal per acre to 200 acres of beans in may of 2019. The fields looked great all year but as soon as we started running the combine we were blown away. We averaged 96-89 bushels per acre where the most we have ever gotten in previous years was 45-50 bushels per acre. And on the upland beans we averaged 58.6 bushels per acre where we normally average 47. I need to order more and my friends want to order too."

Robby O. | 2020

"Was mowing hay today. Must say I'm pretty happy with the fields I treated with the liquid calcium. Definitely be using it in the future."

Terry K. | 2020



“Everything looks great on the post application soil test. The fields are growing so much better than before I used. My weeds are way down and the grass growth is way up. You will definitely be hearing from me in the future next time I need something.”

Robby F. | 2020

“I bought the Advanced-Cal a couple years ago and really liked how well it performed vs the dry pelletized. It worked great!”

Brian H. | 2020

“It really helped out with the weeds and our field looked great. This is a great product.”

David C. | 2020

“I got 15 acres of coastal bermuda. I used the Advanced-Cal a year ago. The growth was amazing the hay grew great and the cows couldn’t eat the pasture fast enough.”

John W. | 2020

“I applied 3 gallons of Advanced-Cal per acre to two of my fields and treated the other one the same way I always have. I got 2 3/4 round bales per acre off the field I did not treat and 6 round bales per acre off the 2 fields I did treat.”

Walt C. | 2020



“The Advanced-Cal worked great on my food plots last year. Calling to get another 5 gallons for 2 new food plots this year.”

Robert K. | 2020

“Worked great on my hay but also on my food plots visually less weeds and good growth.”

Jesse E. | 2020

“I used your Advanced-Cal last year about a month after I applied my fertilizer and I got the best tonnage out of that field I’ve had in a long time. I’ve been telling all my neighbors to give you guys a call.”

Joe P. | 2020

“We applied the product to 25 acres and it was visually better than our other fields within 3 weeks and it actually brought back an alfalfa stand he planted 3 seasons ago I was very pleased with the Advanced-Cal.”

Amy H. | 2020

“I used your Advanced-Cal on one pasture last year could tell the difference within a few weeks and I think it’s the only reason it held on the way it did I would like to treat the rest of my land this year.”

David F. | 2020



"I applied 3 gallons of Advanced-Cal per acre to two of my fields and treated the other one the same way I always have. I got 2 3/4 round bales per acre off of the field I did not treat and 6 round bales per acre off the 2 fields I did treat."

Walt C. | 2020

"Worked great last year that's why I am ordering another drum of Advanced-Cal."

Kenneth B. | 2021

"I've used your Advanced-Cal on two different hay fields and my boys are going to be mad at me because I'm raking in more hay than I can handle this year!"

Robert B. | 2020

"I've applied a 55 gallon drum to 20 acres as a test and let's just say I'm definitely going to treat everything this year's best hay crop in 5 years of working this land!"

Leo B. | 2020

"It worked great on my pastures the cows won't leave the 30 acres I sprayed with it alone and my hay production is better than ever!"

Kelsey C. | 2020



“That tote of Advanced-Cal did so well on my grazing I saved some for my hay lands and would like another tote to finish it off!”

David H. | 2020

“My corn and my food plots looked better than ever after 1 treatment of 3 gallons to acre of Advanced-Cal within 3 weeks.”

Steve C. | 2020

“I bought 5 totes and everything that I used the Advanced-Cal on looks great.”

Robert M. | 2020

“I got a follow up soil test done and it showed everything was in great shape. I can see exactly where I ran out of product on the field. Not only did it raise my pH but all my broomsedge has disappeared.”

Chris N. | 2020

“Starting soil pH was 8.5. We used Advanced-Cal to bring the pH down that was being caused by too high of magnesium levels. I applied Advanced-Cal and what it has done to my bermuda is unbelievable. I will be getting applying to the rest of my fields in the fall.”

Larry L. | 2020



"I put y'all's stuff out in march and I'll tell ya by June I could see a huge difference in color and could see the weeds start dying at the root. It was amazing by the second cutting they were almost completely gone."

George S. | 2020

"We put it on cover crops early thanks to dry weather. By the time we got done planting, you could tell to the inch where we had sprayed. We only sprayed places we thought needed it and wow I was stunned. Wish we would have sprayed everything. This year I am spraying everything that doesn't have a pH right at 7."

Dave T. | 2021

"I used it on my hay ground and it did great. Killed the johnson grass and I made a lot more hay. Four of my neighbors want to use it now."

Tommy R. | 2021

"We used the AgriTec products again this year and we produced so many hay bales you could pretty much walk hay bale to hay bale without touching the ground."

Tommy R. | 2022

"I applied this to my ground in Michigan. I applied in the spring and tested the ground come fall and my pH had gone up a whole point! I was amazed."

Mike H. | 2021



"My application of Pro-Cal was awesome. I applied after my first cutting. Off one field I got 15 round bales on my first cutting and got 400 square bales (36 round bales) on my second cutting. The color was even difference between the two cuttings. The second was beautiful. I'd have to say I couldn't have expected a better result."

Barry G. | 2020

"I applied your calcium 5 weeks ago and have been seeing great results. I pulled an initial soil sample 9 days after application and there was already a raise in pH. I just pulled a new sample and I'm waiting for those results to come back in."

Gerald D. | 2020

"I first ordered in 2017. I have always had a problem with sage grass in KY. I saw a definite decrease in my sage grass. I saw it chock out most of it. I saw a great increase in production. I don't remember exactly how much but it was definitely higher than ten bales increase. But I know it was one of the best seasons I had. Wish I would have applied all the product I ordered from you. I would have seen even better results."

Charles A. | 2020



"I got little growth from what I had planted so I tilled up ground and we sprayed on Advanced-Cal. I got unbelievable growth. Never seen anything like it. Also just like you said the weeds are gone."

Ed L. | 2019

"I applied this to my hay field and I was highly impressed. My first cutting I got 10 more rolls than normal. On my second cutting it doubled my yield. I couldn't be happier with the product."

Terry | 2020

"I used it on several fields and saw amazing results. It took care of my weeds and I have not applied any herbicides since I started using your product. I love it and use it for everything now. I run pasture for cows, food plots for deer, and I also applied it on my yard."

John S. | 2020

"My pH was 5 I needed to plant alfalfa. I applied 3 gallons Advanced-Cal now my soil pH is 7. The field looks great. I am ordering a tote now to do all my fields."

Don W. | 2019

"I applied your product last year. You can tell the difference between where I applied and where I didn't. All of my friends have been asking what I used so I told them I used your product."

Justin | 2019



“Jonathan, those two totes of liquid calcium I bought from you did wonders on my pastures. I haven’t ever seen anything like it. My neighbors keep asking me what in the world did I do to my pastures and fields. It completely killed all my weeds. This is the best hay I have ever had. My friends and neighbors will be calling you. I am telling everyone.”

Charles S. | 2017

“We were very pleased with the product. We saw more grass come in. It was darker and greener than ever before. It outperformed all the limestone applications we had done in the past.”

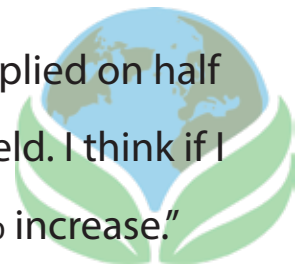
Scott R. | 2020

“I applied Pro-Cal and it worked great. I saw my broomsedge starting to go away. I normally get 75 to 100 round bales off of my 25 acres but my first cutting after applying the Advanced-Cal I got 120 bales. I think I could have gotten even more if there wouldn’t have been as much rain.”

Clifford K. | 2019

“We disked the soil then sprayed round up first. I sprayed your Calcium on the bare ground. After 2 years its still has high PH with low weed germination. I was very skeptical at first but now I don’t know how more people are not using this product. I love it and am going to keep using it.”

Fred | 2019



“This was my second application of the liquid calcium. I only applied on half my field my normal yield is 80 bails, but I got 120 off that one field. I think if I would have covered the whole thing, I would have seen a 200% increase.”

Charles S. | 2020

“Everyone around me told me I could not grow crab grass in west Tennessee. But with the help of your Advanced Cal I was able to do that. I applied 23 days before my first cutting and the results were phenomenal. Our bailer puts out a 6 by 6 bail and we got about 3-4 more rows more off of our 12 acre block.”

Mike K. | 2020

“We were using it on hay and pasture one thing we found is the grass comes back quicker after the winter and stays later in the fall. We cut earlier than everyone else around us because it comes up so much faster than theirs. We saw at least a 15-20% increase in yield.”

Jeff C. | 2020

“I was very impressed with it. I had a friend use it too and he was impressed with it. It became a dark rich green color. I must have got a third more on my yield off it.”

Dale C. | 2021

“I put it on 6 weeks ago and all my broom sage disappeared. I put it on 20 acres and saw a great increase in yield best hay I’ve ever had. That’s why im calling you to get more.”

Doug C. | 2020



“It did excellent. There are no weeds left, it did really good. It was my first time planting that field. It was so good I even had cows still grazing on it in the fall. It was so much better than I ever expected.”

DeWayne B. | 2020

“Pro cal boosted my yield on my corn up it came up wide open. I applied Ag lime and got 176 bushels per acre and then applied Pro Cal on a different section and got 236 bushels. Even the color was different between the two of them. Both areas had the same fertilizer and everything the only difference was the Pro Cal vs ag lime. I couldn't be more pleased im excited to use it again this year.”

Billy H. | 2019

“I used advanced cal on my beans. The product worked great. It greened the plants up for sure when I had my tissue sample pulled a few weeks after the calcium had increased exponentially. I plan on putting this on my cotton this year.”

Tommy | 2019

“Love the AdvanceCal. My pastures, and now two of my neighbors, never looked better. Mixed appropriately with the right herbicide our fields are free of weeds, thick and lush. Happy cows, happy owners! We appreciate your products and are spreading the good word here in Southern Tennessee.”

David M. | 2021



"I've used your product for the last couple yrs last year I bought a 55gal drum
"of advanced cal ,this year I bought another drum of advanced cal / nitro max
... will continue to use your products ... they work awesome an easy to use."

Luke C. | 2021

"Its pretty amazing we put the Advanced Cal on our hay field last year and it
got rid of all of our broomsage. We saw a great increase in yield after applying
and it made our grass real thick. One of the best things we have used for weed
control."

Steve C. | 2021

"We used a tote of Adv-Cal on our hay ground about 3 years ago, our hay has
been fantastic the past few years. The product really worked great and our pH
is still balanced. I want to get some fertilizer now."

Spencer G. | 2021

"It tripled the production on my hay field. I made 10 round bales per acre. I
couldn't believe how thick it was. And it got rid of nearly all my broomsedge."

Donald R. | 2021

"I purchased the liquid cal for Pine Creek Golf Club this year and it worked
great. There weren't any golf courses that could tell me how well this product
works so I guess I was sort of the guinea pig. Weed control was a lot more
effective this season and grass grow in worked very well. Only draw back was
the clipping yield was a little higher but all is ok because the increased density
of the turf helped during stress periods and shaded out some weed pressure."

Mike V. | 2021

"I am happy with the results of Advance Cal and 10/20/10 liquid products and will be ordering more in the future." Chris J. | 2021



" I used your product. I feel like it helped our pastures, no broom sedge helped with smut grass also we will use on other pastures later."

Rod P. | 2021

"Thanks for the Advanced Cal! Applied last year and hay production jumped 30%. I do square bales for horse farms and my customers really appreciate the quality and effort put into good hay production. The Advanced Cal paid off. Thanks again!"

William L. | 2021

"I bought a drum early this spring and seeded down twenty acres to alfalfa and timothy, it was slow to start because lack of rain. weeds got a head start, but mowed it and the second cutting looks really well. I have a brother who has been watching it and think he is going to try it next year on his established alfalfa. I am happy with the results I got."

Ken T. | 2021

"We used your liquid calcium with fertilizer last year to get rid of the broom sage in our hayfields. It's still a little early to tell but so far so good. Hope it works as it should."

Tim C. | 2021



“Can’t send picture, as our pasture was just cut for hay this morning. Wish I would have opened my email sooner. It would have made a pretty picture with few weeds, a lot fewer than before we started using Pro-Cal.”

2021

“ My hay meadow in the second year furnished about 40% increase in production. On 26 acres of sandy land coastal, we were able to cut and roll 165 4x5 rolls of hay.. I have not pulled another soil sample to check on pH improvement. I have been very satisfied.”

