

PEACEFUL VALLEY FARM SUPPLY TECHNICAL BOOKLET

UNDERSTANDING YOUR SOIL ANALYSIS REPORT

*Compiled & Edited by
Peaceful Valley Farm Supply*

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TABLE OF CONTENTS

Introduction	1-2
Results & What They Mean.....	2
Organic Matter.....	3
Organic Matter Reading Chart and Actions to Take	3
Nitrogen.....	4
Nitrogen Level Chart.....	4
Nitrogen Level Definitions	5
Phosphorus.....	6
Potassium	7
Magnesium with Calcium	8
Magnesium without Calcium.....	9
Calcium.....	10
Sodium	11
Sulfur and Sulfur Level Chart	11
Trace Elements or Micronutrients.....	12
Zinc Level Chart.....	12
Manganese Level Chart.....	12
Copper Level Chart	12
Iron Level Chart	13
Boron Level Chart	13
Percent Cation Saturation	13
ECE - Electrical Conductivity.....	13
CEC - Cation Exchange Capacity	14
Excess Lime	14
pH.....	14

THE TEST RESULTS: AN INTRODUCTION

The purpose of this publication is to help you in interpret your Soil Analysis Report from A&L Laboratories. *Understanding Your Soil Analysis Test Results* is designed specifically for the Soil Analysis Package you have purchased from Peaceful Valley Farm Supply. Although you may find it useful for interpreting results from other labs, be aware that because lab testing methodologies vary, the guidelines outlined here may not be reliably applied to other lab test results. Accordingly, we recommend that you order our Soil Analysis Package from us to be sure that the information provided here correlates with your test results. Also, if you have soil test results from other labs and want to compare the A&L test with these past results, you may not get an accurate picture of your soil's progression for the same reason. It is always best to rely over time on results from the same lab so that results will be reliably consistent. Maintain relative consistency also by sampling at the same time each year. Farmers should test annually and gardeners should test at least once every three years.

We will cover all of the basics needed to interpret your Soil Analysis Report and make decisions about improving your soil.

But, keep in mind that we do not explain the complexities of soil fertility. If you wish to increase your knowledge about the soil, we offer several excellent books including *The Soul of Soil*, *Eco-Farm*, *Feed The Soil*, and *Fertile Soil*. Here, you will can go beyond the narrow focus of chemical interpretation component of soil fertility. You can also find more extensive information about interpreting your soil test results from *Know Your Soil*, another popular booklet we offer.

INTRODUCTION - *continued*

There are actually three possible types of soil analysis: physical analysis, chemical analysis, and biological analysis. This publication is specifically directed at chemical analysis. Keep in mind, though, that the adjustments you make to your soil's elemental components will probably also have an impact on the physical structure and biological balance of your soil as well.

Be cautious when viewing the graphical representation of your Soil Analysis Report. Keep in mind that the bar graphs show the laboratory's interpretation of the levels relative to what they consider appropriate and our interpretations do not always agree. So, do not accept the bar graph height nor the symbols VH (Very High), H (High), M (Medium), L (Low), or VL (Very Low) without examining them in light of our recommendations. Where conflict occurs, please follow the instructions given here.

Even if the recommendations provided seem specific, they are not meant to be exact. Soil science is not perfect because it is not completely understood and even experts don't always agree. Once you have determined what your soil needs, you will be making decisions about specific amendments. We offer many fertilizers, so please take a look at the Fertilizer Solutions Chart in the PVFS Main Catalog to make sense of all the options available. Over time you may find certain fertilizers work better for your situation or that you prefer certain types of fertilizer such as non-animal based, slow release, local sources, or pelleted.

RESULTS & WHAT THEY MEAN

Each of the items indicated on your Soil Analysis Report will be discussed in this section, including a brief description of the item and recommendations for addressing each possible scenario. Double suggested application rates if you are growing "intensively" (double-dig), a method where plants are grown tightly spaced and require higher than normal nutrient levels. Acre rates assume broadcasting over the entire area, so reduce these application rates to 1/2 or 1/3 if banding your application.

ORGANIC MATTER

Organic matter is material that was once living, usually from plants but also animals. Organic in this sense means “contains carbon” and since plants are great accumulators of carbon, organic matter from plant material is an excellent choice although organic matter varies in quality.

The many benefits of organic matter include improving soil tilth, improving drainage in tight soils, improving water retention in sandy soils, increasing air penetration into the soil so that microbes can flourish, loosening soil for better root penetration, providing food for soil microbes, and more. You can have too much organic matter - especially if it is of low quality.

