



Rogue Valley Soil Testing

It all starts with the soil

Paul Murdoch
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May 3, 2019
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Test T1	Value in pp/m	General Value	Comments
pH	5.6	Acidic	Add dolomite lime, see chart page
E.C.	.12	Weak	Will improve with amendments
T D S	80	Workable	Better with amendments
Nitrogen	5	Low	Add blood meal, see page for amounts
Phosphorous	90	Very good	
Potassium	90	Very good	
Calcium	20	Low	Add gypsum, see page
Magnesium	18	Low	Add epsom salts, see page
Humus	0	Low	Add compost see lower part of chart page
Sand %	50		
Silt %	30		A sandy loam texture in need of nutrients
Clay %	20		

Test T 2 & 3	Value in pp/m	General Value	Comments
pH	6.2	Slight acidic	Add dolomite lime, see chart page
E.C.	.31	Well in range	
T D S	210	strong	
Nitrogen	20	Good	Ideal pp/m
Phosphorous	90	Good	
Potassium	90	Good	
Calcium	50	Good	
Magnesium	40	Acceptable	
Humus	1	Low	Add compost see lower part of chart page
Sand %	50		
Silt %	30		A sandy loam texture in need of nutrients
Clay %	20		

Test West clover	Value in pp/m	General Value	Comments
pH	6.2	Slight acidic	Add dolomite lime, see chart page
E.C.	.28	Well in range	
T D S	190	strong	
Nitrogen	10	Low	Add blood meal, Ideal to read 20 pp/m
Phosphorous	22	Low	Add bone meal, see page for amount
Potassium	75	Good	
Calcium	28	Low	Add gypsum See page for amount
Magnesium	19	Low	Add epsom salt see page for amount
Humus	1	Low	Add compost see lower part of chart page
Sand %	40		
Silt %	50		A softer silt low clay soil
Clay%	10		



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Test NV1	Value in pp/m	General Value	Comments
pH	6.3	Slightly acidic	Add dolomite lime, see chart page for amounts
E.C.	.35	Well in range	
T D S	230	Strong	Good nutrient transfer
Nitrogen	12	Low	Add blood meal ideal is 20 pp/m See page
Phosphorous	30	Low	Add bone meal, see page
Potassium	70	Good	
Calcium	40	Slight low	Add gypsum See page
Magnesium	26	Slight low	Add epon salts, see page
Humus	1	Low	Add compost see lower part of chart page
Sand %	50		
Silt %	30		A sandy loam texture in need of nutrients
Clay %	20		

Test NX 2	Value in pp/m	General Value	Comments
pH	6.3	Slightly acidic	Add dolomite lime, see chart page for amounts
E.C.	.33	Well in range	
T D S	220	Strong	Good nutrient transfer
Nitrogen	10	Low	Add blood meal ideal is 20 pp/m See page
Phosphorous	45	Low	Add bone meal, see page
Potassium	60	Good	
Calcium	40	Slight low	Add gypsum See page
Magnesium	29	Slight low	Add epon salts, see page
Humus	1	Low	Add compost see lower part of chart page
Sand %	50		
Silt %	30		A sandy loam texture in need of nutrients
Clay %	20		

Test NV 3	Value in pp/m	General Value	Comments
pH	6.0	Slightly acidic	Add dolomite lime, see chart page for amounts
E.C.	.18	Well in range	
T D S	120	Strong	Good nutrient transfer
Nitrogen	5	Low	Add blood meal ideal is 20 pp/m See page
Phosphorous	60	Good	
Potassium	65	Good	
Calcium	30	Slight low	Add gypsum See page
Magnesium	26	Slight low	Add epon salts, see page
Humus	1	Low	Add compost see lower part of chart page
Sand %	50		
Silt %	30		A sandy loam texture in need of nutrients
Clay%	20		

Electrical Conductivity (EC)

EC stands for electrical conductivity, or the ability of a solution to conduct electricity. Electricity moves efficiently through water with high levels of salt present (high EC), and with more resistance through pure water (low EC). EC indicates how much dissolved salt is in a given sample. That's why EC is also referred to as TDS (total dissolved salts) or salinity (the amount of salts in a solution). All nutrients are salts, so EC is a measure of your total nutrients. Knowing your EC levels will help in plant production and monitoring of inputs. Moisture in soil that has a **high salt level will not move into the plant's roots**, causing drought symptoms, even when there is plenty of water present.