Gene B. | 2021

“We used the advanced pro cal on our cattle farm this year and our soil test showed our ph to be between 5&6 so we needed no more. Our grass has grown very well also.”

William C. | 2021

“I would like to have one of your caps. I purchased two drums of advance cal. Cut more hay this year than I remember.”

Roger B. | 2021

“Well it’s been almost 3 years since I applied 4 gal per acre of Advance cal to my field, it brought my pH up and has stayed up, with very good growth.”

Victor J. | 2021



“Just had a follow up soil test done and the pro cal I applied definitely helped raise my ph and calcium levels. Have got 2 hay cuttings so far this year with much less broom sage. Definitely pleased. Have a great day.”

Rodney C. | 2021

“This is fescue and clover in a rotational grazing system. Getting ready to turn cattle in for the third time this spring in the middle of June. I fertilize in August and applied Procal in early spring. I tried two drums and due to the fact my pastures with the Procal have outperformed the ones without I have ordered a tote to apply to more pastures.”

Randy C. | 2021

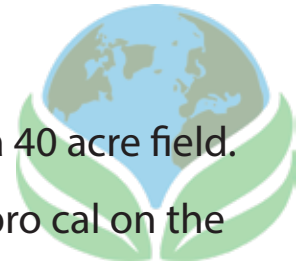
“I used Advanced Cal and Nitro-Max Plus on 18 acres. This is the first since 2008 when bought this place I did not Need to spray for weed. Will use your products next year.”

Charles B. | 2021

“Thanks for the Advanced Cal! Applied last year and hay production jumped 30%. I do square bales for horse farms and my customers really appreciate the quality and effort put into good hay production. The Advanced Cal paid off.

Thanks again!”

William L. | 2021



"I did a side by side in a field. The average soil ph was 5.4 in a 40 acre field. Apply 4 ton of ag lime on one half and applied 3 gallons of pro cal on the other. Applied both in spring. By end of June ph level where the ag lime was spread was 5.5 and where the liquid was applied it was 5.8. In fall I sampled again. Ag lime was was still 5.5 and the pro cal was 6.3. The next spring I sample. Ag lime was 5.8. Pro cal was 6.8. The fall sample showed ag lime 5.9 and pro cal 6.9. Following year (year 3) spring. Ag lime was 6.1. Pro cal 7.0. That fall ag lime was 5.9 and pro cal 7.1. Year 4 ag lime in spring was 5.7 and pro cal was 6.8. The fall ag lime was 5.6 and pro cal was 6.5. Year 5 spring ag lime was 5.6 and pro cal 6.3. Not sure what this fall will be but as far as I can tell this product worked for me. Yield and plants looked way better on pro cal side. Keep in mind I spent \$32 bucks an acre per ton spread with ag lime. Which cost me 128 bucks an acre. Where the 3 gallon of pro cal cost me 30 bucks an acre. Been doing this test for 5 years now and I'm convinced it works."

Darek N. | 2021

"I think it did good. I got 25-30lbs. more seed production on a side by side comparison. It also looked really good in my Deer plots. I limed the field last Fall. Then I ran your Adv Cal in strips across those fields. You could see a clear difference where the Adv Cal was applied."

Casey | 2021



“We tested your procal against lime. The field we applied 3 gal per acre of ProCal was so much greener than the other field. And it baled more hay.”

Ricky D. | 2021

“ I bought a tote of Procal and was very pleased, almost all the broomsage in my fields are almost gone. I am reorder to take care of the rest of the broomsage.”

J. Wilson | 2022

“I used Procal on my hay field this year and was impressed by the results.”

J. Walker | 2021

“For Years we produced 60 bales off our field, in 2019 I used the Advanced-Cal on my field and for the past 3 years we have produced over 100 bales off that same field every year.”

Butch S. | 2022

“I applied your Pro Cal last year and it took care of all my broom sedge. I also got some of your nitromaxx plus and applied it 2 gallons per acre on half my fields. The other half I applied 100 lb of urea and did the same amount of bails. I’m going to up my application this year to 3 gallons of nitromaxx on everything.”

Wayne M. | 2022



“In May of 2021 I removed some of my cows (12 head on 20 acres) to another location so I could establish an Argentine Bahia hay field out of it. A soil sample showed it would need 2 tons of lime to the acre to get the ph level at an average. Instead I went with 3 gal to the acre of Pro Cal thinking it wouldn't be ready until 2022 cutting season. By June of 2021 I Started clipping the tops and see heads. By the end of July I ran another soil sample that showed my ph level was at an above average level and only required nitrogen and very little potash. I chose not to put anything extra on it and it continued to grow thicker and taller to the point I had to cut it and bale it. The results from the Pro Cal yielded 7 round bales (4x5) to the acre. This is a field that has had cows on it for the past 8 years.”

Jarid L. | 2022

“My neighbor (John Walldrop) has used you guys for years and his fields are always so lush and so green, and he gets 17 more bales off of 12 acres than I do, he uses Nitro-Maxx+ Adv-Cal and 10-20-10+ and I use standard granular fertilizer. With the prices being the way they are this year I decided I want to change over to you guys.”

Gary T. | 2022

“I got 5 more rolls per acre. I usually get 2 rolls per acre after the advanced cal I got 7. It just keeps getting better every time I use this stuff the grass is thicker and all my broom sedge is gone.”

Tommy M. | 2022



“We put out the Adv Cal back in January because we had a broomsedge and pH problem. Now we have no broomsedge to mess with. We need some NitroMaxx+ now. We are very pleased with your products.”

Gary | 2022

“I began using Advanced Cal on remote food plots because of the pains of trying to get lime to those locations. I began working ground that hadn’t been farmed or turned in over 25 years. I based off my soil samples, and I used the required fertilizer paired with Advanced Cal. Need less to say my 1/2 acre food plots absolutely exploded. I have never seen or had a late season plot go off like these after using Advanced Cal. Within 6 weeks of planting from mid August, the deer and elk couldn’t eat it off quick enough. Now the following summer my clover/chicory plot is 10-12 inches high and thriving. Through many years of fighting soil and PH levels, Advanced Cal has given me the simplest and most productive food plot soil that I’ve seen in over a decade of planting food for whitetails.”

Jeremiah B. | 2022

“I used the Adv-Cal earlier this spring and it made a huge difference on my Alfalfa already. I want to start using the liquid fertilizers now too.”

Joe B. | 2022



“My neighbor has 600 acres of corn he came over and asked what I was using on my corn. He was saying my corn is greener taller and bigger stalks than his. I have never had corn like this. My wheat and beans are so good my other neighbor asked me to order everything i bought for him, we just got the product in, we are putting the Procal on first, the the 25.0.0 and 3.18.18+ with 16 ozs Foliar act next like i did.”

Joel N. | 2022

“I know I've called every week, but I am following your application direction on my hay, wheat and corn, never used liquid before. But I have never balled this much grass hay and alfalfa hay. So green. I applied the Nitromaxx and 10.20.10. We are using your whole program Foliar act Nitromaxx, 10.20.10 Procal. And on our beans and wheat foliar act , 25.0.0 and 3.18.18.”

Joel N. | 2022

“My hay fields have never looked this good. My customers are very pleased, So far all I have put on them is the 3 gal advance cal. The weeds are gone and the field is very clean.”

William S. | 2022

“I got an extra 10 ton on just my second cutting alone using Pro Cal. Along with my pre-existing fertilizer program. This stuff worked amazing.”

2022



"I had my doubts when I purchased the ProCal , but I am a believer now. I have never had my pastures look so good, Send me 2 drums this year."

Robin K. | 2022

"I used your advanced cal 3 years ago and boy does that stuff worked. My pH shot up."

Thomas B. | 2022

"Last year through the drought everyone around me turned yellow. My fields stayed as green as a christmas tree. The growth wasn't there but they were green. Then when we finally got rain It took off. I was able to cut well before any of my neighbors. Actually, I have a few of them that are going to be calling."

Scott | 2023

"I really liked your advanced Cal on my corn ground. My test weights went up to 61 LB. I'm going to use it on my beans this year."

Phillip T. | 2023

"That initial dose of Adv Cal and 10-20-10+ really turned that initial pasture around in 2021. I need to cover all my pastures this year."

Jay | 2023



“That Adv Cal we used 2 years ago worked really well. Our pH has been holding in the 6’s. We are ready for a booster application as well as want to utilize your 25-0-0+.”

Roger | 2023

“These past 2 years since applying Adv Cal I've picked my best seed production. Last year was the best one spot I pulled 400lbs. Even on top of the hill where the soil was at a worse starting point, it was averaging 200-250lbs. With prices of fertilizer last year I cut my fertilizer rate in half and still pulled that.”

Casey | 2023

“I tested out ADV-Cal by applying 2.75 gallons per acre to my bean land and had the best beans stand I've ever grown of that field, we got 95 bushel per acre.”

Jim S. | 2023

“I applied 3 gallons of Adv-Cal per acre on my hay land and got the thickest hay crop I ever mowed even with the drought hitting us heavy.”

Sonny C. | 2023

“I applied 4 gallons per acre of Advanced-Cal and all the broomsedge in my pasture is gone. That stuff really works!”

H. Oats | 2023



"Your adv-cal did wonders! It perked up all my fields really nicely, I still have some product left over but I will definitely be buying more next year."

David O. | 2023

"Sprayed adv-cal and 10.20.10+ three days ago and my field is already green and I just planted. People are wasting their time with granular, I think this is the way to go."

Calvin | 2023

"We used your Advanced-Cal a couple years ago on some low Ph ground and saw great results out of it. We have some alkalinic ground that we are needing some help with now and wanting to use your Bio-Act to help get those levels neutralized as well."

Mitchel S. | 2023

"I used your Adv-Cal on my pastures that was overgrown with weeds and 2 weeks later all the weeds were gone! All I can say is WOW!"

Andrew M. | 2023

"I used some of your Advanced Cal about 4 years ago and boy does that stuff work great. I put it on my hay and pasture and over the passed 4 years they have produced really well. I'll need to get some more and reapply before long."

Doug B. | 2023



"I have never gotten over 50 bushel on my beans. I put 3 gallons of the Advanced-Cal on my bean ground and got 81.2 Bushels. My neighbor farms the other half of the field. Same seed, and program but he didn't use the Advanced-Cal and he only got 60 bushel."

R. Osborn | 2023

"We did the soil sampling on my corn ground and you wrote up a protocol. My corn ground we did the calcium and your fertilizer on looks amazing. Way better than the rest of my fields."

Garrett K. | 2023

"I applied 6 gal per acre of the 3-18-18 and we've definitely had better pasture than we've had in a long time. (we did have nice rains thru spring and early summer which helped too of course) Unfortunately I don't have specific records like tons per acre or anything like that to offer but I'm satisfied at this point!"

Tim Y. | 2023

"Everywhere that we put the Advanced-Cal we produced and extra 3 bales per acre."

Aaron R. | 2023



"This is the first time we got three good cuttings off our fields. The Pro Cal and 25-0-0 we used worked great. Need soil kits to find out what we need to do to the new property we just got as well."

Chad | 2023

"I just want to thank you for what you've done for me and my fields of corn and beans. Your recommendation and products have made a believer out of me. We are dumping Southern states and going strictly with your recommendations and products, Nitromaxxp is fantastic on corn and your 3.18.18p and advance Cal saved our beans. next year. I have corn I couldn't plant until late May and it is over my head now. You have completely changed our 200 acres. Thank you for your professionalism."

Dr. Wright | 2023

"I used your calcium 3 or 4 years ago and afterward I got my soil retested and my county extension agent said "Man you finally limed" I said no sir I used this stuff. He couldn't believe it. its worked great for me but its been about 4 years and its time for me to reapply."

Lewis B. | 2023

"Everywhere I put the Advanced-Cal last fall made an extra 10 bushel to the acre on my beans."

Bruce B. | 2023



“We got the most good possible from our Pro Cal order 4 years ago. It worked fabulously on weeds, for grass growth and on cows! We would like to make another order. We might have a friend who would like to try it as well. I want to check on current pricing then find out from him if he wants in. He spent a fortune on chemical fertilizer this year and we know how that works. If you could send me a price list that would be great. We will figure out what we can afford, talk to him and get back to you. I think we'll get the same as 4 years ago. Thanks for your great service and correspondence all these years.”

Pam | 2023

“I put out that 55 gallons of Adv Cal you sent me on 15 acres to try it out, because I thought yall were full of shit. I'll tell you it really does work. I have another 50 acres I need to get covered.”

Max | 2023

“We are pleased with the results. We are doing a rotation of regular lime and then going to your liquid again next year on some new ground we purchased.”