Use the chart below for adjustments in organic matter levels. Both % organic matter and CEC are used (CEC is explained later in its own section) to determine the appropriate action because together it better demonstrates the quality of your organic matter, whereas % organic matter alone only indicates quantity of organic matter. Descriptions of the actions to take follow below.

Organic Matter Reading	C.E.C. Reading	Action to Take
Less than 2	Any	Add organic matter
Below 5 but above 2	Under 20	Add high quality organic matter
Below 5 but above 2	Over 20	Maintain organic matter
Above 5	Under 20	Promote biological activity
Above 5	Over 20	Don't add

Add organic matter: Add compost (10 tons per acre or 50-100 pounds per 100 square feet) or cover crops. You can also use other sources such as manure, sawdust, or rice hulls, but these will take longer to break down and may reduce nitrogen availability in the short-term. However, in some low organic matter soils the need is so desperate that you may have to rely on what you can find.

Add high quality organic matter: Apply only high quality compost (10 tons per acre or 50-100 pounds per 100 square feet) such as New Era, Grover's, or Cranford brands. You may also grow cover crops and incorporate them into the soil, giving you quickly decomposable organic matter.

Maintain organic matter: Add compost (5 tons per acre or 25 -50 pounds per 100 square feet) or cover crops, avoiding using high-lignin materials (such as straw, sawdust, rice hulls, etc.) and only use manure that is relatively low in straw content (apply at least 6 months before planting).

Promote biological activity: No additional organic matter is needed, but you need to take action to encourage the decomposition of the existing organic material into humus. To ensure microbial populations are present in your soil to break the organic matter into humus, add small amounts of compost (2 tons per acre or 15 to 25 pounds per 100 square feet) or apply a soil inoculant such as Biotron, Ceres or Liquicomp. As decomposition occurs, carefully monitor that adequate nitrogen levels are maintained as the nitrogen may be sequestered during the decomposition process.

Don't add: Do not add organic matter, but continue to monitor levels with regular soil testing.

NITROGEN

“N” in “N-P-K”

Nitrogen is probably the element you hear about the most when associated with gardening and farming. This is probably because applications of readily available forms of N create a quick growth response and short-term “greening-up”. Nitrogen is the essential constituent of proteins, which plants need to fabricate the chlorophyll responsible for plants’ green foliage. Nitrogen is also abundant in the atmosphere, constituting 80% of the air we breathe. While nitrogen gas in the air is inert, fertilizer forms of nitrogen can be highly volatile. Be aware that over-applying N can “burn” plants (root damage that shows symptoms above ground), so stay within normally recognized application rates. Excessive N in your crops can actually lead to nitrate poisoning if you eat these nitrogen over-laden greens.

Nitrogen Level	Amount to Apply	
Under 10 Very Low	Vegetable Crops	Heavy
	Orchard, Vineyard, & Lawns	Heavy
	Grasses & Grains	Moderate
10-20 Low	Vegetable Crops	Heavy
	Orchard, Vineyard, & Lawns	Moderate
	Grasses & Grains	Light
20-30 Medium	Vegetable Crops	Moderate
	Orchard, Vineyard, & Lawns	Light
	Grasses & Grains	Do Not Add
30-40 High	Vegetable Crops	Light
	Orchard, Vineyard, & Lawns	Do Not Add
	Grasses & Grains	Do Not Add
Above 40 Very High	Do Not Add	

Some of your N needs may be met by organic matter as it decomposes. However, it is very difficult to measure these levels using chemically-based test results so this N can only be taken into account as an estimate. Generally speaking, the higher the organic matter, the higher the potential N release. In soils with over 5% organic matter, you may want to reduce soil amendments of N by 1/4, and then add liquid forms of N during the season as observable deficiencies occur.

If your levels are higher than 40 ppm, you need to “devigorate” your soil. This is done by planting “heavy feeding” crops (crops that use the most nutrients, such as corn) or grass-only cover crops, either of which will consume your excess nitrogen.

