



BIOLOGY

BOOKS - MBD

Plant Nutrition

Example

1. What is mineral nutrient?

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2. Name the part of plant body which absorbs mineral nutrients.

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3. What are trace elements?



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4. Name nine micronutrients.



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5. Name macronutrients.



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6. Write two criteria for essentiality of elements for plants.



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7. Name four macronutrients.



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8. What are nutrients?



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9. Which elements are needed as trace elements for healthy growth of plants?



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10. Deficiency of which element is responsible for early fall of leaves?



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11. From where do the plants get the supply of hydrogen?



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12. Name the element used by plant to form cytochrome.

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13. What is the role of sodium and calcium in the permeability of membrane?

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14. What happens due to deficiency of molybdenum in cauliflower?

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15. Can the addition of calcium carbonate to soil improve the growth ?
How?

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16. The macronutrients which is an essential component of all organic compounds, yet not obtained by plants from soil is:

- A. Nitrogen
- B. Carbon
- C. Phosphorus
- D. Magnesium

Answer:



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17. Which is essential for root hair growth?

- A. Zn
- B. Ca
- C. Mo

D. S

Answer:



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18. Prolonged liberal irrigation of agricultural fields is likely to create the problems of:

A. 1. Acidity

B. 2. Aridity

C. 3. Salinity

D. 4. Metal toxicity

Answer:



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19. The deficiencies of micronutrients, not only affects growth of plants but also vital functions such as photosynthetic and mitochondrial electron flow. Among the list given below, Which group of these elements shall effect most, both photosynthetic and mitochondrail electron transport:

A. Cu, Mn, Fe

B. Co, Ni, Mo

C. Mn, Co, Ca

D. Ca, K, Na

Answer:



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20. Name the plant organ meant for absorption of mineral and why?



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21. What is passive absorption?



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22. In which form mineral are absorbed?



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23. What is the driving force for active absorption?



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24. What is role of transpiration pull in translocation of solutes?



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25. What is flux?



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26. Name three major resources of minerals.



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27. Name four macronutrients.



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28. Name the micronutrients which form components of fertilizer.



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29. Why do plants of legume family contain more protein than other plants?



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30. Name the enzyme involved in biological nitrogen fixation. What are the two mineral element needed for the activity of enzyme?



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31. What type of condition is created by leghaemoglobin in root nodules of a legume?



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32. A farmer adds Azotobacter culture to the soil before sowing maize. How does it increase the yield of maize?



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33. How do some bacteria carry out nitrification? What are such bacteria called?

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34. Name the best known symbiotic nitrogen fixing bacterium.

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35. How is nitrogenase enzyme protected?

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36. Name the red pigment present in the root nodules of leguminous plants.

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37. Which element is essential part of enzyme urease which catalyzes hydrolysis of urea to $CO_2 \rightarrow NH_4$.



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38. Name the nitrifying bacteria of the soil. Why are they called chemoautotrophs?



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39. Fill in the blank

Elements which are required by the plants in minute quantities are called

.....



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40. Fill in the blank

Carbon is absorbed by the plant asfrom the air.



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41. Fill in the blank

Elements which are required in large quantities by the plants are called.....



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42. Fill in the blank

Oxygen is absorbed in the molecular form from theby the plant.



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43. Fill in the blank

The common symptom of nitrogen deficiency isin plants.



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44. Fill in the blank

The deficiency of potassium producesgrowth in plants.



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45. True or False

Boron is related to synthesis of plant auxins.



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46. True or False

Insectivorous plants by catching insects get an additional supply of

vitamins.

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47. True or False

Leghaemoglobin has the ability to combine very rapidly with oxygen and thus act as oxygen carrier.

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48. True or False

Reduction of nitrates to nitrites is carried by an enzyme called nitrate reductase, which is a flavoprotein and contains iron for its activity.

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49. One word for the following statement

The transfer of amino group from one amino acid to keto group of keto

acid.



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50. One word for the following statement

The bond between two adjacent amino acids to form polypeptide chain.



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51. One word for the following statement

Absorption which requires an input of energy.



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52. One word for the following statement

Cultivation of plants by placing the roots in the nutrient solution.



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53. 'All elements that are present in a plant need not be essential to its survival'. Comment.

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54. Why is purification of water and nutrient salts so important in studies involving mineral nutrition using hydroponics?