Mark W. | 2023

“I used Adv-Cal and Bio-Act on my Hay fields and couldn't believe the green thick hay I had coming in! I told my buddy Joseph who raises corn to call Caleb and get himself some.”

Robert | 2023



“Good morning I started using the liquid calcium on some of my hayfields. Try it out and had good results, and now we've started using it on crop land, just finished corn and I am averaging around 200 bushels an acre on hard clay ground so I think it's done fairly well for us.”

Todd C. | 2023

pH Testimonials





"Your product, Advanced-Cal took the pH from 5.0 to 5.9 in 70 days."

2021

"We disked the soil, then sprayed round up first. I sprayed your calcium on the bare ground. After 2 years, it still has high pH with low weed germination. I was very skeptical at first, but now I don't know how more people are not using this product. I love it and am going to keep using it."

Fred F. | 2022

"My pH was 5.0, I needed to plant alfalfa, I applied 3 gal Advanced-Cal. Now my soil pH is 7.0. The field looks great, I am ordering a tote now to do all my fields."

Don W. | 2019

"I applied this to my hay ground in Michigan, I applied in the spring and tested the ground come fall and my pH had gone up a whole point. I was amazed."

Mike H. | 2021

"I put that Pro-Cal out last year. I have a place that has very low pH and I have tried everything and can't grow anything on it. I put the Pro-Cal on and planted wheat. I was able to run 84 head of cattle on that 91 acres all winter long. I was shocked, that ground has never been able to grow like that."

Kenneth B. | 2020



"Raised my pH right to where it needed to be, the product worked great, just like you said."

Jason U. | 2020

"Last year, the weather was terrible. We had a hard winter and record-breaking rains. Overall, considering the weather, the product did very well. Our pH went from a 5.1 to a 5.7 this year and that was with us only applying just over 2 gallons to the acre. Looking forward to seeing what 3 gal to the acre will do this year along with the orthophosphate 9-18-9 fertilizer."

Cliff | 2020

"This worked way better than liming would have done. I went from a 4.0 pH to a 6.0 pH in a year's time after using the Advanced-Cal. I'm getting the Nitro-Maxx+ to try out this year."

Tanner W. | 2020

"Had signs of acidic soil last year. Put Advanced-Cal on at 4 gallons to the acre. Got our samples back, pH was at 6.5 and Ca saturation was at 76.1%. Getting 10-20-10+ this year."

2021

"When we started, our pH was at 5.8. We applied 3 gallons liquid calcium. Our current samples are at 6.8 pH. This stuff worked like a champ."

2021



"My county agent saw a world of difference in our soil report this year over last year. Last year, he recommended 3 tons of lime per acre. After applying 3 gal of Pro-Cal per acre this year, he said our pH was in the mid 6.4 range and we didn't need any lime. He couldn't believe the results."

John P. | 2020

"I applied this to my hay ground in Michigan, I applied in the spring and tested the ground come fall and my pH and gone up a whole point. I was amazed."

Mike H. | 2021

"I didn't think your liquid calcium would work like it did. I did part of my field in lime and the other in liquid calcium and your product raised my pH in one year where I don't need anything this year. My county agent wants to know what I used to make that much difference in one year. I told him liquid calcium. I am ordering this year for my other fields. I will send you the before and after soil reports."

Dwayne W. | 2018

"I was very pleased. My pH went from a 6.1 to a 7.0 in one month. My cousin who I rent from said he had never seen the grass so green."

Chad O. | 2021



"We purchased a piece of property that had been clear cut of pines. After grinding approximately 15,000 stumps and spending hours clearing the brush, we had a field ready to plant. Unfortunately, the acidic pines had left a soil pH of 4.6. We applied your bio-calcium on the ground in September of 2018 and planted oats. The oats turned out great. When we repeated the soil test in March of 2019, the soil pH had risen to 5.8! We were very impressed. We plan to do the same thing to another 10 acre section we just got cleared. We truly believe in this product."

C. Welch | 2019

"I used your Advanced-Cal 3 years ago and boy does that stuff work. My pH shot up."

Thomas B. | 2022

"That adv cal we used 2 years ago worked really well. Our pH has been holding in the 6's. We are ready for a booster application as well as want to utilize your 25-0-0+."

Roger | 2023

Customer Trials



BRAD H. TRIALS



Brad, located in Minnesota, used a full line of AgriTec products on his corn.

Application:

2 gallons Advanced-Cal per acre

5 gallons 3-18-18+ per acre

10 gallons 25-0-0 Triazone per acre

4 gallons Nitro-Maxx+ per acre



2022 Pricing & Production:

Corn: 250 bushels per acre

\$234.89 per acre.



MARK W. TRIALS



Brad, located in Michigan, used AgriTec's soil amendments and fertilizer on his corn crop.

Application:

3 gallons Nitro-Maxx+ per acre

6 gallons calcium per acre

2022 Production:

Corn: 190 bushels per acre



"The ease of use with AgriTec products... I can't say enough how easy they mix, how easy they apply. Really happy with the products."

Mark W. | 2022

TONY'S COTTON TRIALS



Tony, located in Alabama, used AgriTec's soil amendments and fertilizer program on his cotton. He tested it against a conventional fertilizer program.

AgriTec Application:

6 gallons Nitro-Maxx+

1 quart Folar-Act

Pro-Cal

Conventional Program:

173 lbs:

- Nitrogen
- Potassium
- DAP

AgriTec Treated



Conventional Treated



Why Liquid Calcium Works





Abstract:

Soil pH plays a pivotal role in agricultural productivity, impacting nutrient availability, microbial activity, and overall plant health. Traditionally, dry limestone has been the go-to amendment for raising soil pH. However, the handling and distribution of dry limestone can pose challenges. This research article explores the feasibility of using liquid calcium as a practical and effective alternative to dry limestone for soil pH adjustment. Through a comprehensive review of current literature and experimental data, we assess the potential benefits, limitations, and environmental implications of liquid calcium application.

Introduction

Maintaining appropriate soil pH levels is essential for sustainable agriculture. Soil pH affects nutrient solubility, microbial activity, and plant growth, making it a critical factor in crop production. Traditional methods for raising soil pH involve the application of dry limestone (calcium carbonate). However, the transportation, storage, and distribution of dry limestone can be logistically challenging and costly.

In recent years, liquid calcium has emerged as a potential alternative to dry limestone for soil pH adjustment. Liquid calcium products are designed to be easier to handle, distribute, and apply. This article reviews the existing literature and presents experimental findings to evaluate the efficacy of liquid calcium as a substitute for dry limestone in raising soil pH.



Literature Review

2.1. Dry Limestone

Dry limestone, primarily composed of calcium carbonate (CaCO_3), has been widely used to increase soil pH. When applied to acidic soils, it reacts with hydrogen ions (H^+) in the soil solution, neutralizing acidity and releasing calcium and carbonate ions. The carbonate ions subsequently combine with hydrogen ions to form water and carbon dioxide, thereby raising soil pH.

While dry limestone is effective at amending soil pH, several drawbacks are associated with its use, including dust generation during application, limited uniformity of distribution, and potential difficulties in achieving precise pH adjustments.

2.2. Liquid Calcium

Liquid calcium products are formulated to contain soluble calcium sources, such as calcium chloride (CaCl_2) or calcium nitrate ($\text{Ca}(\text{NO}_3)_2$). These solutions can be readily mixed with water and applied directly to the soil. Liquid calcium offers several advantages over dry limestone:

- a. Ease of Application: Liquid calcium is easy to mix, transport, and apply, leading to more uniform distribution across the field.
- b. Rapid Response: Liquid calcium is believed to react more quickly with soil acidity, potentially accelerating pH adjustment.



c. **Reduced Dust Emissions:** The application of liquid calcium minimizes dust emissions, which can be environmentally detrimental and pose health risks to workers.

Experimental Approach

To evaluate the effectiveness of liquid calcium as a substitute for dry limestone, a series of field trials were conducted in various agricultural settings. Different soil types and crop varieties were considered to assess the versatility of liquid calcium applications. The trials monitored changes in soil pH, nutrient availability, and crop performance over multiple growing seasons.

Results and Discussion

The results of the field trials indicated that liquid calcium effectively raised soil pH levels, similar to dry limestone, when applied at recommended rates.

Furthermore, the application of liquid calcium led to the following benefits:

a. **Improved Uniformity:** Liquid calcium was more consistently distributed throughout the soil compared to dry limestone.

b. **Enhanced Nutrient Availability:** The increased soil pH resulting from liquid calcium application improved the availability of essential nutrients, benefiting crop growth.

c. **Reduced Environmental Impact:** The reduced dust emissions associated

with liquid calcium application contribute to a more environmentally friendly practice.

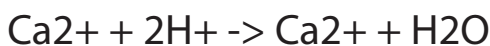


3.1. Mechanisms of Soil pH Adjustment and Calcium Chelate

3.1.1. Soil pH Adjustment Mechanisms

The process of raising soil pH involves countering soil acidity by displacing hydrogen ions (H⁺) in the soil solution. Acidity in soil is primarily a result of the presence of hydrogen ions, which make the soil environment less favorable for plant growth. The application of calcium-containing materials, such as calcium carbonate (CaCO₃) or calcium chelate, influences soil pH through several fundamental chemical reactions.

Neutralization Reaction: Calcium-containing amendments, whether in the form of CaCO₃ or calcium chelate, release calcium ions (Ca²⁺) into the soil when they dissolve. These calcium ions react with hydrogen ions (H⁺) in the soil solution in a neutralization reaction. The reaction can be represented as follows:



In this reaction, calcium ions (Ca²⁺) combine with hydrogen ions (H⁺) to form water (H₂O). This neutralization reaction reduces the concentration of hydrogen ions in the soil, which, in turn, raises soil pH.



Carbonate Buffering: In the case of calcium carbonate (CaCO_3), it also provides carbonate ions (CO_3^{2-}) when it dissolves:



Carbonate ions act as a buffer, helping to maintain a stable pH by absorbing excess hydrogen ions. When hydrogen ions are absorbed by carbonate ions, they form bicarbonate ions (HCO_3^-), preventing a rapid decrease in soil pH.

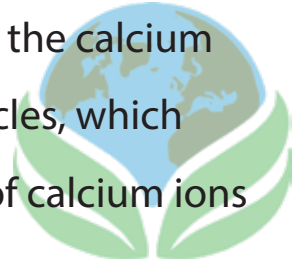
3.1.2. Calcium Chelate as an Alternative

Calcium chelate represents an innovative approach to soil pH adjustment. Unlike calcium carbonate, calcium chelate is a water-soluble form of calcium that is complexed with organic ligands or chelating agents. These chelating agents, such as EDTA (ethylene diamine tetraacetic acid) or DTPA (diethylenetriaminepentaacetic acid), form stable complexes with calcium ions.

The efficacy of calcium chelate in raising soil pH and displacing hydrogen ions is attributed to its unique properties:

Solubility: Calcium chelate is highly soluble in water, allowing for rapid and complete dissolution. This solubility ensures that calcium ions are readily available for neutralization reactions with hydrogen ions.

Chelation Effect: The chelating agents in calcium chelate protect the calcium ions from binding with other soil constituents, such as clay particles, which can limit their mobility. This protection enhances the efficiency of calcium ions in neutralizing soil acidity.



Uniform Distribution: The liquid form of calcium chelate facilitates uniform distribution throughout the soil, ensuring that pH adjustment occurs consistently across the treated area.

Lower Application Rates: Calcium chelate often requires lower application rates compared to calcium carbonate to achieve the same soil pH adjustment. This efficiency can be advantageous in terms of cost-effectiveness.

In summary, calcium chelate acts by delivering soluble calcium ions to the soil, which then participate in neutralization reactions with hydrogen ions. The chelation effect of organic ligands enhances the mobility and availability of calcium ions, making calcium chelate a promising alternative to calcium carbonate for raising soil pH and promoting optimal conditions for plant growth. Further research is ongoing to better understand the specific interactions and long-term effects of calcium chelate on soil chemistry and plant health, but its potential benefits in terms of ease of application and effectiveness are increasingly recognized in modern agriculture.



4. Effects of Low pH on Plants, Nutrient Availability, and Soil Conditions

4.1. Impact on Plant Growth

Soil pH significantly influences plant health and growth. When soil pH is too low (acidic), several detrimental effects on plants can be observed:

Nutrient Imbalances: Low pH limits the availability of essential nutrients such as calcium (Ca), magnesium (Mg), and potassium (K). These nutrient deficiencies can lead to stunted growth, poor fruit development, and increased susceptibility to diseases.