Definitions: HEAVY Nitrogen Application

Product*	Rate per Acre**	Rate per 100 square feet
F101 Blood Meal (14% nitrogen)	600-1,200 pounds	5 pounds
F1055 Fish Meal (10% nitrogen)	1,000-2,000 pounds	7 pounds
F790 Cottonseed Meal (6% nitrogen)	1,200-2,400 pounds	10 pounds
F940 Feather Meal (12% nitrogen)	800-1,600	6 pounds

**If using another fertilizer, base your rate on the fertilizer listed that has a N content closest to the fertilizer you are using. Consult the catalog Fertilizer Solutions Chart for more options.*

***Rate per acre is very approximate and depends on row and plant spacing.*

Definitions: MODERATE Nitrogen Application

Product*	Rate per Acre**	Rate per 100 square feet
F101 Blood Meal (14% nitrogen)	500-1,000 pounds	4 pounds
F1055 Fish Meal (10% nitrogen)	750-1,500 pounds	6 pounds
F790 Cottonseed Meal (6% nitrogen)	1,000-2,000 pounds	8 pounds

**If using another fertilizer, base your rate on the fertilizer listed that has a N content closest to the fertilizer you are using. Consult the catalog Fertilizer Solutions Chart for more options.*

***Rate per acre is very approximate and depends on row and plant spacing.*

Definitions: LIGHT Nitrogen Application

Product*	Rate per Acre**	Rate per 100 square feet
F101 Blood Meal (14% nitrogen)	350-700 pounds	3 pounds
F1055 Fish Meal (10% nitrogen)	500-1,000 pounds	4 pounds
F790 Cottonseed Meal (6% nitrogen)	700-1,400 pounds	6 pounds

**If using another fertilizer, base your rate on the fertilizer listed that has a N content closest to the fertilizer you are using. Consult the catalog Fertilizer Solutions Chart for more options.*

***Rate per acre is very approximate and depends on row and plant spacing.*

PHOSPHORUS

“P” in “N-P-K”

Phosphorous is the key element plants need for flowering, fruiting and rooting. You see this compound primarily in the form of bones (bone meal) or ancient bone piles (rock phosphate). It is normally found in nature combined with calcium in the form of calcium phosphate. In this form, the P tends to remain “locked up” with calcium (not available to plants) so it must be “unlocked” in the soil through natural microbial and chemical processes. So, it is crucial to have phosphorous in adequate quantity *and* a healthy, balanced, bio-active soil to make it available to the plants. Because of the stability of the calcium-phosphorous bond, burning does not occur even with high phosphorous applications. Very large applications, though, may result in an upward shift in pH toward alkalinity due to the calcium content of phosphorous amendments. Keep well ahead of your phosphorus applications because just about all products for organic agriculture that contain phosphorus do not supply it in a readily-available form. This means that it will release very slowly, sometimes over a period of years.

There are two readings for phosphorus on your Soil Analysis Report. Refer to the Phosphorus Weak Bray to determine your level on the chart below. Phosphorus NaHCO₃ represents your long-term phosphorus reserves, and should be monitored over time as you follow-up with subsequent tests.

Phosphorus Level	Amount to Apply
Under 10 Very Low, Low	1 ton F2100 Soft Rock Phosphate per acre -or- 5 pounds per 100 square feet
10-20 Medium	1/2 ton F2100 Soft Rock Phosphate per acre -or- 3 pounds per 100 square feet
20-30 High	1/4 ton F2100 Soft Rock Phosphate per acre -or- 2 pounds per 100 square feet
Over 30 Very High	None

POTASSIUM

“K” in “N-P-K”

Potassium, or Potash, exists in most types of organic matter and is critical for plant vigor as it regulates metabolism. Too much potassium can lead to a high pH. Wood ash is often suggested as a source of K, but we do not recommend its use as it is very difficult to know just how much K is in the ash, and it also may not be considered a legal organic source of potassium.

Potassium Level	C.E.C. Level	Amount of F2260 Sulfate of Potash to Add
100 or less Very Low	Under 5	100 pounds per acre or 1/2 pound per 100 square feet
	5 to 10	250 pounds per acre or 1 pound per 100 square feet
	10 or higher	500 pounds per acre or 2 pounds per 100 square feet
100 to 150 Low	Under 5	None
	5 to 10	100 pounds per acre or 1/2 pound per 100 square feet
	10 to 20	250 pounds per acre or 1 pound per 100 square feet
	20 or higher	500 pounds per acre or 2 pounds per 100 square feet
150 to 250 Medium	Under 15	None
	15 or higher	100 pounds per acre or 1/2 pound per 100 square feet
300 or higher High, Very High	Under 20	Take corrective action*
	Over 20	None

**Take corrective action: The soil has too much potassium for its CEC level, so add F1152 gypsum (one ton per acre or 5 pounds per 100 square feet) to leach out the excess potassium.*

MAGNESIUM (Mg)

Magnesium is naturally found in some types of clay soils. Clay soils with extremely high magnesium is the type of clay that can be used for pottery because the magnesium binds the clay together. One old timer story says you can tell how much magnesium there is in your soil by the thickness of the soil that sticks to your boots! Like potassium, magnesium is important for plant metabolic processes, especially in chlorophyll production and in the uptake of phosphorous. Too much magnesium can “bind up” your soil so that water and nutrients do not penetrate well. Excessively high magnesium can cause high pH. You can add magnesium either with or without calcium depending on the amendment you use. A discussion of calcium follows.

