

Hoagland_Nutrient_Solution_Protocol

| Hoagland Full nutrient solution (1L) | | | | | |
|---|--|---------|------------------|------------------------|---------------------|
| Concentration | Chemical | wt(g)/L | For 250 mL Stock | mL/L for working stock | Final Concentration |
| 2M | KNO ₃ | 202.2 | 50.55 | 2.5 | 5 mM |
| 2M | Ca(NO ₃) ₂ ·4H ₂ O | 472.3 | 118.075 | 2.5 | 5 mM |
| 1M | KH ₂ PO ₄ (PH=6) | 136.09 | 34.0225 | 1 | 1 mM |
| 2M | MgSO ₄ ·7H ₂ O | 492.94 | 123.3235 | 1 | 2 mM |
| 0.05M | Fe-EDTA* | 2.8 | 0.7 | 1 | 50 uM |
| | Micro Nutrients | | | 1 | |
| | | | Total | 9 | |
| *0.05M Fe-EDTA (200ml): 3.72g DETA in 70 mL ddiH ₂ O mixed with 2.78 g FeSO ₄ ·7H ₂ O in 70 mL ddiH ₂ O and then volume up to 200 mL | | | | | |

| Hoagland -Nitrogen nutrient solution (1L) | | | | | |
|--|--|---------|------------------|------------------------|---------------------|
| Concentration | Chemical | wt(g)/L | For 250 mL Stock | mL/L for working stock | Final Concentration |
| 0.5M | KSO ₄ | 87 | 21.75 | 10 | 5 mM |
| 2M | CaCl ₂ ·2H ₂ O | 294.02 | 73.505 | 2.5 | 5 mM |
| 1M | KH ₂ PO ₄ (PH=6) | 136.09 | 34.0225 | 1 | 1 mM |
| 2M | MgSO ₄ ·7H ₂ O | 492.94 | 123.3235 | 1 | 2 mM |
| 0.05M | Fe-EDTA* | 2.8 | 0.7 | 1 | 0.1 mM |
| | Micro Nutrients | | | 1 | |
| | | | Total | 16.5 | |

| Hoagland -Phosphorus nutrient solution (1L) | | | | | |
|--|--|---------|------------------|------------------------|---------------------|
| Concentration | Chemical | wt(g)/L | For 250 mL Stock | mL/L for working stock | Final Concentration |
| 2M | KNO ₃ | 202.2 | 50.55 | 2.5 | 5 mM |
| 2M | Ca(NO ₃) ₂ ·4H ₂ O | 472.3 | 118.075 | 2.5 | 5 mM |
| 1M | KSO ₄ | 87 | 21.75 | 10 | 10 mM |
| 2M | MgSO ₄ ·7H ₂ O | 492.94 | 123.3235 | 1 | 2 mM |
| 0.05M | Fe-EDTA* | 2.8 | 0.7 | 1 | 0.1 mM |
| | Micro Nutrients | | | 1 | |
| | | | Total | 18 | |

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| Micro Nutrients (1L) | | |
|-------------------------|--|---------|
| Final Concentration | Chemical | wt(g)/L |
| 0.046M | H ₃ BO ₃ (Boric Acid) | 2.86 |
| 0.009M | MnCl ₂ ·4H ₂ O (Manganese Chloride) | 1.81 |
| 7.5X10 ⁻⁴ M | ZnSO ₄ ·7H ₂ O (Zinc Sulphate) | 0.22 |
| 3.2X10 ⁻⁴ M | CuSO ₄ (Copper Sulphate) | 0.08 |
| 1.11X10 ⁻⁴ M | H ₂ MoO ₄ ·4H ₂ O (Molybdic Acid 85%) | 0.02 |

| Concentration | Chemical | wt(g)/L | For 250 mL Stock |
|---------------|--|---------|------------------|
| 2M | KNO ₃ | 202.2 | 50.55 |
| 2M | Ca(NO ₃) ₂ ·4H ₂ O | 472.3 | 118.075 |
| 1M | KH ₂ PO ₄ (PH=6) | 136.09 | 34.0225 |
| 2M | MgSO ₄ ·7H ₂ O | 492.94 | 123.3235 |
| 0.05M | Fe-EDTA* | 2.8 | 0.7 |
| 0.5M | KNO ₃ | 202.2 | 50.55 |
| 2M | CaCl ₂ ·2H ₂ O | 294.02 | 73.505 |