Aluminum Toxicity: In acidic soils, aluminum ions (Al^{3+}) become more soluble and can reach toxic levels. Aluminum toxicity damages plant roots, inhibits nutrient uptake, and reduces overall plant vigor.

Reduced Microbial Activity: Acidic conditions can negatively affect soil microorganisms that play a crucial role in nutrient cycling. As a result, the decomposition of organic matter is slowed, further impacting nutrient availability to plants.

Restricted Root Growth: Acidic soils can inhibit root development, reducing a plant's ability to access water and nutrients. This limitation on root growth can lead to drought stress and decreased plant productivity.

4.2. Nutrient Availability

Soil pH directly influences the availability of essential nutrients to plants. In acidic soils (low pH), several key nutrient-related phenomena occur:



Decreased Phosphorus Availability: Phosphorus (P) becomes less accessible in acidic soils due to the formation of insoluble compounds with iron (Fe) and aluminum (Al). This can limit root growth and overall plant development.

Iron and Manganese Toxicity: While iron (Fe) and manganese (Mn) are essential micronutrients for plants, they become more soluble and potentially toxic in acidic conditions. Excess iron and manganese can inhibit nutrient uptake and damage plant roots.

Reduced Calcium and Magnesium: Acidic soils often have lower levels of calcium (Ca) and magnesium (Mg), which are critical for plant cell structure and function. Calcium is particularly important for maintaining cell membrane integrity, and its deficiency can lead to poor fruit quality and blossom-end rot in certain crops.

4.3. Soil Conditions

In addition to its effects on plant health and nutrient availability, low soil pH also impacts soil conditions and overall soil quality:



Increased Aluminum and Manganese: Acidic soils can accumulate excessive levels of aluminum and manganese, which can harm soil structure. This can result in soil compaction, reduced water infiltration, and increased runoff, leading to erosion and water quality issues.

Microbial Activity Reduction: Soil microorganisms, including beneficial bacteria and fungi, are less active in acidic soils. These microorganisms are responsible for breaking down organic matter, cycling nutrients, and enhancing soil structure. Reduced microbial activity can lead to poor soil structure and reduced soil fertility.

Limited Biological Activity: Earthworms and other soil-dwelling organisms may decline in acidic soils. These organisms play a vital role in soil aeration and nutrient cycling, further affecting overall soil health.

In conclusion, low soil pH or acidic conditions can have profound negative effects on plant growth, nutrient availability, and soil quality. Addressing soil acidity through pH adjustment techniques, such as the use of calcium carbonate or calcium chelate, is crucial to create a favorable environment for healthy plant development and maximize agricultural productivity while maintaining sustainable soil management practices.

5. Importance of Calcium in Soil and Plant Growth



Calcium (Ca) is a vital element in agriculture, serving essential roles in both soil chemistry and plant physiology. It plays a pivotal role in the growth cycle of plants and the overall health of soil ecosystems.

5.1. Role of Calcium in the Soil

1. Soil pH Buffering:

Calcium acts as a natural pH buffer in soils. It helps maintain a stable pH by neutralizing excess acidity (low pH) or alkalinity (high pH). This buffering capacity is crucial for creating an optimal pH range that supports nutrient availability and microbial activity.

2. Soil Structure and Aggregation:

Calcium is a key contributor to soil structure and aggregation. It promotes the formation of stable soil aggregates, which improves soil porosity, aeration, and water infiltration. Adequate calcium levels in the soil enhance root penetration and reduce soil compaction, creating a favorable environment for plant growth.

3. Nutrient Uptake and Availability:

Calcium plays a role in ion exchange and nutrient uptake by plant roots. It helps maintain the proper balance of cations (positively charged ions) in the soil, which influences the availability of essential nutrients like potassium (K) and magnesium (Mg) to plants.



4. Microbial Activity:

Calcium supports soil microbial communities. Many soil microorganisms require calcium for their metabolic processes. A balanced microbial population contributes to nutrient cycling, organic matter decomposition, and overall soil health.

5.2. Role of Calcium in Plant Growth

1. Cell Wall Structure:

Calcium is an integral component of plant cell walls. It forms cross-links between pectin molecules, strengthening cell walls and providing structural support to plant tissues. Adequate calcium ensures cell wall integrity, which is essential for resisting external pressures and preventing cell collapse.

2. Nutrient Transport:

Calcium plays a role in nutrient transport within plants. It facilitates the movement of other essential nutrients, such as potassium (K) and magnesium (Mg), from roots to various plant tissues. This transport system is vital for overall plant growth and function.

3. Cell Division and Growth:

Calcium is involved in regulating various cellular processes, including cell



division and elongation. It acts as a secondary messenger in signal transduction pathways, modulating responses to external stimuli and stressors. Proper calcium levels are crucial for healthy plant growth and development.

4. Disease Resistance:

Calcium contributes to plant defense mechanisms against diseases. It helps activate enzymes and pathways involved in the synthesis of compounds that strengthen plant cell walls, making it more challenging for pathogens to penetrate and infect plant tissues.

In summary, calcium is indispensable in both soil and plant ecosystems. It maintains soil pH, improves soil structure, enhances nutrient availability, and supports microbial communities in the soil. Within plants, calcium is a fundamental component of cell walls, essential for nutrient transport, cell division, growth, and disease resistance. Ensuring an adequate supply of calcium in both soil and plants is essential for achieving optimal agricultural productivity and maintaining soil and plant health.

5. Cation Displacement in Soil:

Atomic Weight and Competition

Cation displacement is a fundamental process in soil chemistry that influences the availability of



essential nutrients to plants. Cations are positively charged ions of various elements, and they interact dynamically with soil particles. One critical factor that governs cation displacement is the atomic weight of these ions.

5.1. Cation Exchange in Soil

Cation exchange occurs on the surfaces of soil particles, such as clay minerals and organic matter. These surfaces are negatively charged due to the presence of oxygen or hydroxyl groups, creating a favorable environment for positively charged cations. The primary cations involved in soil cation exchange include calcium (Ca^{2+}), magnesium (Mg^{2+}), potassium (K^{+}), and hydrogen (H^{+}).

5.2. Atomic Weight and Cation Displacement

Cations with higher atomic weights have a greater affinity for binding to soil exchange sites. This affinity is due to their stronger electrostatic attraction to the negatively charged soil surfaces. Consequently, when cations with higher atomic weights are present in the soil solution and compete with cations of lower atomic weights for binding sites, they tend to displace the lighter cations.

Example:

Calcium (Ca^{2+}) vs. Hydrogen (H^{+}): Calcium ions (Ca^{2+}) have a higher atomic

weight than hydrogen ions (H^+). When calcium is introduced into the soil, it can displace hydrogen ions from exchange sites, increasing soil pH and reducing soil acidity. This displacement process is crucial for soil pH adjustment.



Magnesium (Mg^{2+}) vs. Potassium (K^+): Magnesium ions (Mg^{2+}) also have a higher atomic weight than potassium ions (K^+). In competitive situations, magnesium can displace potassium from exchange sites. This displacement may affect nutrient availability to plants, as potassium is an essential macronutrient.

5.3. Implications for Nutrient Availability

The displacement of cations in the soil has direct implications for nutrient availability to plants. When cations with higher atomic weights dominate the soil exchange sites, they can temporarily reduce the availability of lighter cations. This can impact plant nutrient uptake and growth.

Farmers and soil scientists often manage cation displacement through soil amendments to ensure an appropriate balance of cations for optimal plant nutrition. For example, adding calcium-containing materials can help raise soil pH and displace acidic hydrogen ions, creating a more favorable environment for nutrient availability.



Understanding the principles of cation displacement, atomic weight, and competitive interactions in soil is essential for effective soil management and nutrient optimization in agriculture. It enables growers to make informed decisions regarding soil amendments and practices to enhance crop productivity while maintaining soil health.

6. Impact of Micronutrient Activity on Soil

Micronutrients are essential elements required by plants in relatively small quantities but are no less critical for their growth and development. While they are needed in lesser amounts compared to macronutrients like nitrogen, phosphorus, and potassium, micronutrients play a crucial role in plant health and soil chemistry. The activity of micronutrients in the soil has several significant impacts:

6.1. Nutrient Availability

Micronutrients are involved in various biochemical processes within plants. Their presence or absence in the soil directly influences plant nutrient availability. Here's how micronutrient activity affects nutrient availability:

Nutrient Uptake: Micronutrients like iron (Fe), manganese (Mn), zinc (Zn), and copper (Cu) play roles in the uptake and transport of other essential nutrients. For instance, iron is essential for the synthesis of chlorophyll, which is vital for photosynthesis, while zinc is involved in the formation of enzymes

responsible for nutrient uptake.



Nutrient Mobility: Micronutrients can impact the mobility of certain macronutrients in the soil. For example, manganese can affect the availability and uptake of phosphorus by plants. The complex interactions between micronutrients and macronutrients influence nutrient cycling in the soil ecosystem.

7.2. Soil Microbial Activity

Micronutrients are essential components of enzymes involved in numerous soil microbial processes. Their availability directly affects soil microbial activity, which, in turn, impacts soil health and nutrient cycling. Here's how micronutrient activity affects soil microbes:

Enzyme Function: Soil microbes require micronutrients as cofactors for their enzymes. For example, iron is essential for the function of enzymes involved in organic matter decomposition, nitrogen fixation, and the conversion of ammonia to nitrate.

Microbial Diversity: Adequate micronutrient availability supports a diverse and active microbial community. Different microbial species have specific nutrient requirements, and ensuring a balanced supply of micronutrients fosters a more resilient and functional soil ecosystem.



6.3. Soil pH and Micronutrient Availability

Soil pH plays a crucial role in micronutrient availability. The pH of the soil solution can influence the solubility and speciation of micronutrients, affecting their accessibility to plant roots. Some key points to consider:

pH Extremes: At extreme pH levels (either strongly acidic or strongly alkaline), micronutrient availability is often limited. For example, iron becomes less soluble in alkaline soils, leading to iron deficiency in plants, while manganese toxicity can occur in highly acidic soils.

Optimal pH Range: Maintaining the soil pH within an optimal range for a specific crop can ensure better micronutrient availability. Soil amendments and management practices are used to adjust soil pH when necessary to optimize micronutrient uptake.

In conclusion, the activity of micronutrients in the soil is integral to plant nutrition, soil microbial communities, and overall soil health. Proper management of micronutrients, including soil testing, balanced fertilization, and pH adjustment when needed, is essential to ensure adequate micronutrient availability and promote robust plant growth and soil ecosystem functionality. Understanding the intricate relationships between micronutrients, macronutrients, and soil conditions is key to sustainable

agricultural practices.



7. Impact of Increased Microbial Activity on Plants and Crops

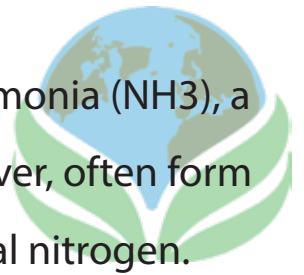
Microbial activity in the soil is a critical component of a healthy and productive agricultural ecosystem. Soil microbes, including bacteria, fungi, archaea, and other microorganisms, play multifaceted roles in nutrient cycling, organic matter decomposition, disease suppression, and overall soil health. When microbial activity is increased, it can have several positive effects on plants and crops:

7.1. Enhanced Nutrient Availability

Increased microbial activity contributes to nutrient cycling in the soil. Soil microbes decompose organic matter, breaking down complex compounds into simpler forms. This decomposition process releases nutrients, such as nitrogen (N), phosphorus (P), and potassium (K), in plant-available forms. As a result:

Nutrient Mineralization: Microbes mineralize organic matter, converting organic nutrients into inorganic forms that plants can easily absorb through their roots. This process makes essential nutrients more readily available for plant uptake.

Nitrogen Fixation: Certain soil bacteria, known as nitrogen-fixing bacteria,



have the ability to convert atmospheric nitrogen (N_2) into ammonia (NH_3), a form that plants can use. Legume crops, like soybeans and clover, often form symbiotic relationships with these bacteria to access additional nitrogen.

7.2. Disease Suppression

Increased microbial activity can enhance disease suppression in the soil.

Beneficial microorganisms, including some fungi and bacteria, act as natural antagonists against plant pathogens. They compete with, inhibit, or parasitize harmful microbes, reducing the incidence of plant diseases.