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55. Explain with examples: macronutrients, micronutrients, beneficial nutrients, toxic elements and essential elements.

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56. Name atleast five different deficiency symptoms in plants. Describe them and correlate them with the conerned mineral deficiency.





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57. If a plant shows a symptom which could develop due to deficiency of more than one nutrient, how would you find out experimentally, the real deficient mineral element?



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58. Why is that in certain plants deficiency symptoms appear first in younger parts of the plant while in others they do so in mature organs?



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59. How are the minerals absorbed by the plants?



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60. What are the conditions necessary for fixation of atmospheric nitrogen by Rhizobium. What is their role in N_2 -fixation?

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61. What are the steps involved in formation of a root nodule?

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62. Which of the following statements are true? If false, correct them:

Boron deficiency leads to stout axis.

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63. Which of the following statements are true? If false, correct them:

Every mineral element that is present in a cell is needed by the cell.

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64. Which of the following statements are true? If false, correct them:

Nitrogen as a nutrient element, is highly immobile in the plants.



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65. Which of the following statements are true? If false, correct them: It is

very easy to establish the essentiality of micronutrients because they are

required only in trace quantities.



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66. Name a plant, which accumulate silicon.



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67. Mycorrhiza is a mutualistic association gain from each other?



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68. Nitrogen fixation is shown by prokaryotes and not eukaryotes.

Comment?

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69. Carnivorous plants like *Nepenthes* and Venus fly trap have nutritional adaptations. Which nutrient do they especially obtain and from where?

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70. Think of a plant which lacks chlorophyll. From where will it obtain nutrition? Give an example of such a type of plant.

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71. Name an insectivorous angiosperm.



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72. A farmer adds Azotobacter culture to the soil before sowing maize. Which mineral element is being replenished ?



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73. What type of condition is created by leghaemoglobin in root nodules of a legume?



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74. What is common to Nepenthes, Utricularia and Drosera with regard to mode of nutrition?



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75. Plants with zinc deficiency show reduced biosynthesis of

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76. Yellowish edges appear in leaves deficient in

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77. The macronutrients which is an essential component of all organic compounds, yet not obtained by plants from soil is:

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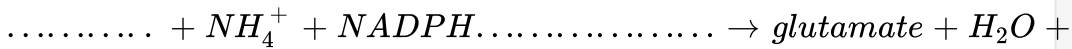
78. Name one non-symbiotic nitrogen fixing prokaryote.

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79. Rice fields produce an important green house gas. Name it.

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80. Complete the equation for reductive amination



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81. How is sulphur important for plants? Name the amino acids in which it is present.

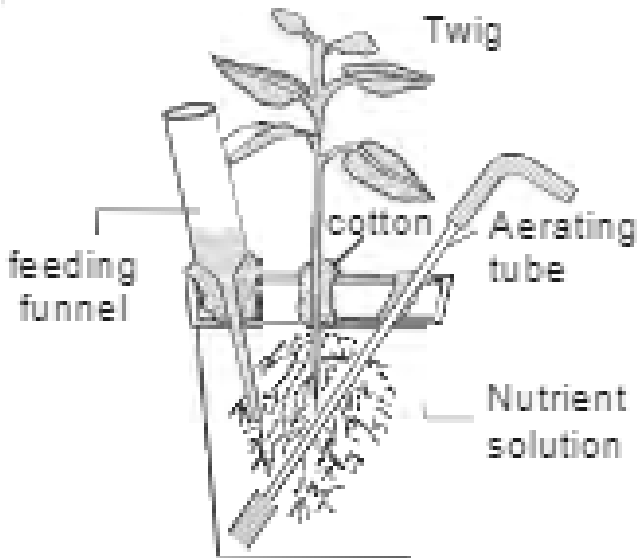
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82. How are organisms like pseudomonas and Thiobacillus of great significance in nitrogen cycle?

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83. Carefully observe the following figure

Name the technique shown in the figure and the scientist who demonstrated this technique for the first time.