MAGNESIUM WITH CALCIUM

- ONLY ADD DOLOMITE IF YOU ALSO NEED CALCIUM -

Magnesium Level	C.E.C. Level	Amount of F850 Dolomite* to Add
100 or less Very Low, Low	Under 5	None
	5 to 10	200 pounds per acre or 1/2 pound per 100 square feet
	10 to 15	400 pounds per acre or 2 pounds per 100 square feet
	15 to 20	600 pounds per acre or 3 pounds per 100 square feet
	Over 20	800 pounds per acre or 4 pounds per 100 square feet
100 to 150 Medium	Under 5	None
	5 to 10	100 pounds per acre or 1/2 pound per 100 square feet
	10 to 20	200 pounds per acre or 1 pound per 100 square feet
	20 or higher	400 pounds per acre or 2 pounds per 100 square feet
150 to 250 High	Under 15	None
	Over 15	100 pounds per acre or 1/2 pound per 100 square feet
300 or higher Very High	Under 20	Take corrective action**
	Over 20	None

MAGNESIUM WITH CALCIUM - *continued*

**If you add Dolomite, reduce the amount of your lime application by the same amount.*

***Take corrective action: The soil has too much magnesium for this CEC level, so add gypsum at (one ton per acre or 5 pounds per 100 square feet) to leach out the excess magnesium. Add gypsum annually until the soil test Mg at an acceptable level.*

MAGNESIUM WITHOUT CALCIUM

Magnesium Level	C.E.C. Level	Amount of F2360 K-Mag to Add
100 or less Very Low, Low	Under 5	None
	5 to 10	250 pounds per acre or 1/2 pound per 100 square feet
	10 to 15	500 pounds per acre or 2 pounds per 100 square feet
	15 to 20	750 pounds per acre or 3 pounds per 100 square feet
	Over 20	1000 pounds per acre or 4 pounds per 100 square feet
100 to 150 Medium	Under 10	None
	10 to 20	250 pounds per acre or 1/2 pound per 100 square feet
	20 or higher	500 pounds per acre or 2 pounds per 100 square feet
150 to 250 High	Under 15	None
	Over 15	250 pounds per acre or 1/2 pound per 100 square feet
300 or higher Very High	Under 20	Take corrective action
	Over 20	None

CALCIUM (Ca)

Calcium is a very abundant element in nature. Just look at sea life and you will find it everywhere! Calcium is a critical element in cell wall structure. Since plants are made of millions of cells, you can guess how important this element is! But, when calcium is too high, you end up with an “alkaline” condition (high pH) which can impede plant absorption of some nutrients. In this case you may want to add sulfur. To determine if this is necessary, see sulfur.

Calcium Level	C.E.C. Level	Amount of F1850 Oystershell/Mined Lime to Add
1000 or less Low, Very Low	Under 5	None
	5 to 10	1,000 pounds per acre or 2 pounds per 100 square feet
	10 to 15	2,000 pounds per acre or 5 pounds per 100 square feet
	15 or higher	4,000 pounds per acre or 10 pounds per 100 square feet
1000 to 1500 Medium	Under 10	None
	10 to 15	1,000 pounds per acre or 2 pounds per 100 square feet
	15 to 20	2,000 pounds per acre or 5 pounds per 100 square feet
	20 or higher	4,000 pounds per acre or 8 pounds per 100 square feet
1500 to 2500 High	Under 15	None
	15 to 20	1,000 pounds per acre or 2 pounds per 100 square feet
	20 to 25	3,000 pounds per acre or 6 pounds per 100 square feet
	25 or higher	4,000 pounds per acre or 8 pounds per 100 square feet
Over 2500 Very High	Under 20	None
	Over 20	1,000 pounds per acre or 2 pounds per 100 square feet

SODIUM

Sodium is found in common table salt (sodium chloride) as well as in the salt found in sea water. Sodium should always be under 100 ppm. If it is too high, add F1152 Gypsum at 1 ton per acre (5 pounds per 100 square feet). Sodium that is too high causes the pH to rise and impedes other nutrients from being taken up by the plants. Make the gypsum addition annually until the soil test no longer shows too high of a level. If your water is high in sodium, you may always need to add gypsum. There is no known level that is too low.

