**Stock solutions for modified Hoagland’s solutions**

|  |  |  |
| --- | --- | --- |
| **Compound** | **Molar mass (g)** | **Stock solution (g per L)** |
| 1 M NH4H2PO4 | 115.03 | 115.03 |
| 2 M KNO3 | 101.11 | 202.22 |
| 2 M Ca(NO3)2 \* 4 H2O | 236.15 | 472.3 |
| 1 M NH4NO3 (full strength & below) | 80.04 | 80.04 |
| 8 M NH4NO3 (above full strength) | 80.04 | 160.08 |
| 1 M KH2PO4 | 136.09 | 136.09 |
| 1 M KCl | 74.55 | 74.55 |
| 1 M CaCO3 | 100.09 | 100.09 |
| 2 M MgSO4 \* 7 H2O | 246.48 | 492.96 |
| 10 % Fe-EDTA | 38.50 | 38.5 |
| **Trace Elements (in 1 L H2O):** |  |  |
| MnCl2 \* 4 H2O | 197.92 | 1.81 |
| H3BO3 | 61.83 | 2.83 |
| ZnSO4 \* 7 H2O | 287.60 | 0.22 |
| CuSO4 \* 5 H2O | 249.68 | 0.08 |
| 85% Molybdic acid | 161.95 | 0.11 |

*Modified Hoagland’s solution -* 0 ppm N (0 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 0 | 0 |
| 2 M KNO3 | 101.1 | 0 | 0 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 0 | 0 |
| 1 M NH4NO3 | 80.043 | 0 | 0 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 1 | 136.1 |
| 1 M KCl | 74.555 | 3 | 223.7 |
| 1 M CaCO3 | 100.087 | 4 | 400.3 |
| 2 M MgSO4 \* 7 H2O | 246.48 | 1 | 493.0 |
| 10 % Fe-EDTA | - | 1 | - |
| Trace element cocktail | - | 1 | - |