EC Meter Reading Interpretation

0.00 - 0.25 Very low - indicates probable deficiency. **Amendment will help correct**

0.25 - 0.75 Suitable for seedlings and salt-sensitive plants. For pile

0.75 - 1.50 Desirable level for most Ag plants.

1.75 - 2.25 Reduced growth, leaf marginal burn. For EFF27 Row

Small Area pH Adjustment Tables for Dolomite Lime

Average amount of powdered Dolomite Lime in pounds per square yard for soils of average organic content to bring pH to 7.0 pH level

PH Test Result Show Soil @	Sandy Soil	Sandy Loam	Loam	Silt & Clay Loams
4.0	½ lb per sq yd	1 lb per sq yd	1.5 lb per sq yd	2 lb per sq yd
4.5	⅓ lb. per sq yd	⅓ lb. per sq yd	1¼ lb per sq yd	1¾ lb per sq yd
5.0	¼ lb per sq yd	½ lb per sq yd	1 lb per sq yd	1.5 lb per sq yd
5.5	¼ lb per sq yd	½ lb per sq yd	1 lb per sq yd	1.5 lb per sq yd
6.0	1/8 lb per sq yd	¼ lb per sq yd	½ lb per sq yd	1 lb per sq yd
6.5	1/8 lb per sq yd	¼ lb per sq yd	½ lb per sq yd	1 lb per sq yd
7.0	0	0	0	0
7.5	0	0	0	0
8.0				

Add dolomite lime to adjust the acid pH This works out to about 100 lbs per acre for test f1

HUMUS INTERPRETATION

The Humus Color Chart (1384) is labeled with values of 1, 2, 3, 4 and 5.

The results are interpreted as follows:

HUMUS OR ORGANIC MATTER IN SOIL

Humus Reading	1	2	3	4	5
Agricultural Soils	Low	Medium	High		
Garden-Greenhouse Soils		Low	Medium	High	
Organic Soils			Low	Medium	High

Adding organic humus will control the pH and E.C. Start with at least 2 -3 inches worked into the soil. On square yard of rich compost will cover 10 x 10 feet 3 inches deep

Blood Meal / Dried Blood

for more rapid nitrogen release

blood meal is sometimes not recommended for organic gardening because it can damage young tender plants in warm moist conditions see below.

Analysis - nitrogen 13.25, phosphorus 1.00, potassium 0.60.

Application And Rate - no more than 4oz per square yard at the time of planting.

Blood Meal is a very volatile application and should be applied in a one at a time use to plants rather than a general overall fertilizer. Over use of Blood Meal will evoke toxicity.

Apply at one half during the growing season. Stop blood meal once fruit is set. i.e. tomatoes or other vegetables reach their size. At this time of development phosphorus and potassium are needed to mature to harvest. Refer to your test report. If P and K are low, fertilize with bone meal and potash. Blood meal (N) is no longer needed.

Release Rate - rapid lasts up to 4 months.

Soil Reaction - acidic.

BLOOD MEAL IS USEFUL FOR

- Sprinkle over compost heap if high carbon content brown matter e.g. paper, chipped twigs, straw... etc, is in excess of nitrogenous green leafy matter.
- Can be incorporated to balance the carbon content when digging in a high carbon brown mulch - otherwise nitrogen is robbed from the soil.
- Use on nitrogen hungry greens:- broccoli, cabbage, cauliflower, kale, spinach, brussel sprouts; also lettuce, and on corn-cob ...
- Apply during the growing season.
- Also used to repel animals like deer and rabbits, but only effective if it remains dry. Suggest placing it in containers.

Action On Plants - the analysis shows that nitrogen is the major constituent of blood meal as it is a constituent of blood protein.

These blood proteins are rapidly broken down to ammonia by soil bacteria. In warm moist conditions that favor bacterial growth, blood meal decomposition can be too rapid. Ammonia may be released in large enough quantity to damage delicate roots. Plant roots absorb ammonia to take up nitrogen for building plant protein.

Therefore blood meal is useful for plants that add lots of green leafy growth.

As it is a fast acting organic feed, care should be taken not to apply too much, especially in warm moist conditions. Blood Meal could be used to effectively balance carbons in the compost heap or when digging in.

