

WALLACE LABS
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EI Segundo, CA 90245
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MEDIA REPORT

Print Date Aug. 18, 2020

Receive Date 8/17/20

Location California Soils, Inc.
 Requester Conor Davis

graphic interpretation: * very low, ** low, *** moderate

**** high, ***** very high

ammonium bicarbonate/DTPA

extractable - mg/kg soil

Interpretation of data

low medium high
 0 - 12 16 - 28 32 - 44
 0-240 240-500 500-700
 0- 12 12- 20 over 20
 0- 2 3- 4 over 5
 0- 4 4- 6 over 6
 0- 0.5 0.6 - 1 over 1
 0- 1 1- 2 over 2

Sample ID Number 20-231-02
 Sample Description Pro Planters Mix

elements

phosphorus 338.35 *****
 potassium 4,248.78 *****
 iron 312.68 *****
 manganese 82.59 *****
 zinc 111.71 *****
 copper 13.46 *****
 boron 4.89 *****
 calcium 1,704.12 ****
 magnesium 663.69 *****
 sodium 1,418.07 *****
 sulfur 489.56 **
 molybdenum 0.30 ***
 nickel 2.06 *

The following trace elements may be toxic
 The degree of toxicity depends upon the pH of the soil, soil texture, organic matter, and the concentrations of the individual elements as well as to their interactions

aluminum n d *
 arsenic 0.56 *
 barium 2.53 *
 cadmium 0.41 *
 chromium 0.24 *
 cobalt 0.48 *
 lead 22.80 ***
 lithium 0.93 *
 mercury n d *
 selenium n d *
 silver n d *
 strontium 6.14 *
 tin n d *
 vanadium 2.10 *

The pH optimum depends upon soil organic matter and soil content-
 under 5 may be too acidic
 6 to 7 may be good
 over 8.0 is too alkaline

Saturation Extract

pH value 7.46 ***
 ECe (milli-mh/cm) 4.86 *****

The ECe is a measure of the media salinity:

good at 200 ppm
 good at 25 ppm

calcium 75.8 3.8
 magnesium 36.2 3.0
 sodium 350.4 15.2
 ammonium as N 35.6 2.5
 potassium 750.3 19.2
 cation sum 43.7
 chloride 1,134 31.9
 nitrate as N 28.8 2.1
 phosphorus as P 5.6 0.2
 sulfate as S 142.8 8.9
 anion sum 43.1

toxic over 1 for many plants
 increasing problems start at 3
 est. gypsum requirement-lbs/cubic yard

boron as B 1.51 *****
 SAR 8.3 *****
 18.9

infiltration rate inches/hour 24.39
 Total Nitrogen, dry weight basis 1.23%
 Total Carbon, dry weight basis 19.65%
 Carbon:Nitrogen Ratio 16.0
 lime (calcium carbonate) no
 organic matter based on carbon, dry weight basis 39.30%
 organic matter based on LOI 44.64% hydrophobic
 acid insoluble materials (sand, silt & clay) 46.56%
 bulk density (pounds per cubic feet as received) 33.63
 moisture content of media 23.4%
 half saturation percentage 91.4%

ideal percentages of cations

abt 5% potassium millieq K 5.09 15%
 < 3% sodium millieq Na 1.91 6%
 abt 70% calcium millieq Ca 19.04 57%
 10 - 15% magnesium millieq Mg 7.28 22%
 5-10% hydrogen millieq H 0.16 0%
 total millieq/100 grams 33.49

Elements are expressed as mg/kg dry soil or mg/l for saturation extract.

pH and ECe are measured in a saturation paste extract. nd means not detected.

WALLACE LABORATORIES, LLC
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August 19, 2020

Conor Davis, conor@CaliforniaSoils.com
California Soils, Inc.
PO Box 345
Westley, CA 95387

RE: Pro Planters Mix, Our ID No. 20-231-02
Received august 17, 2020

Dear Conor,

The pH is moderately alkaline at 7.46. Salinity is moderately high at 4.86 millimho/cm. Chloride is 1,134 parts per million in the saturation extract.

Mineral nitrogen is modest. Sulfur is modest. Phosphorus, potassium, iron, manganese, zinc, copper, boron and magnesium are high. Soluble calcium is modest. Soluble boron is 1.5 parts per million in the saturation extract. Sodium is high. SAR (sodium adsorption ratio) is 8.3. Plant-available lead is moderate. The concentrations of other common non-essential heavy metals are low.

The optimum level of boron is about 0.2 to 0.3 part per million. Sensitive plants need boron below about 0.5 part per million. Most plants need boron below 1 part per million. Boron is leachable but the rate of leaching is about one-third the rate of leaching of sodium chloride.

Ideally, SAR should be less than about 3. High sodium and high SAR values limit soil physical properties, reduces water percolation, decreases soil aggregate stability, increases clay dispersion, increases swelling of expandable clays, increases surface crusting and reduces soil tilth. High sodium also restricts the uptake of competitive ions such as potassium and calcium. Sodium and SAR can be lowered with the addition of gypsum followed with leaching.

The organic matter content based on organic carbon is 39.3% on a dry weight basis. The carbon:nitrogen ratio is 16.0.

LOI or volatile solids is 44.6% on a dry weight basis,

The acid insoluble fraction is 46.5% on a dry weight basis. This fraction is predominately sand, silt and clay.

The rate of water percolation is 24.4 inches per hour.

The as-received bulk density is 33.6 pounds per cubic foot.

The cation exchange capacity is 33.5 milliequivalents per 100 grams. Exchangeable potassium is high. Exchangeable magnesium is modestly high. Exchangeable calcium is moderately low. Exchangeable sodium is high. Exchangeable hydrogen is low.

The soil is hydrophobic. It is difficult to wet. Water beads up on the soil surface initially and then slowly moves into the soil.

Recommendations

Incorporate agricultural gypsum at the rate of 5 pounds per cubic yard.

Preleach prior to planting. Reduce the salinity to less than 3 millimho/cm. Reduce chloride to less than 150 parts per million in the saturation extract for salt-sensitive plants. Lower boron to less than 1 part per million or as needed in the saturation extract. Reduce SAR to less than 3.

Increase nitrogen after leaching. Yara or Simplot calcium ammonium nitrate (27-0-0) can be used to supply a pH-neutral source of nitrogen. Slow-release sources include urea formaldehyde (39-0-0) and feather meal.

Monitor the plantings with periodic testing of the media and tissue analyses of the plants. Periodically apply nitrogen as needed.

Sincerely,

Garn A. Wallace, Ph. D.
GAW:n