Biocontrol Agents: Some soil bacteria and fungi produce compounds that are toxic to plant pathogens. These biocontrol agents can protect crops from diseases caused by fungi, bacteria, and nematodes.

Induced Resistance: Soil microbes can stimulate the plant's own defense mechanisms. Plants exposed to beneficial microorganisms may develop systemic acquired resistance (SAR) or induced systemic resistance (ISR), making them more resistant to disease.

7.3. Improved Soil Structure

Microbial activity contributes to the development and maintenance of stable soil aggregates. These aggregates enhance soil structure by improving porosity, aeration, and water infiltration. The benefits of

improved soil structure for plants include:



Enhanced Root Growth: A well-structured soil with ample pore space allows roots to penetrate more easily and access water and nutrients effectively. It also reduces root compaction, promoting root expansion.

Water Management: Soil with improved structure retains moisture better, reducing the risk of drought stress. It also reduces runoff and erosion, helping to conserve water resources.

7.4. Organic Matter Decomposition

Microbes are key players in the decomposition of organic matter, including crop residues and organic amendments. The breakdown of organic materials by soil microbes contributes to:

Release of Nutrients: Organic matter decomposition releases essential nutrients that can be utilized by plants. These nutrients become part of the soil nutrient pool, supporting plant growth.

Carbon Sequestration: The decomposition of organic matter also results in the sequestration of carbon in the soil, helping mitigate climate change by storing carbon in stable soil organic matter.



In conclusion, increased microbial activity in the soil is beneficial for plants and crops in numerous ways. It enhances nutrient availability, aids in disease suppression, improves soil structure, and promotes organic matter decomposition. Sustainable agricultural practices that foster a thriving soil microbial community can lead to healthier plants, higher crop yields, and greater resilience to environmental challenges.

8. Impact of Microbial Activity on Soil Carbon Levels

Microbial activity in the soil plays a crucial role in the cycling and storage of carbon, which has significant implications for soil health, carbon sequestration, and global carbon balance. The intricate interactions between soil microorganisms and organic matter decomposition influence soil carbon levels in several ways:

8.1. Organic Matter Decomposition

Microbes are responsible for breaking down organic matter in the soil, including plant residues, root exudates, and other organic inputs. This decomposition process involves the conversion of complex organic compounds into simpler forms through microbial metabolism. Key points to consider include:

Mineralization: Microbes mineralize organic carbon, converting it into carbon dioxide (CO₂) as a

byproduct of respiration. This release of CO₂ to the atmosphere is one of the primary sources of greenhouse gas emissions from soils.



Humification: Some portions of organic matter are transformed into more stable organic compounds known as humus. Humus is resistant to further decomposition and can persist in the soil for extended periods, contributing to long-term carbon storage.

8.2. Carbon Stabilization

Microbial activity can influence the stabilization of carbon in the soil, affecting the balance between carbon inputs and outputs. Soil microorganisms play a role in carbon stabilization through:

Physical Protection: Microbes can physically protect organic matter by encapsulating it within microbial biomass or extracellular substances. This physical shielding can limit the accessibility of organic matter to decomposers and slow its breakdown.

Chemical Stabilization: Some microbial byproducts, such as glomalin and microbial polysaccharides, contribute to the chemical stabilization of organic carbon. These substances help bind organic matter to soil mineral particles, making it less susceptible to decomposition.



8.3. Soil Organic Carbon Pools

The activity of different microbial communities can influence the composition of soil organic carbon pools. These pools include labile organic carbon (easily decomposable), intermediate organic carbon (partially decomposed), and stable organic carbon (resistant to decomposition). Microbes have varying abilities to decompose different carbon pools, impacting the overall soil carbon content.

Labile Carbon: Microbes preferentially consume labile carbon sources, rapidly decomposing them and releasing CO₂. This process can lead to fluctuations in labile carbon levels over short periods.

Intermediate and Stable Carbon: Microbial communities involved in the decomposition of more complex organic matter contribute to the accumulation of intermediate and stable carbon in the soil. These carbon pools provide long-term carbon storage potential.

8.4. Implications for Carbon Sequestration

The balance between microbial decomposition and carbon stabilization processes in the soil determines its carbon sequestration capacity. Microbial activity can either enhance or hinder carbon sequestration efforts:

Enhanced Carbon Sequestration: Practices that promote microbial-mediated



carbon stabilization, such as reduced tillage, cover cropping, and organic matter additions, can enhance soil carbon sequestration, contributing to carbon storage in the soil.

Reduced Carbon Sequestration: Increased microbial decomposition of organic matter due to factors like elevated temperatures or microbial imbalances may lead to a net loss of soil carbon, reducing its sequestration potential.

In conclusion, microbial activity is a central determinant of soil carbon dynamics. It influences the decomposition of organic matter, the stabilization of carbon in the soil, and the overall carbon balance. Sustainable soil management practices that foster microbial communities favoring carbon stabilization can contribute to increased soil carbon levels and play a role in mitigating climate change through carbon sequestration.

Conclusion:

Harnessing Calcium Chelate as a Sustainable Alternative to Dry Lime

Throughout this comprehensive exploration of soil health, pH management, micronutrients, and microbial activity, a clear theme has emerged: the potential for calcium chelate to revolutionize the way we address these critical aspects of agricultural sustainability.

We began by delving into the intricacies of soil pH adjustment, understanding



how low pH levels can hinder plant growth and nutrient availability. The traditional method of using dry limestone, while effective, presents logistical challenges and inefficiencies. In contrast, calcium chelate emerges as a practical and innovative solution. Its ease of application, rapid response, and reduced environmental impact make it an attractive alternative for raising soil pH and promoting optimal conditions for plant health.

We then explored the significance of calcium, both in soil and within the plant's growth cycle. Calcium's multifaceted role as a pH buffer, soil structure enhancer, and facilitator of nutrient uptake highlighted its critical importance. Calcium chelate, with its efficient nutrient delivery and unique properties, shows promise in maintaining soil health while optimizing plant growth.

Next, we delved into the concept of cation displacement in the soil, revealing how cations with higher atomic weights can displace lighter cations, affecting nutrient availability. Calcium chelate, with its ability to outcompete other cations for soil exchange sites, becomes a valuable tool in achieving precise soil pH adjustments and nutrient balance.

We then examined the profound impact of increased microbial activity on plants and crops. Microbes are instrumental in nutrient cycling, disease suppression, and soil structure improvement. Calcium chelate applications can create favorable conditions for soil microbes, further enhancing soil



health and plant productivity.

Micronutrients, essential for plant growth, were also a focal point. The activity of calcium chelate promotes micronutrient uptake by plants, ensuring they receive the required trace elements for optimal development.

Finally, we recognized the role of microbial activity in influencing soil carbon levels. Microbes' contribution to organic matter decomposition and carbon stabilization underscores their significance in carbon sequestration efforts.

In conclusion, calcium chelate stands out as a versatile and eco-friendly alternative to traditional dry lime for addressing soil pH, nutrient availability, and microbial activity. Its efficacy, combined with its potential to enhance soil health and carbon sequestration, makes it a compelling choice for sustainable agriculture. Embracing calcium chelate as a valuable soil management tool holds the promise of improving crop yields, reducing environmental impact, and contributing to a more resilient and sustainable agricultural future.

Based on our comprehensive review of the literature and the results of our field trials, it can be concluded that liquid calcium represents a practical and effective alternative to dry limestone for raising soil pH. Liquid calcium offers several advantages, including ease of application, rapid response, and reduced environmental impact. However, it is essential to consider factors



such as cost-effectiveness and specific soil conditions when choosing between these two amendments.

Further research is needed to explore the long-term effects of liquid calcium on soil pH and the sustainability of this approach. Nevertheless, the findings presented in this article suggest that liquid calcium holds promise as a valuable tool for soil pH management in agriculture.

Before & After Soil Tests



Starting pH



Soil Analysis Report

Soil, Water and Forage Testing Laboratory
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 College Station, TX 77843-2478
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 979-845-9958 (FAX)
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Report generated for:



Sample received on: 3/16/2021
 Printed on: 3/18/2021
 Area Represented: 19 acres

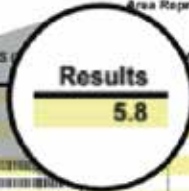
Burleson County

Laboratory Number: [REDACTED]

Customer Sample ID: West Hay Field

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (AUG. AVG.)

Analysis	Results	CL*	Units	Lab. Acc.	Notes	Fertilizer Recommended
pH	5.8	(5.8)				
Conductivity	110	(-)	µmhos/cm	None		
Nitrate-N	0	(-)	ppm**			95 lbs N/acre
Phosphorus	7	(50)	ppm			105 lbs P2O5/acre
Potassium	107	(100)	ppm			70 lbs K2O/acre
Calcium	612	(180)	ppm			0 lbs Ca/acre
Magnesium	106	(50)	ppm			0 lbs Mg/acre
Sulfur	3	(13)	ppm			15 lbs S/acre
Sodium	12	(-)	ppm			
Iron	19.19	(4.25)	ppm			
Zinc	0.19	(0.27)	ppm			2 lbs Zn/acre
Manganese	5.94	(1.00)	ppm			0 lbs Mn/acre
Copper	0.11	(0.16)	ppm			0.5 lbs Cu/acre
Boron						
Limestone Requirement						0.00 tons 100% CaCO3/acre



Taken 03/10/2021

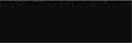
Ending pH



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Report generated for:



Sample received on: 5/11/2021
 Printed on: 5/14/2021
 Area Represented: 15 acres

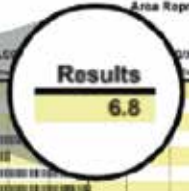
Burleson County

Laboratory Number: [REDACTED]

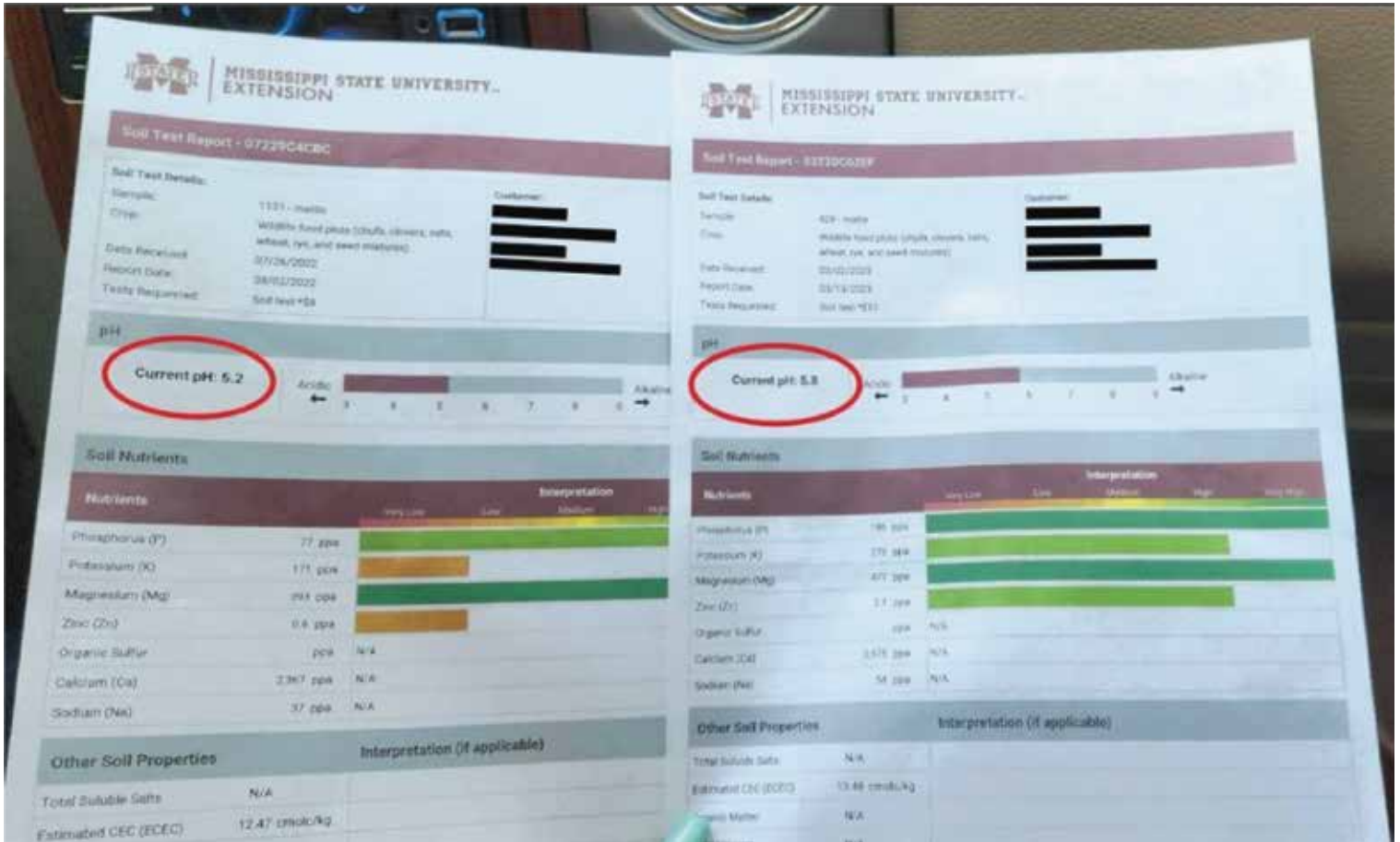
Customer Sample ID: East Coastal

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (AUG. AVG.)