**Individual NPK concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 0 | 0.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 0 | 0.0 |
| K from 2 M KNO3 | 39.0943 | 0 | 0.0 |
| N from 2 M KNO3 | 14.006 | 0 | 0.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 0 | 0.0 |
| N from 2 M Ca(NO3)2 | 28.012 | 0 | 0.0 |
| N from 1 M NH4NO3 | 28.012 | 0 | 0.0 |
| K from 1 M KH2PO4 | 39.0943 | 1 | 39.1 |
| P from 1 M KH2PO4 | 30.9737 | 1 | 31.0 |
| K from 1 M KCl | 39.0943 | 3 | 117.3 |
| Cl from 1 M KCl | 35.453 | 3 | 106.4 |
| Ca from 1 M CaCO3 | 40.078 | 4 | 160.3 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 0.0 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 35 ppm N (2.5 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 0.165 | 19.0 |
| 2 M KNO3 | 101.1 | 0.335 | 67.7 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 0.335 | 109.9 |
| 1 M NH4NO3 | 80.043 | 0.165 | 13.2 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0.85 | 115.7 |
| 1 M KCl | 74.555 | 2.45 | 182.7 |
| 1 M CaCO3 | 100.087 | 3.33 | 333.3 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | - |
| Trace element cocktail | - | 1 | - |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 0.165 | 2.3 |
| P from 1 M NH4H2PO4 | 30.9737 | 0.165 | 5.1 |
| K from 2 M KNO3 | 39.0943 | 0.335 | 26.2 |
| N from 2 M KNO3 | 14.006 | 0.335 | 9.4 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 0.335 | 26.9 |
| N from 2 M Ca(NO3)2 | 28.012 | 0.335 | 18.8 |
| N from 1 M NH4NO3 | 28.012 | 0.165 | 4.6 |
| K from 1 M KH2PO4 | 39.0943 | 0.85 | 33.2 |
| P from 1 M KH2PO4 | 30.9737 | 0.85 | 26.3 |
| K from 1 M KCl | 39.0943 | 2.45 | 95.8 |
| Cl from 1 M KCl | 35.453 | 2.45 | 86.9 |
| Ca from 1 M CaCO3 | 40.078 | 3.33 | 133.5 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 35.1 |
| P | 31.4 |
| K | 155.2 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 70 ppm N (5 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 0.33 | 38.0 |
| 2 M KNO3 | 101.1 | 0.67 | 135.5 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 0.67 | 219.9 |
| 1 M NH4NO3 | 80.043 | 0.33 | 26.4 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0.67 | 91.2 |
| 1 M KCl | 74.555 | 2 | 149.1 |
| 1 M CaCO3 | 100.087 | 2.67 | 267.2 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 0.33 | 4.6 |
| P from 1 M NH4H2PO4 | 30.9737 | 0.33 | 10.2 |
| K from 2 M KNO3 | 39.0943 | 0.67 | 52.4 |
| N from 2 M KNO3 | 14.006 | 0.67 | 18.8 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 0.67 | 53.7 |
| N from 2 M Ca(NO3)2 | 28.012 | 0.67 | 37.5 |
| N from 1 M NH4NO3 | 28.012 | 0.33 | 9.2 |
| K from 1 M KH2PO4 | 39.0943 | 0.67 | 26.2 |
| P from 1 M KH2PO4 | 30.9737 | 0.67 | 20.8 |
| K from 1 M KCl | 39.0943 | 2 | 78.2 |
| Cl from 1 M KCl | 35.453 | 2 | 70.9 |
| Ca from 1 M CaCO3 | 40.078 | 2.67 | 107.0 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 70.2 |
| P | 31.0 |
| K | 156.8 |
| Ca | 160.7 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 105 ppm N (7.5 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 0.5 | 57.7 |
| 2 M KNO3 | 101.1 | 1 | 202.2 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 1 | 328.2 |
| 1 M NH4NO3 | 80.043 | 0.5 | 40.0 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0.5 | 68.0 |
| 1 M KCl | 74.555 | 1.5 | 111.8 |
| 1 M CaCO3 | 100.087 | 2 | 200.2 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 0.5 | 7.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 0.5 | 15.5 |
| K from 2 M KNO3 | 39.0943 | 1 | 78.2 |
| N from 2 M KNO3 | 14.006 | 1 | 28.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 1 | 80.2 |
| N from 2 M Ca(NO3)2 | 28.012 | 1 | 56.0 |
| N from 1 M NH4NO3 | 28.012 | 0.5 | 14.0 |
| K from 1 M KH2PO4 | 39.0943 | 0.5 | 19.5 |
| P from 1 M KH2PO4 | 30.9737 | 0.5 | 15.5 |
| K from 1 M KCl | 39.0943 | 1.5 | 58.6 |
| Cl from 1 M KCl | 35.453 | 1.5 | 53.2 |
| Ca from 1 M CaCO3 | 40.078 | 2 | 80.2 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 105.0 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 140 ppm N (10 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 0.67 | 77.3 |
| 2 M KNO3 | 101.1 | 1.33 | 268.9 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 1.33 | 436.5 |
| 1 M NH4NO3 | 80.043 | 0.67 | 53.6 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0.33 | 44.9 |
| 1 M KCl | 74.555 | 1 | 74.6 |
| 1 M CaCO3 | 100.087 | 1.33 | 133.1 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 0.67 | 9.4 |
| P from 1 M NH4H2PO4 | 30.9737 | 0.67 | 20.8 |
| K from 2 M KNO3 | 39.0943 | 1.33 | 104.0 |
| N from 2 M KNO3 | 14.006 | 1.33 | 37.3 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 1.33 | 106.6 |
| N from 2 M Ca(NO3)2 | 28.012 | 1.33 | 74.5 |
| N from 1 M NH4NO3 | 28.012 | 0.67 | 18.8 |
| K from 1 M KH2PO4 | 39.0943 | 0.33 | 12.9 |
| P from 1 M KH2PO4 | 30.9737 | 0.33 | 10.2 |
| K from 1 M KCl | 39.0943 | 1 | 39.1 |
| Cl from 1 M KCl | 35.453 | 1 | 35.5 |
| Ca from 1 M CaCO3 | 40.078 | 1.33 | 53.3 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 139.9 |
| P | 31.0 |
| K | 156.0 |
| Ca | 159.9 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 210 ppm N (15 mM N; full strength Hoagland’s)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 1 | 115.3 |
| 2 M KNO3 | 101.1 | 2 | 404.4 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 2 | 656.4 |
| 1 M NH4NO3 | 80.043 | 1 | 80.0 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0 | 0.0 |
| 1 M KCl | 74.555 | 0 | 0.0 |
| 1 M CaCO3 | 100.087 | 0 | 0.0 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 1 | 14.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 1 | 31.0 |
| K from 2 M KNO3 | 39.0943 | 2 | 156.4 |
| N from 2 M KNO3 | 14.006 | 2 | 56.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 2 | 160.3 |
| N from 2 M Ca(NO3)2 | 28.012 | 2 | 112.0 |
| N from 1 M NH4NO3 | 28.012 | 1 | 28.0 |
| K from 1 M KH2PO4 | 39.0943 | 0 | 0.0 |
| P from 1 M KH2PO4 | 30.9737 | 0 | 0.0 |
| K from 1 M KCl | 39.0943 | 0 | 0.0 |
| Cl from 1 M KCl | 35.453 | 0 | 0.0 |
| Ca from 1 M CaCO3 | 40.078 | 0 | 0.0 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 210.1 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 280 ppm N (20 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 1 | 115.3 |
| 2 M KNO3 | 101.1 | 2 | 404.4 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 2 | 656.4 |
| 1 M NH4NO3 | 80.043 | 3.5 | 288.2 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0 | 0.0 |
| 1 M KCl | 74.555 | 0 | 0.0 |
| 1 M CaCO3 | 100.087 | 0 | 0.0 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 1 | 14.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 1 | 31.0 |
| K from 2 M KNO3 | 39.0943 | 2 | 156.4 |
| N from 2 M KNO3 | 14.006 | 2 | 56.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 2 | 160.3 |
| N from 2 M Ca(NO3)2 | 28.012 | 2 | 112.0 |
| N from 1 M NH4NO3 | 28.012 | 3.5 | 98.0 |
| K from 1 M KH2PO4 | 39.0943 | 0 | 0.0 |
| P from 1 M KH2PO4 | 30.9737 | 0 | 0.0 |
| K from 1 M KCl | 39.0943 | 0 | 0.0 |
| Cl from 1 M KCl | 35.453 | 0 | 0.0 |
| Ca from 1 M CaCO3 | 40.078 | 0 | 0.0 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 280.1 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 350 ppm N (25 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 1 | 115.3 |
| 2 M KNO3 | 101.1 | 2 | 404.4 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 2 | 656.4 |
| **8 M** NH4NO3 | 80.043 | 0.75 | 480.3 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0 | 0.0 |
| 1 M KCl | 74.555 | 0 | 0.0 |
| 1 M CaCO3 | 100.087 | 0 | 0.0 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 1 | 14.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 1 | 31.0 |
| K from 2 M KNO3 | 39.0943 | 2 | 156.4 |
| N from 2 M KNO3 | 14.006 | 2 | 56.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 2 | 160.3 |
| N from 2 M Ca(NO3)2 | 28.012 | 2 | 112.0 |
| N from 1 M NH4NO3 | 28.012 | 0.75 | 168.1 |
| K from 1 M KH2PO4 | 39.0943 | 0 | 0.0 |
| P from 1 M KH2PO4 | 30.9737 | 0 | 0.0 |
| K from 1 M KCl | 39.0943 | 0 | 0.0 |
| Cl from 1 M KCl | 35.453 | 0 | 0.0 |
| Ca from 1 M CaCO3 | 40.078 | 0 | 0.0 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 350.2 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |

*Modified Hoagland’s solution -* 630 ppm N (25 mM N)

**Primary N addition compounds**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M NH4H2PO4 | 115.3 | 1 | 115.3 |
| 2 M KNO3 | 101.1 | 2 | 404.4 |
| 2 M Ca(NO3)2 \* 4 H2O | 164.088 | 2 | 656.4 |
| **8 M** NH4NO3 | 80.043 | 2 | 1280.7 |

**Supplemental macronutrients and micronutrients**

|  |  |  |  |
| --- | --- | --- | --- |
| **compound** | **mg mol-1** | **ml L-1** | **ppm** |
| 1 M KH2PO4 | 136.086 | 0 | 0.0 |
| 1 M KCl | 74.555 | 0 | 0.0 |
| 1 M CaCO3 | 100.087 | 0 | 0.0 |
| 2 M MgSO4 \* 7 H2O | 120.366 | 1 | 240.7 |
| 10 % Fe-EDTA | - | 1 | 0.0 |
| Trace element cocktail | - | 1 | 0.0 |

**Individual macronutrient concentrations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **mg mol-1** | **ml L-1** | **ppm** |
| N from 1 M NH4H2PO4 | 14.006 | 1 | 14.0 |
| P from 1 M NH4H2PO4 | 30.9737 | 1 | 31.0 |
| K from 2 M KNO3 | 39.0943 | 2 | 156.4 |
| N from 2 M KNO3 | 14.006 | 2 | 56.0 |
| Ca from 2 M Ca(NO3)2 | 40.078 | 2 | 160.3 |
| N from 2 M Ca(NO3)2 | 28.012 | 2 | 112.0 |
| N from 1 M NH4NO3 | 28.012 | 2 | 448.2 |
| K from 1 M KH2PO4 | 39.0943 | 0 | 0.0 |
| P from 1 M KH2PO4 | 30.9737 | 0 | 0.0 |
| K from 1 M KCl | 39.0943 | 0 | 0.0 |
| Cl from 1 M KCl | 35.453 | 0 | 0.0 |
| Ca from 1 M CaCO3 | 40.078 | 0 | 0.0 |
| Mg from 2 M MgSO4 | 24.305 | 1 | 48.6 |
| S from 2 M MgSO4 | 32.065 | 1 | 64.1 |

**Total macronutrient concentration in solution**

|  |  |
| --- | --- |
| Macronutrient | Concentration (ppm) |
| N | 630.3 |
| P | 31.0 |
| K | 156.4 |
| Ca | 160.3 |
| Mg | 48.6 |
| S | 64.1 |