CAUTION

- Don't apply to seedlings.
- A fast acting organic feed and care should be taken not to apply too much. Rapid decomposition when conditions are warm and moist could be damaging.
- Don't apply to peas and beans and other legumes. They have root nodules with bacteria that fix atmospheric nitrogen.

To increase Phosphorous and Potassium
For all reading less than 75 ppm

Amounts of bone meal to add for phosphorous

Scatter bone meal on top of the field to add phosphorus to the soil. For every 1,000 square feet, apply 30 pounds for severely deficient soil, 20 pounds for moderately deficient soil and 10 pounds for slightly deficient soil. These soils certainly fall in the range of severely deficient. At 30 lbs per 1,000 square feet, suggest adding 1,300 lbs per acre

Adding Pot Ash for low Potassium Potassium all Okay

Most organic method.

Add hardwood ash to increase both the potassium and magnesium. This will also raise the acidic soil's pH closer to neutral. Sprinkle 1 to 2 lbs of ash per 100 square feet of growing. Or...6,000 lbs per acre. Work into the soil to release potassium. As this may be less than practical, Adding Muriate of Pot Ash may be a more practical approach. See suggestions on label i.e. 140 pounds of Muriate of potash (0-0-60) per acre.

Amending these two parts of the soil alone will increase low readings on the other sub nutrients. Limestone or gypsum supply your garden soil with calcium. If your soil is acidic, adding limestone helps boost most vegetable crops by increasing alkalinity. For example, if your soil pH is below 5.5, add 2 to 3 pounds of dolomitic lime per 100 square feet to raise the pH. Apply to your local cooperative extension office for a soil test to determine its pH. Add the lime two to three months before planting your vegetables or other plants to allow time for the it to dissolve into the soil. Dig the lime into the soil to a depth of about 6 inches, and water the soil afterward to the same depth.

For soils that have a pH of 6.5 to 6.7, gypsum is a better choice for adding calcium, because it doesn't alter the soil's pH. Before planting your plants, spread about 1 to 2 pounds of gypsum per 100 square feet, and dig it into the soil.

Potassium moves freely from the root system toward the foliage at a plant's top leaves and branches. When the soil doesn't have enough potassium to supply the entire plant, the leaves of the plant begin to show the first symptoms. The most common symptom of potassium deficiency is an area of yellowed tissue around some leaf edges. Potassium deficiency can also cause entire leaves to develop a light-green color.

Plants suffering from potassium deficiency first begin to show symptoms on the leaves closest to the root system of the plant. In mild cases, the characteristic yellow discoloration takes the form of a band around the edge of each affected leaf. In some species, the discoloration around the edges of leaves can take the shape of spots instead of a band or stripe. As the symptoms progress the yellowed tissue dies and turns brown, spreading to more leaves farther up the plant. These symptoms often do not occur until four to six weeks after planting time.

Okay to add gypsum any time of year

Cannabis or hemp: 20 to 30 lbs. per 100 sq. ft. Twice per year

For hemp and cannabis application, also mix in compost or organic matter

Adding calcium to soil

if your soil pH is below 5.5, add 2 to 3 pounds of dolomitic lime per 100 square feet to raise the pH

For soils that have a pH of 6.5 to 6.7, gypsum is a better choice for adding calcium, because it doesn't alter the soil's pH. Before planting your plants, spread about 1 to 2 pounds of gypsum per 100 square feet, and dig it into the soil.

Two commonly used amendments to raise magnesium levels are Epsom salts and lime. Epsom salts will add magnesium without altering pH and lime will add magnesium while raising pH at the same time.

The exact amount of magnesium amendment you should add to your soil depends on a variety of factors including the texture of your soil and the preexisting magnesium and pH levels. For example, it would take 7.5 pounds of lime per 100 square feet to raise the pH from 5.5 to 6.5. You can use the results of your soil test to determine the appropriate quantity.



Pesticide report for Horn Creek Hemp
May 3, 2019

Tested for: Sample NV1 NV 2 NV3

organophosphate
carbamate pesticides
toxic/heavy metals
or naturally occurring
acetylcholinesterase inhibitors

Normal amounts of iron and aluminum
Heavy metals i.e. lead, mercury etc. read too low to measure.
Consider this normal and safe.

All tests read negative

thank you
Michael Anzalone

Cannabis / Hemp do's and Don't s

Always check the overall environmental conditions prior to passing judgment – soil around 6.4 to 6.8 pH– plenty of water, light, fresh air, loose soil, no water standing in pools.