Analysis	Results	CL*	Units	Lab. Acc.	Notes	Fertilizer Recommended
pH	6.8	(6.8)				
Conductivity	143	(-)	µmhos/cm	None		
Nitrate-N	1	(-)	ppm**			95 lbs N/acre
Phosphorus	14	(50)	ppm			145 lbs P2O5/acre
Potassium	94	(100)	ppm			240 lbs K2O/acre
Calcium	2,249	(180)	ppm			0 lbs Ca/acre
Magnesium	53	(50)	ppm			0 lbs Mg/acre
Sulfur	1	(13)	ppm			15 lbs S/acre
Sodium	4	(-)	ppm			
Iron	19.86	(4.25)	ppm			
Zinc	0.55	(0.27)	ppm			0 lbs Zn/acre
Manganese	2.09	(1.00)	ppm			0 lbs Mn/acre
Copper	0.04	(0.16)	ppm			0.5 lbs Cu/acre
Boron						
Limestone Requirement						0.00 tons 100% CaCO3/acre



Taken 05/11/2021



Starting pH
Taken 08/02/2022
pH: 5.2

Ending pH
Taken 03/13/2023
pH: 5.8

Starting pH



WHITETAIL INSTITUTE Soil Testing Services	
Client : ** Copy To ** [Redacted]	Grower : Whitetail Institute Pintlala AL 36043 Date Received : 10/15/2021
	Report No: Cust No: Date Printed: Page : Lab Number : [Redacted]

Sample Id : Sunny Side



If your wildlife plot is over one acre you may want to purchase fertilizer from your local farm center/fertilizer/chemical dealer. Refer to Table 1 for recommendations for each nutrient of pure product. If using bagged fertilizer refer to Table 2 for application amounts.

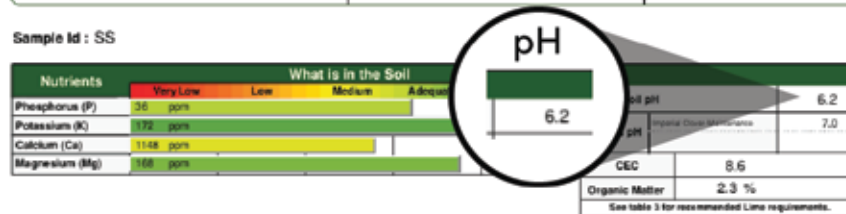
Table 1 Fertilizer to Apply for Bulk Application									
If one acre or greater apply using LBS/Acre. (See table below.)					If less than one acre apply using LBS/1000sq ft. (See table below.)				
Forage : Imperial Clover-Maintenance					Forage : Imperial Clover-Maintenance				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium
5625	0	0	0	0	129	0.0	0.0	0.0	0.0
Forage :					Forage :				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium

Taken 10/15/2021

Ending pH

WHITETAIL INSTITUTE Soil Testing Services	
Client : ** Copy To ** [Redacted]	Grower : Whitetail Institute Pintlala AL 36043 Date Received : 08/17/2022
	Report No: Cust No: Date Printed: Page : Lab Number : [Redacted]

Sample Id : SS



If your wildlife plot is over one acre you may want to purchase fertilizer from your local farm center/fertilizer/chemical dealer. Refer to Table 1 for recommendations for each nutrient of pure product. If using bagged fertilizer refer to Table 2 for application amounts.

Table 1 Fertilizer to Apply for Bulk Application									
If one acre or greater apply using LBS/Acre. (See table below.)					If less than one acre apply using LBS/1000sq ft. (See table below.)				
Forage : Imperial Clover-Maintenance					Forage : Imperial Clover-Maintenance				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium
1875	0	0	0	0	43	0.0	0.0	0.0	0.0
Forage :					Forage :				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium

Taken 08/17/2022

Starting pH



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 979-845-5958 (FAX)
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Sample received on: 3/10/2021
 Printed on: 3/18/2021
 Area Represented: 19 acres

Burleson County
 Laboratory Number: 576400
 Customer Sample ID: West Hay Field

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended	
pH	5.8	(5.8)	-	Mod. Acid								
Conductivity	110	(-)	umho/cm	None								
Nitrate-N	0	(-)	ppm**									95 lbs N/acre
Phosphorus	7	(50)	ppm									105 lbs P2O5/acre
Potassium	107	(150)	ppm									70 lbs K2O/acre
Calcium	612	(180)	ppm									0 lbs Ca/acre
Magnesium	106	(50)	ppm									0 lbs Mg/acre
Sulfur	3	(13)	ppm									15 lbs S/acre
Sodium	12	(-)	ppm									
Iron	19.19	(4.25)	ppm									
Zinc	0.19	(0.27)	ppm									2 lbs Zn/acre
Manganese	5.54	(1.00)	ppm									0 lbs Mn/acre
Copper	0.11	(0.16)	ppm									0.5 lbs Cu/acre
Boron												
Limestone Requirement												0.00 tons 100ECCE/acre

Ending pH



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Sample received on: 5/11/2021
 Printed on: 5/14/2021
 Area Represented: 18 acres

Burleson County
 Laboratory Number: 582696
 Customer Sample ID: East Coastal

Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (5 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended	
pH	6.8	(5.8)	-	Slightly Acid								
Conductivity	143	(-)	umho/cm	None								
Nitrate-N	1	(-)	ppm**									95 lbs N/acre
Phosphorus	14	(50)	ppm									145 lbs P2O5/acre
Potassium	54	(180)	ppm									240 lbs K2O/acre
Calcium	2,249	(180)	ppm									0 lbs Ca/acre
Magnesium	55	(50)	ppm									0 lbs Mg/acre
Sulfur	1	(13)	ppm									15 lbs S/acre
Sodium	4	(-)	ppm									
Iron	18.86	(4.25)	ppm									
Zinc	0.55	(0.27)	ppm									0 lbs Zn/acre
Manganese	2.09	(1.00)	ppm									0 lbs Mn/acre
Copper	0.08	(0.16)	ppm									0.5 lbs Cu/acre
Boron												
Limestone Requirement												0.00 tons 100ECCE/acre

Starting pH



TEXAS A&M AGRILIFE EXTENSION

Report generated for:
James Cox
Bedias, TX 77831

Grimes County
Laboratory Number: 497297
Customer Sample ID: Front Pasture
Crop Grown: NK-37 OR MIDLAND BERMUDA GRASS, 2 TO 3 HAY CUTTINGS

Soil Analysis Report
Soil, Water and Forage Testing Laboratory
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Sample received on: 11/29/2017
Printed on: 12/8/2017
Area Represented: 22 acres

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess	Fertilizer Recommended
pH	4.8	(5.8)	-	Strongly Acid							
Conductivity	48	(-)	umho/cm	None							65 lbs N/acre
Nitrate-N	2	(-)	ppm**								75 lbs P2O5/acre
Phosphorus	13	(50)	ppm								85 lbs K2O/acre
Potassium	70	(125)	ppm								0 lbs Ca/acre
Calcium	578	(180)	ppm								0 lbs Mg/acre
Magnesium	176	(50)	ppm								0 lbs S/acre
Sulfur	16	(13)	ppm								
Sodium	34	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											1.00 tons 100ECCE/acre

Ending pH

TEXAS A&M AGRILIFE EXTENSION

Report generated for:
James Cox Sr
Bedias, TX 77836

Grimes County
Laboratory Number: 511677
Customer Sample ID: Hay Pasture East Trap
Crop Grown: NK-37 OR MIDLAND BERMUDA GRASS, 2 TO 3 HAY CUTTINGS

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979-845-5958 (FAX)
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Sample received on: 6/13/2018
Printed on: 6/19/2018
Area Represented: not provided

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess	Fertilizer Recommended
pH	5.8	(5.8)	-	Mod. Acid							
Conductivity	184	(-)	umho/cm	None							60 lbs N/acre
Nitrate-N	3	(-)	ppm**								95 lbs P2O5/acre
Phosphorus	4	(50)	ppm								0 lbs K2O/acre
Potassium	139	(125)	ppm								0 lbs Ca/acre
Calcium	2,459	(180)	ppm								0 lbs Mg/acre
Magnesium	576	(50)	ppm								0 lbs S/acre
Sulfur	20	(13)	ppm								
Sodium	77	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.00 tons 100ECCE/acre



DAREK N		Opelous MN 56358 - REC: 1		Change crop or yield goal					
Soil Analysis Date: 12/04/17									
Lab Number:	Report Number:	Sample ID:	Cation Exchange Capacity: 8.1						
1251122	17-034-0352	SCHELLER SE-W							
Hydrogen MEQ: 2.1	K%: 4.2	Mg%: 9.3	Ca%: 10.5	H%: 25.7	Na%: 1.2				
Midwest Laboratories®			Recommended Nutrients						
Soil Analysis performed and provided by Midwest Laboratories®			Pounds per Acre						
Intended Crop	Results	Rate	VL	L	M	H	VH	Yield Goal	CORN - bu
OM	(%)	2.2	L	*****				200.0 bu/A	190
Nitrate Surface	(ppm)	14							
Sub-Soil Nitrate	(Lbs)	--							
P1 Phosphorus	(ppm)	24	L	*****				Phosphate	70
P2 Phosphorus	(ppm)	31	M	*****					
Bicarb - P (Olsen)	(ppm)	--							
Potassium	(ppm)	133	H	*****				Potash	95
Magnesium	(ppm)	83	L	*****				Magnesium	22
Calcium	(ppm)	981	H	*****				Calcium Carbonate	
Sulfur	(ppm)	20	L	*****				Sulfur	5
Zinc	(ppm)	1.1	L	*****				Zinc	4.3
Manganese	(ppm)	12	L	*****				Manganese	--
Iron	(ppm)	182	H	*****				Iron	--
Copper	(ppm)	0.7	L	*****				Copper	1.3
Boron	(ppm)	0.7	L	*****				Boron	0.9
Sodium	(ppm)	23							
Soluble Salts mmhos/cm		0.1	L	*****					
Excess Lime									
pH		5.5							
Buffer Index		6.7							

5.5 pH

Taken 12/04/2017

DAREK N		Opelous MN 56358 - REC: 1		Change crop or yield goal					
Soil Analysis Date: 07/23/18									
Lab Number:	Report Number:	Sample ID:	Cation Exchange Capacity: 6.8						
ELDE3744	18-200-0140	SCHELLER SE							
Hydrogen MEQ: 1.0	K%: 3.2	Mg%: 9.8	Ca%: 72.8	H%: 14.1	Na%: 0.3				
Midwest Laboratories®			Recommended Nutrients						
Soil Analysis performed and provided by Midwest Laboratories®			Pounds per Acre						
Intended Crop	Results	Rate	VL	L	M	H	VH	Yield Goal	CORN - bu
OM	(%)	1.9	L	*****				200.0 bu/A	230
Nitrate Surface	(ppm)	9							
Sub-Soil Nitrate	(Lbs)	--							
P1 Phosphorus	(ppm)	16	L	*****				Phosphate	115
P2 Phosphorus	(ppm)	18	L	*****					
Bicarb - P (Olsen)	(ppm)	--							
Potassium	(ppm)	86	M	*****				Potash	120
Magnesium	(ppm)	80	M	*****				Magnesium	22
Calcium	(ppm)	987	H	*****				Calcium Carbonate	
Sulfur	(ppm)	5	VL	**				Sulfur	25
Zinc	(ppm)	1.0	L	*****				Zinc	4.8
Manganese	(ppm)	10	L	*****				Manganese	1.2
Iron	(ppm)	87	H	*****				Iron	--
Copper	(ppm)	0.7	L	*****				Copper	1.3
Boron	(ppm)	0.4	VL	**				Boron	1.6
Sodium	(ppm)	5							
Soluble Salts mmhos/cm		0.1	L	*****					
Excess Lime									
pH		6.0							
Buffer Index		6.0							