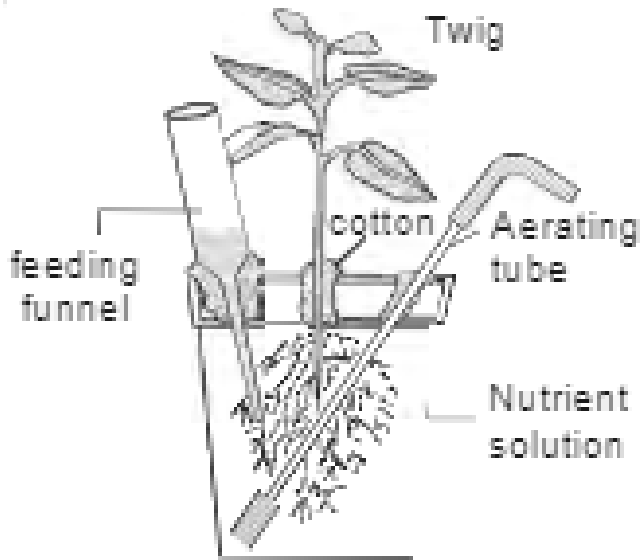


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84. Carefully observe the following figure

Name at least three plants for which this technique can be employed for

their commercial production.

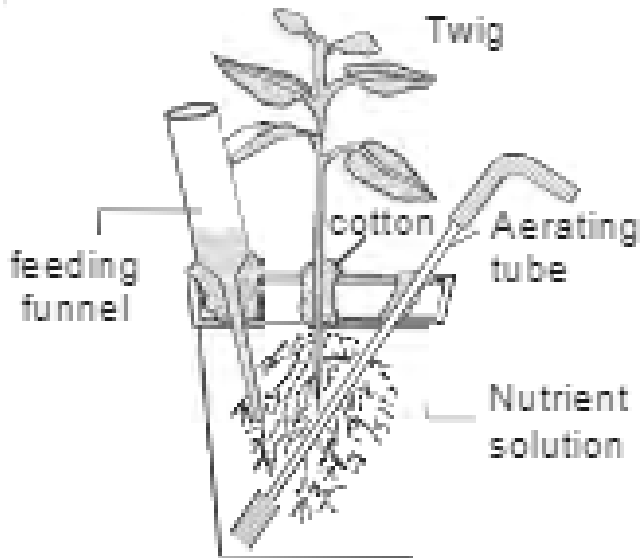


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85. Carefully observe the following figure

What is the significance of aerating tube and feeding funnel in this

setup?



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86. Name the most crucial enzyme found in root nodules for N_2 fixation?

Does it require a special pink coloured pigment for its functioning.

Elaborate.

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87. How are the terms 'critical concentration' and 'deficient' different from each other in terms of concentration of an essential element in plants? Can you find the values of 'critical concentration' and 'deficient' for mineral - Fe & Zn.

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88. Carnivorous plants exhibit nutritional adaptation. Citing an example explain this fact.

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89. It is observed that deficiency of a particular element showed its symptoms initially in older leaves and then in younger leaves.

Does it indicate that the element is actively mobilized or relatively immobile?

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90. It is observed that deficiency of a particular element showed its symptoms initially in older leaves and then in younger leaves.

Name two elements which are highly mobile and two which are relatively immobile.



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91. It is observed that deficiency of a particular element showed its symptoms initially in older leaves and then in younger leaves.

How is the aspect of mobility of elements important to horti culture and agriculture?



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92. We find that Rhizobium forms nodules on the roots of leguminous plants. Also Frankia another microbe forms nitrogen fixing nodules on the roots of non-leguminous plant Alnus.

Can we artificially induce the property of nitrogen fixation in a plant-leguminous or non-leguminous?

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93. We find that *Rhizobium* forms nodules on the roots of leguminous plants. Also *Frankia* another microbe forms nitrogen fixing nodules on the roots of non-leguminous plant *Alnus*.

What kind of relationship is observed between mycorrhiza and pine trees?

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94. We find that *Rhizobium* forms nodules on the roots of leguminous plants. Also *Frankia* another microbe forms nitrogen fixing nodules on the roots of non-leguminous plant *Alnus*.

Is it necessary for a microbe to be in close association with a plant to provide mineral nutrients? Explain with the help of one example.

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95. What are essential elements for plants ? Give the criteria of essentiality? How are minerals classified depending upon the amount in which they are needed by the plants?



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96. With the help of examples describe the classification of essential elements based on the function they perform.



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97. Give the biochemical events occurring in the root nodule of a pulse plant. What is the end product? What is its fate?