SULFUR

This important nutrient is often forgotten as a needed element in the soil's mineral bank. Though it exists as elemental sulfur in some places on earth, sulfur is usually found as a natural compound, such as in gypsum. Like nitrogen, it also is an important ingredient for the fabrication of proteins. A soil very high in sulfur can be acidic, but it takes an extremely high amount to cause detriment to plants.

Sulfur Level		Amount to Apply
Under 5	Very Low	Very Heavy
5 to 10	Low	Heavy
10 to 15	Medium	Moderate
15 to 20	High	Light
20 or higher	Very High	None

Definitions: VERY HEAVY or HEAVY Sulfur Application

pH Level	Calcium Over 80% cation saturation	Calcium under 80% cation saturation
Under 7.5	Add F1152 gypsum at 500 pounds/acre (2 pounds per 100 square feet)	Add F1152 gypsum at 500 pounds/acre (2 pounds per 100 square feet)
7.5-8.0	Add F2210 soil sulfur at 600 pounds/acre (2 pounds per 100 square feet)	Add F1152 gypsum at 500 pounds/acre (2 pounds per 100 square feet)
8.0 or higher	Add F2210 soil sulfur at 1,000 pounds/acre (3 pounds per 100 square feet)	Add gypsum at 500 pounds/acre (2 pounds per 100 square feet)

Definitions: MODERATE or LIGHT Sulfur Application

pH Level	Calcium Over 80% cation saturation	Calcium under 80% cation saturation
Under 7.5	Add F1152 gypsum at 300 pounds/acre (2 pounds per 100 square feet)	Add F1152 gypsum at 300 pounds/acre (1 pound per 100 square feet)
7.5-8.0	Add F2210 soil sulfur at 600 pounds/acre (2 pounds per 100 square feet)	Add F1152 gypsum at 300 pounds/acre (1 pound per 100 square feet)
8.0 or higher	Add F2210 soil sulfur at 1,000 pounds/acre (3 pounds per 100 square feet)	Add gypsum at 300 pounds/acre (1 pound per 100 square feet)

TRACE ELEMENTS OR MICRONUTRIENTS

This group of elements are critical for plant metabolic functions but are not needed in the soil in very large quantities. Even though minute quantities are used, absence of any of these crucial elements can have devastating affects on your crops. The way these elements perform and how they interact is not completely understood, but you should treat them like the minerals you get from a vitamin supplement, consuming tiny amounts relative to all the food you eat. The elements we will address here include zinc, manganese, iron, copper and boron.

Our Soil Analysis Package includes zinc but you may have also ordered the Micronutrient Lab Readings which includes manganese, iron, copper, and boron which will not appear on your Report unless you purchased that option.

Amendments of these elements come from various mining processes and are usually treated in some way to make the nutrients plant available (frequently they are sulfated). You surely could put an iron skillet in your soil for iron but it may be a long time before the iron gets to the plant! Be careful in amending your soil with trace elements as excessive levels can impede the plant's ability to take up other nutrients.

Zinc Level		What to add per acre	What to add per 100 square feet
Less than 1	Very Low	15 pounds Zinc Sulfate	5 pounds Azomite
1 to 3	Low	10 pounds Zinc Sulfate	3 pounds Azomite
3 to 5	Medium	6 pounds Zinc Sulfate	2 pounds Azomite
5 to 8	High	3 pounds Zinc Sulfate	1 pound Azomite
Over 8	Very High	None	None

Manganese Level		What to add per acre	What to add per 100 square feet
Under 5	Very Low	20 pounds Techmangam Manganese Sulfate	5 pounds Azomite
6 to 14	Low	16 pounds Techmangam Manganese Sulfate	3 pounds Azomite
15 to 29	Medium	8 pounds Techmangam Manganese Sulfate	2 pounds Azomite
30 to 49	High	4 pounds Techmangam Manganese Sulfate	1 pound Azomite
Over 50	Very High	None	None

Copper Level		What to add per acre	What to add per 100 square feet
Under 0.3	Very Low	12 pounds Copper Sulfate	5 pounds Azomite
0.4 to 0.8	Low	8 pounds Copper Sulfate	3 pounds Azomite
0.9 to 1.5	Medium	4 pounds Copper Sulfate	2 pounds Azomite
Over 1.5	High Very High	None	None