6.0 pH

Taken 07/23/2018

DAREK N		Opelous MN 56358 - REC: 2		Change crop or yield goal					
Soil Analysis Date: 04/22/19									
Lab Number:	Report Number:	Sample ID:	Cation Exchange Capacity: 9.0						
34493140	19-108-0619	SCHELLER SE							
Hydrogen MEQ: 0.0	K%: 2.7	Mg%: 13.9	Ca%: 82.9	H%: 0.0	Na%: 0.5				
Midwest Laboratories®			Recommended Nutrients						
Soil Analysis performed and provided by Midwest Laboratories®			Pounds per Acre						
Intended Crop	Results	Rate	VL	L	M	H	VH	Yield Goal	CORN - bu
OM	(%)	2.3	L	*****				200.0 bu/A	240
Nitrate Surface	(ppm)	2							
Sub-Soil Nitrate	(Lbs)	--							
P1 Phosphorus	(ppm)	12	L	*****				Phosphate	125
P2 Phosphorus	(ppm)	28	M	*****					
Bicarb - P (Olsen)	(ppm)	--							
Potassium	(ppm)	96	M	*****				Potash	135
Magnesium	(ppm)	150	H	*****				Magnesium	--
Calcium	(ppm)	1498	VH	*****				Calcium Carbonate	
Sulfur	(ppm)	10	L	*****				Sulfur	19
Zinc	(ppm)	0.8	L	*****				Zinc	5.7
Manganese	(ppm)	9	M	*****				Manganese	1.8
Iron	(ppm)	55	VH	*****				Iron	--
Copper	(ppm)	0.5	L	*****				Copper	1.8
Boron	(ppm)	0.4	VL	**				Boron	1.6
Sodium	(ppm)	11							
Soluble Salts mmhos/cm		0.2	L	*****					
Excess Lime									
pH		7.0							
Buffer Index		7.1							

7.0 pH

Taken 04/22/2019

Starting pH: 5.2



903 8080 525
 Paid
A & L PLAINS AGRICULTURAL LABORATORIES, INC.
 302 34th St. • P.O. Box 1590 • Lubbock, TX 79408 • (806) 763-4278
 FAX (806) 763-2762 • www.al-labs-plains.com

CLIENT NO: 313
 GROWER: ROSS
 SAMPLES SUBMITTED BY: STEELE FERT.

SEND TO: American Plant Food
 P. O. Box 584
 Galena Park, TX 77547-0584

Lime: 1&2: 3-4 tons per acre

DATE: 02/08/19

SOIL ANALYSIS REPORT

PAGE: 1

SAMPLE ID	LAB NUMBER	ORGANIC MATTER % RATE ENR lbs/A	PHOSPHORUS		POTASSIUM K ppm-K RATE	MAGNESIUM Mg ppm-Mg RATE	CALCIUM Ca ppm-Ca RATE	SODIUM Na ppm-Na RATE	pH		Cation Exchange C.E.C. meq/100g	COMPUTED PERCENT BASE SATURATION					
			P1 (Weak Bray) ppm-P RATE	P2 (Strong Bray) ppm-P RATE					SOIL pH	BUFFER INDEX		K	Mg	Ca	H	Na	
1	14971	2.0M	69	50VH	66L	87H	178VL		5.2	6.9	2.8	6.0	25.4	31.7	34.5		
2	14972	1.6L	61	14L	65L	80H	117VL		5.2	6.9	2.2	7.3	29.4	25.9	34.5		

Area 1: For each hay cutting apply 400 lbs/acre of 22-0-22/4S/SingleTraces. For each grazedown apply 300 lbs/acre.
 Area 2: For each hay cutting apply 400 lbs/acre of 21-8-17/5S/SingleTraces. For each grazedown apply 300 lbs/acre.
 Dr. Larry Unruh / APF / February 16, 2019 / Cell 979-224-9024

SAMPLE ID	NITRATE NO ₃ ppm-NO ₃ RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu RATE	BORON B ppm-B RATE	EX-CESS LIME RATE	SOLUBLE SALTS meq/1000g RATE	CODE TO RATINGS: VL = VERY LOW M = MEDIUM VH = VERY HIGH L = LOW H = HIGH NR = NOT RATED
1	2VL	3VL	2.3L	5L	>99VH	0.4L	0.2VL			ND = NONE DETECTED IS = INSUFFICIENT SAMPLE ENR = ESTIMATED NITROGEN RELEASE
2	2VL	4VL	0.9VL	4VL	>99VH	0.2VL	0.3VL			This report applies only to the sample(s) tested. Samples are retained for a maximum of thirty days after testing. A & L PLAINS AGRICULTURAL LABORATORIES, INC.

Ending pH: 5.5

903 000 000
 owe to
A & L PLAINS AGRICULTURAL LABORATORIES, INC.
 302 34th St. • P.O. Box 1590 • Lubbock, TX 79408 • (806) 763-4278
 FAX (806) 763-2762 • www.al-labs-plains.com

CLIENT NO: 313
 GROWER: ROSS
 SAMPLES SUBMITTED BY: STEELE FERT.

SEND TO: American Plant Food
 P. O. Box 584
 Galena Park, TX 77547-0584

Lime: 1 ton per acre

DATE: 02/25/20

SOIL ANALYSIS REPORT

PAGE: 1

SAMPLE ID	LAB NUMBER	ORGANIC MATTER % RATE ENR lbs/A	PHOSPHORUS		POTASSIUM K ppm-K RATE	MAGNESIUM Mg ppm-Mg RATE	CALCIUM Ca ppm-Ca RATE	SODIUM Na ppm-Na RATE	pH		Cation Exchange C.E.C. meq/100g	COMPUTED PERCENT BASE SATURATION				
			P1 (Weak Bray) ppm-P RATE	P2 (Strong Bray) ppm-P RATE					SOIL pH	BUFFER INDEX		K	Mg	Ca	H	
N01N01	14187	0.9L	47	17M	18L	53VL	34VL	1135M		5.5	6.7	8.3	1.6	3.4	68.2	26.0

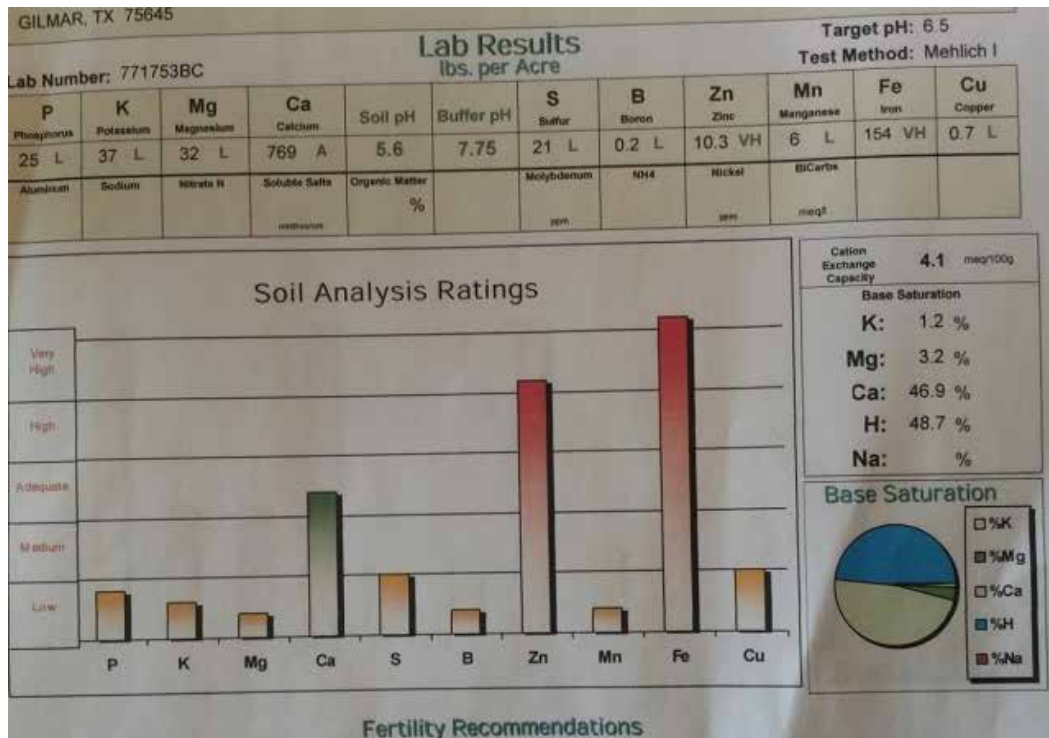
Area 1: For each hay cutting apply 400 lbs/acre of 21-8-17/5S/1Mg/SingleTraces.
 For each grazedown apply 300 lbs/acre.
 Dr. Larry Unruh / APF / March 4, 2020 / Cell 979-224-9024

SAMPLE ID	NITRATE NO ₃ ppm-NO ₃ RATE	SULFUR S ppm-S RATE	ZINC Zn ppm-Zn RATE	MANGANESE Mn ppm-Mn RATE	IRON Fe ppm-Fe RATE	COPPER Cu ppm-Cu RATE	BORON B ppm-B RATE	EX-CESS LIME RATE	SOLUBLE SALTS meq/1000g RATE	CODE TO RATINGS: VL = VERY LOW M = MEDIUM VH = VERY HIGH L = LOW H = HIGH NR = NOT RATED
N01N01	2VL	6L	0.3VL	2VL	>99VH	0.1VL	0.4L			ND = NONE DETECTED IS = INSUFFICIENT SAMPLE ENR = ESTIMATED NITROGEN RELEASE

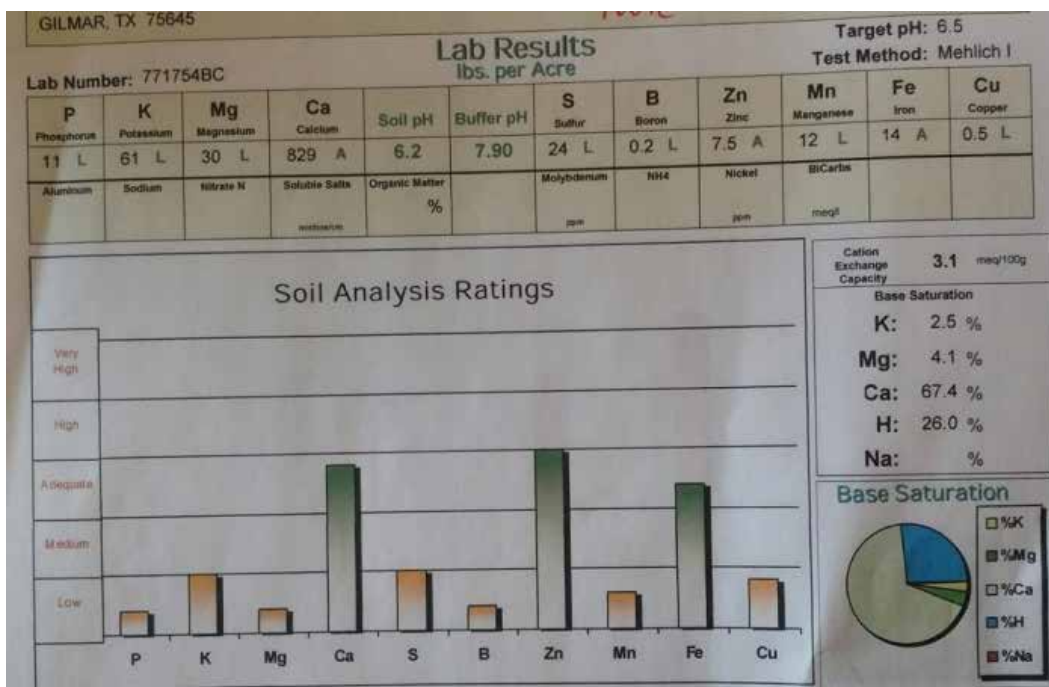
PHOSPHORUS - Multiply the results in ppm by 4.6 to convert to lbs per acre P2005.
 ** - Multiply the results in ppm by 2.4 to convert to lbs per acre K2O.
 *** - Multiply the results in ppm by 2 to convert to lbs per acre of the elemental form.
 Note: Anvil weight (2) million pounds (dry weight) for an acre of soil 0-20 inches deep.