When you begin your garden, develop a soil that works well for you. Start with just the soil you have .pH should balance around 6.5 to 7.0 for most cannabis plants Too much water can kill young marijuana plants. Following germination, allow the surface to get crusty. Stick your finger 3-4 inches under the soil, if no moisture, then water thoroughly. Sink water should sit open for 24 hours or more to release chlorine among other potentially harmful sediments.

Your soil contains plenty nutrients, **do not** add more of these with your watering schedule. When adding nutrients to your water, - apply *every other* watering. The vegetative stage likes more Nitrogen, and the flowering stage like more Phosphates and less Nitrogen. To begin growing, there is plenty

pH And marijuana Grown In Soil

When growing marijuana in soil the pH of the soil should be between 6.5 and 7.0. When growing in containers, a single pH reading for each container is recommended. When growing outdoors in a garden, it is best to take two or three pH measurements from different areas of the garden. If you have a large garden, you may have to adjust the pH in various parts of your garden to different levels. Check the pH once every one-two weeks. Unlike hydroponics where the nutrient solution is in a single reservoir and only needs to be checked once, a soil garden will get its nutrients from the soil it is growing in. Even a small garden that contains a few plants may have soil that varies in pH from one area to another.

Most fertilizers cause a pH change in the soil. Adding fertilizer to the soil almost always results in a more acidic (lower) pH. As time goes on, the amount of salts produced by the breakdown of fertilizers in the soil causes the soil to become increasingly acidic and eventually the concentration of these salts in the soil will stunt the plant and cause browning out of the foliage. Also, as the plant gets older its roots become less effective in bringing food to the leaves. To avoid the accumulation of these salts in your soil and to ensure that your plant is getting all of the food it needs, you can begin leaf feeding your plant at the age of about 1.5 months. Dissolve the fertilizer in water (worm castings mixed with water will work well for leaf feeding) and spray the mixture directly onto the foliage. The leaves absorb the fertilizer into their veins. If you want to continue to put fertilizer into the soil as well as leaf feeding, be sure not to overdose your plants.

Adjusting pH Of marijuana Grown In Soil

A good way to stabilize soil is to use dolomite lime (calcium-magnesium carbonate). Dolomitic lime acts slowly and continuously, so soil will remain pH stable for a few months. Using fine size dolomite lime is important, coarser grades can take a year or longer to work. You can find fine size dolomite lime at any well stocked garden supply center.

Dolomite lime has been used by gardeners as a pH stabilizer for many years. It has a pH that is neutral (7.0). When added to soil in the correct proportions, it will stabilize soil at a pH near 7.0.

When growing in containers, add one cup of fine dolomite lime to each cubic foot of soil. Mix the dry soil thoroughly with the dolomite lime, and then lightly water it. After watering, re-mix it and wait for a day or two before checking the pH. When growing in an outdoor garden, follow the dolomite lime manufacturer's instructions. *Lowering soil pH*: small amounts of composted leaves, cottonseed meal, or peat moss will lower the pH of soil. *Raising soil pH*: small amounts of hardwood ashes or crushed oyster/egg shells will help to raise the soil pH. Hydrated dolomite lime can also be used to raise the pH of soil. In containers, use no more than 1/8 cup of hydrated lime per cubic foot of soil (per application). Mix it into warm water, and then apply the water to the soil. When growing in an outdoor garden, follow the manufacturer's instructions. Wait at least a day or two before checking the pH level of soil after attempting to raise, lower or stabilize it. If adjustments still have to be made, use small amounts of whatever material you are using. Don't try to adjust the pH more than 0.1 every two days.

A brief explanation of EC, TDC and CEC

Total dissolved solids (TDS) is the amount of dissolved substances in solution. This measurement reads all the dissolved inorganic and organic substances in a liquid. ... For example, if you measured the conductivity of a glass of water and then add table salt, the conductivity will go up. Or simply put, the more organic nutrients in a soil, the richer the soil will be.

Cation exchange capacity (CEC) is the total capacity of a soil to hold exchangeable cations. CEC is an inherent soil characteristic and is difficult to alter significantly. It influences the soil's ability to hold onto essential nutrients and provides a buffer against soil acidification.

This is all tied together with the EC (electrical conductivity) test. As stated above, the more organic nutrients in a soil, the richer the soil will be. The better plants will grow whether it be corn, tomatoes or cannabis.