TRACE ELEMENTS OR MICRONUTRIENTS - *continued*

Iron Level	What to add per acre	What to add per 100 square feet
Less than 3 Very Low, Low	10 pounds Iron Sulfate	5 pounds Azomite
4 to 11 Medium	10 pounds Iron Sulfate	3 pounds Azomite
Over 11 High, Very High	None	None

Boron Level	What to add per acre	What to add per 100 square feet
Under 0.3 Very Low	7 pounds Fertibor	5 pounds Azomite
0.4 to 0.5 Low	3 pounds Fertibor	3 pounds Azomite
Over 0.5 Medium	None	None
Over 2 High, Very High	500 pounds gypsum	2 pounds gypsum

PERCENT CATION SATURATION

Cations are the positively charged ions of certain elements. The four shown here, potassium (K), magnesium (Mg), calcium (Ca) and sodium (Na), represent the vast majority of the cation volume in soil. Actions to take for these elements have already been explained in previous sections. You do not need to completely understand this concept or know much about chemistry for these numbers to be useful. In the soil, these four elements are in somewhat of a competition, and your job is to assist them in reaching a proper balance. The % results shown on your Report are indicating their relative proportions with the total of the percentages equaling nearly 100%. In other words, each percentage shown will depend on the levels of the other three cations - think of a pie being split among these four elements. The small remaining % is comprised of hydrogen - its presence is what determines pH. Typically, the larger this remainder, the lower the pH

ECE (ELECTRICAL CONDUCTIVITY)

This is literally what it implies - as the level shown increases the soil's ability to conduct electricity increases. You may have heard before that salt (sodium chloride) water will conduct electricity better than fresh water. Although high sodium often accounts for high Ece levels, a high level may also indicate the presence of other salts frequently present in irrigation water. If your Ece is high but your sodium is not, consult with a specialist to determine your course of action.

CEC - CATION EXCHANGE CAPACITY

Your CEC result indicates the soil's ability to hold and release cations (which were explained above in Percent Cation Saturation). CEC ranges from 0 to 100, with 100 representing a capacity of pure humus. The higher this number, the greater the soil's ability to hold on to cation elements so they can be released for later use. For example, cations will easily leach out of sandy soil which has a very low CEC. Typically, you will always want to increase CEC. Of the thousands of soil tests Peaceful Valley Farm Supply has seen over the years, CEC results under 20 are common.

For example, you may have a low pH due to low calcium. Adding lime will increase calcium and pH, but in a low CEC soil, a large application of lime may be wasteful because the soil cannot hold on to all of the calcium. This excess calcium can be easily leached away by water before it can be used by the crops.

To increase CEC, add good quality compost or cover crops. This will increase the humus content and lead to a higher CEC. Don't expect this number to climb rapidly. It may take many years of humus building to get this number above 20.

EX LIME - EXCESS LIME

This indicates excess lime usually left over from a lime application. If this is High (H), it usually means you should no longer add lime. This indication should follow the recommendation for lime as above under Calcium.

pH

Most people have heard of pH which literally means "potential Hydrogen". A pH over 7 is referred to as "alkaline", and you find this alkaline condition typically in low rainfall areas such as in deserts or at the alkali or salt flats of Utah and Nevada. A pH under 7 is referred to as "acid" and you see this condition more frequently in high rainfall areas such as the Northern California coast where "acid-loving" plants such as Coastal Redwoods and azaleas flourish. A pH at 7 is referred to as "neutral" which is the pH of distilled water. Many people add lime or sulfur based on the pH and while this may be somewhat useful, it is not accurate. A high pH can be caused by elements other than calcium and a low pH may not mean you need to lime your soil. We use the nutrient levels of the cations explained above to determine the course of action. While a pH level may be helpful to indicate generally where your soil stands, it is only part of the picture and should not be used alone to determine what you need to adjust in your soil.

CONCLUSION

While our customers often insist that we tell them exactly what to add to their soil, we can only provide guidelines because the organic management of soil fertility is not a simplistic system. The more you know about this method, the greater your success will be in growing organically. Don't be afraid to apply your own common sense and develop your skills of observation as the status of your soil and your plants will constantly be in flux due many different factors including soil chemistry, microbial population, temperature, water, native soil, and the plants you are growing. It's really not as complicated as it might first seem, so dig in and good luck!