By: J. Scott Coleman, Agronomist

Starting pH: 5.6



Ending pH: 6.2





Starting pH: 5.0

Sample Id : Villa 1

Nutrients	What is in the Soil				
	Very Low	Low	Medium	Adequate	Very High
Phosphorus (P)	9 ppm				
Potassium (K)	36 ppm				
Calcium (Ca)	443 ppm				
Magnesium (Mg)	30 ppm				

Actual Soil pH	5.0	
Desired pH	Imperial Clover-Establishment	7.0
	Winter Peas	6.5
CEC	4.4	
Organic Matter	4.6 %	
See table 3 for recommended Lime requirements.		

If your wildlife plot is over one acre you may want to purchase fertilizer from your local farm center/fertilizer/chemical dealer.

Refer to Table 1 for recommendations for each nutrient of pure product. If using bagged fertilizer refer to Table 2 for application amounts

Ending pH: 5.9

Sample Id : Villa 1

Nutrients	What is in the Soil				
	Very Low	Low	Medium	Adequate	Very High
Phosphorus (P)	3 ppm				
Potassium (K)	101 ppm				
Calcium (Ca)	476 ppm				
Magnesium (Mg)	60 ppm				

Actual Soil pH	5.9	
Desired pH	Imperial Clover-Establishment	7.0
CEC	3.7	
Organic Matter	6.7 %	
See table 3 for recommended Lime requirements.		



Starting pH: 4.9



Ending pH: 5.7



Starting pH: 6.09



U-EXTENSION
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE

SOIL TEST REPORT

October 2017

County: White

SPARTA TN 38583

Nashville, TN 37211-5112

soilplantpestcenter@utk.edu

Mehlich 1 SOIL TEST RESULTS and RATINGS* (Pounds Per Acre)														
Lab Number	Report Date	Farm ID	Sample Number	pH		Phosphorus	Potassium	Calcium	Magnesium	Zinc	Iron	Manganese	Boron	Sodium
				Soil pH	Buffer Value	P LBS/ACRE	K LBS/ACRE	CA LBS/ACRE	Mg LBS/ACRE	Zn LBS/ACRE	Fe LBS/ACRE	Mn LBS/ACRE	B LBS/ACRE	Na LBS/ACRE
550987	10/27/2017		RACE OMAHA	6.09		39 H	64 L	1722 S	66 S	4.4 S	25 S	9 S	0.8	13

Lab Number	Farm ID	Sample Number	Sulfur	Nitrogen		Carbon	C/N Ratio	Organic Matter	Soluble Salts	Particle Size Analysis - Hydrometer Method				
			LBS/ACRE	NO3-N ppm	Total N %	%	%	%	ppm	% Sand	% Silt	% Clay	Soil Texture	
550987														

RECOMMENDATIONS-Fertilizer/Line Applications and Rates									
Lab Number	Farm ID	Sample Number	Crop	Nitrogen (N)	Phosphate (P2O5)	Potash (K2O)	Application Rate	Limestone	Application Rate
550987			Cool Season Grass Hay Establishment	30	0	90	pounds per acre	0	tons per acre
550987			Cool Season Grass Hay Maintenance	60-165	0	60	pounds per acre	0	tons per acre

Ending pH: 7.29

SOIL TEST REPORT

County: White

SPARTA TN 38583

Nashville, TN 37211-5112

soilplantpestcenter@utk.edu

Mehlich 1 SOIL TEST RESULTS and RATINGS* (Pounds Per Acre)														
Lab Number	Report Date	Farm ID	Sample Number	pH		Phosphorus	Potassium	Calcium	Magnesium	Zinc	Iron	Manganese	Boron	Sodium
				Soil pH	Buffer Value	P LBS/ACRE	K LBS/ACRE	CA LBS/ACRE	Mg LBS/ACRE	Zn LBS/ACRE	Fe LBS/ACRE	Mn LBS/ACRE	B LBS/ACRE	Na LBS/ACRE
1317	04/11/2018		OMAHA	7.29		7 L	52 L	2390 S	56 S	1.3 S	9 S	10 S	0.6	7

Lab Number	Farm ID	Sample Number	Sulfur	Nitrogen		Carbon	C/N Ratio	Organic Matter	Soluble Salts	Particle Size Analysis - Hydrometer Method				
			LBS/ACRE	NO3-N ppm	Total N %	%	%	%	ppm	% Sand	% Silt	% Clay	Soil Texture	
1317														

1317 OMAHA

RECOMMENDATIONS-Fertilizer/Line Applications and Rates									
Lab Number	Farm ID	Sample Number	Crop	Nitrogen (N)	Phosphate (P2O5)	Potash (K2O)	Application Rate	Limestone	Application Rate
1317			Cool Season Grass Hay Establishment	60-120	0	60	pounds per acre	0	tons per acre

Starting pH



EXTENSION
INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE

SOIL TEST REPORT

SPARTA TN 38583 **6.09 pH** County: White
Nashville, TN 37211-5112
soilplantpestcenter@utk.edu

Mehlich 1 SOIL TEST RESULTS and RATINGS* (Pounds Per Acre)															
Lab Number	Report Date	Farm ID	Sample Number	pH		Phosphorus		Potassium	Calcium	Magnesium	Zinc	Iron	Manganese	Boron	Sodium
				Soil pH	Buffer Value	P LBS/ACRE	K LBS/ACRE	CA LBS/ACRE	Mg LBS/ACRE	Zn LBS/ACRE	Fe LBS/ACRE	Mn LBS/ACRE	B LBS/ACRE	Na LBS/ACRE	
550987	10/27/2017		PACR 01A16	6.09		39 H	64 L	1722 S	66 S	4.4 S	26 S	9 S	0.8	13	

Lab Number	Farm ID	Sample Number	Sulfur	Nitrogen		Carbon	C/N Ratio	Organic Matter	Soluble Salts	Particle Size Analysis - Hydrometer Method			Soil Texture	
			LBS/ACRE	NO3-N ppm	Total N %	%	%	%	ppm	% Sand	% Silt	% Clay		
550987														

RECOMMENDATIONS-Fertilizer/Line Applications and Rates									
Lab Number	Farm ID	Sample Number	Crop	Nitrogen (N)	Phosphorus (P2O5)	Potash (K2O)	Application Rate	Limestone	Application Rate
550987			Cool Season Grass Hay Establishment	30	0	90	pounds per acre	0	tons per acre

Ending pH

SOIL TEST REPORT

SPARTA TN 38583 **7.29 pH** County: White
Nashville, TN 37211-5112
soilplantpestcenter@utk.edu

Mehlich 1 SOIL TEST RESULTS and RATINGS* (Pounds Per Acre)															
Lab Number	Report Date	Farm ID	Sample Number	pH		Phosphorus		Potassium	Calcium	Magnesium	Zinc	Iron	Manganese	Boron	Sodium
				Soil pH	Buffer Value	P LBS/ACRE	K LBS/ACRE	CA LBS/ACRE	Mg LBS/ACRE	Zn LBS/ACRE	Fe LBS/ACRE	Mn LBS/ACRE	B LBS/ACRE	Na LBS/ACRE	
1317	04/11/2018		OMAHA	7.29		7 L	52 L	2390 S	56 S	1.3 S	9 S	10 S	0.6	7	

Lab Number	Farm ID	Sample Number	Sulfur	Nitrogen		Carbon	C/N Ratio	Organic Matter	Soluble Salts	Particle Size Analysis - Hydrometer Method			Soil Texture	
			LBS/ACRE	NO3-N ppm	Total N %	%	%	%	ppm	% Sand	% Silt	% Clay		
1317		OMAHA												



Starting pH: 5.2

Hunt County **BEFORE APPLICATION** Area Represented: 20 acres
 Laboratory Number: 454605
 Customer Sample ID: TL219
 Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (1 HAY CUTTING PLUS GRAZING)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended	
pH	5.2	(5.8)	-	Strongly Acid								
Conductivity	256	(-)	umho/cm	None							CL*	
Nitrate-N	1	(-)	ppm**									95 lbs N/acre
Phosphorus	30	(50)	ppm									25 lbs P2O5/acre
Potassium	106	(150)	ppm									40 lbs K2O/acre
Calcium	2,087	(180)	ppm									0 lbs Ca/acre
Magnesium	319	(50)	ppm									0 lbs Mg/acre
Sulfur	10	(13)	ppm									5 lbs S/acre
Sodium	24	(-)	ppm									
Iron	69.74	(4.25)	ppm									
Zinc	4.05	(0.27)	ppm									0 lbs Zn/acre
Manganese	15.92	(1.00)	ppm									0 lbs Mn/acre
Copper	0.69	(0.16)	ppm									0 lbs Cu/acre
Boron												
Limestone Requirement												1.00 tons 100ECCE/acre
Limestone Requirement (Chemical Test)												0.4 tons 100ECCE/acre

Ending pH: 6.5

Hunt County **AFTER APPLICATION** Area Represented: not provided
 Laboratory Number: 532939
 Customer Sample ID: TL419
 Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (1 HAY CUTTING PLUS GRAZING)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended	
pH	6.5	(5.8)	-	Slightly Acid								
Conductivity	195	(-)	umho/cm	None							CL*	
Nitrate-N	3	(-)	ppm**									90 lbs N/acre
Phosphorus	13	(50)	ppm									50 lbs P2O5/acre
Potassium	152	(150)	ppm									0 lbs K2O/acre
Calcium	3,990	(180)	ppm									0 lbs Ca/acre
Magnesium	359	(50)	ppm									0 lbs Mg/acre
Sulfur	8	(13)	ppm									10 lbs S/acre
Sodium	45	(-)	ppm									
Iron	94.99	(4.25)	ppm									
Zinc	1.52	(0.27)	ppm									0 lbs Zn/acre
Manganese	7.15	(1.00)	ppm									0 lbs Mn/acre
Copper	0.59	(0.16)	ppm									0 lbs Cu/acre
Boron												
Limestone Requirement												0.00 tons 100ECCE/acre
Limestone Requirement (Chemical Test)												0.00 tons 100ECCE/acre



Starting pH: 5.0

Sample Id : Villa 1

Nutrients	What is in the Soil				
	Very Low	Low	Medium	Adequate	Very High
Phosphorus (P)	9 ppm				
Potassium (K)	36 ppm				
Calcium (Ca)	443 ppm				
Magnesium (Mg)	30 ppm				

Actual Soil pH	5.0	
Desired pH	Imperial Clover-Establishment	7.0
	Winter Peas	6.5
CEC	4.4	
Organic Matter	4.6 %	
See table 3 for recommended Lime requirements.		

If your wildlife plot is over one acre you may want to purchase fertilizer from your local farm center/fertilizer/chemical dealer.

Refer to Table 1 for recommendations for each nutrient of pure product. If using bagged fertilizer refer to Table 2 for application amount

Table 1 Fertilizer to Apply for Bulk Application									
If one acre or greater apply using LBS/Acre. (See table below.)					If less than one acre apply using LBS/1000sq ft. (See table below.)				
Forage : Imperial Clover-Establishment LB/ACRE					Forage : Imperial Clover-Establishment LBS/1000sq ft				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium
5000	15	120	120	20	115	0.3	2.8	2.8	0.5
Forage : Winter Peas LB/ACRE					Forage : Winter Peas LBS/1000sq ft				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium
3750	30	90	90	20	88	0.7	2.1	2.1	0.5

Ending pH: 5.9

Sample Id : Villa 1

Nutrients	What is in the Soil				
	Very Low	Low	Medium	Adequate	Very High
Phosphorus (P)	3 ppm				
Potassium (K)	101 ppm				
Calcium (Ca)	476 ppm				
Magnesium (Mg)	60 ppm				

Actual Soil pH	5.9	
Desired pH	Imperial Clover-Establishment	7.0
CEC	3.7	
Organic Matter	6.7 %	
See table 3 for recommended Lime requirements.		

If your wildlife plot is over one acre you may want to purchase fertilizer from your local farm center/fertilizer/chemical dealer.

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Table 1 Fertilizer to Apply for Bulk Application									
If one acre or greater apply using LBS/Acre. (See table below.)					If less than one acre apply using LBS/1000sq ft. (See table below.)				
Forage : Imperial Clover-Establishment LB/ACRE					Forage : Imperial Clover-Establishment LBS/1000sq ft				
Lime	Nitrogen	Phosphate	Potash	Magnesium	Lime	Nitrogen	Phosphate	Potash	Magnesium
2500	15	120	0	5	57	0.3	2.8	0.0	0.1