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98. We know that plants require nutrients. If we supply these in excess, will it be beneficial to the plants? If yes, how/ If no, why?



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99. Trace the events starting from the coming in contact of Rhizobium to a leguminous root till nodule formation. Add a note on importance of leg haemoglobin.



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100. Hydroponics have been shown to be a successful technique for growing of plants. Yet most of the crops are still grown on land. Why?



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101. What are nutrients?



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102. How many nutrients are required by plants ?



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103. What are the two main categories of essential elements on the basis of quantity?



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104. What are macroelements? Why are they called essential elements?



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105. List a few macronutrients.



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106. Name elements which constitute bulk of body.

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107. What are hydroponics?

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108. What are microelements? Give examples.

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109. What are non-mineral elements ?

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110. How is nitrogen obtained?



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111. What is the role of nitrogen in plants?



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112. What are free nitrogen fixing bacteria?



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113. What are chemoautotrophs?



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114. What is exanthema?



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115. Define premature abscission.



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116. Name any one symbiotic nitrogen fixing bacteria. How does it help in nitrogen fixation ?



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117. What is chlorosis?



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118. What are nutrients?



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119. Differentiate macronutrient and micronutrients.

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120. Write functions of macronutrients.

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121. What is the role of nitrogen in plants?

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122. Write the role of Phosphorus in the plant metabolism.

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123. What are the symptoms of phosphorus deficient plant? Where do these symptoms first appear in a plant?

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124. Discuss the role of potassium in the plant metabolism.

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125. Why do plants need potassium?

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126. What are symptoms of a potassium deficient plant?

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127. What is the role of calcium in the plant metabolism?



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128. Describe the role of iron in the growth of plants?



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129. What is the role of magnesium ? Discuss their deficiency symptoms in plants.



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130. What is the importance of sulphur in the metabolism and growth of plants?



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131. Describe the role of manganese in the life of plants.

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132. List the deficiency symptoms of manganese in plants.

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133. What is a role of zinc in plants?

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134. List the various symptoms of zinc deficiency in plants.

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135. What is the role of Molybdenum in plant metabolism?

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136. List the functions of Boron in plant life.

 [Watch Video Solution](#)

137. What is the role of Copper in plant metabolism?

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138. List the symptoms of a Copper deficient plant.

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139. How does nitrogen fixation take place?

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140. With a graphic representation show the relationship between three main nitrogen pools, atmospheric soil and biomass.

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141. Name the two amides present in plants. How are they formed?

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142. What is the utility of hydroponic technique? Draw sketches to show the set up of the technique.

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143. In spite of presence of all the essential elements in the soil the plants sometimes show symptoms of mineral deficiency. Explain.

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144. Plants usually show better growth when ammonium sulphate is added to the soil. How would you explain this behaviour?



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145. Give Scientific reasons to the following:

Iron is not a constituent to chlorophyll but its deficiency causes chlorosis.



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146. Give Scientific reasons to the following:

The nodule bacteria - Rhizobium can fix nitrogen only in presence of the pigment- leghaemoglobin.



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147. Give Scientific reasons to the following:

Solute enters into the xylem from cortex of roots only by passing through symplastic pathway across the endodermis.



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148. Nitrogenase acts under anaerobic conditions and carries on the process of nitrogen fixation.



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149. Magnesium deficiency in plants leads to chlorosis in leaves.



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150. Active Absorption of salts takes place against the concentration gradient.





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151. What are macronutrients that usually play the most important role in limiting plant growth globally?



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152. Name the pigment that protects nitrogenase.



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Exercise

1. Name the mineral constituent of cell wall.



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2. What is the role of Nitrobacter bacteria?

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3. What are trace elements?

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4. Name a plant, which accumulate silicon.

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5. Yellowish edges appear in leaves deficient in

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6. How are the minerals absorbed by the plants?



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7. List any two conditions necessary for fixation of nitrogen by Rhizobium.



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8. How is sulphur important for plants? Name the amino acids in which it is present.



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9. Differentiate macronutrient and micronutrients.



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10. Write the role of Phosphorus in the plant metabolism.



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11. What are symptoms of a potassium deficient plant?

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12. What are essential elements for plants ? Give the criteria of essentiality?

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13. Descriptive biological nitrogen fixation.

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14. Name any three micromutrients. Write their functions and deficiency symptoms.

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