|  |  |  |  |
| --- | --- | --- | --- |
| **S.no** | **Parameter** | **Unit** | **Results** |
| 1 | pH |  | 8.22 |
| 2 | Electrical conductivity | mS/cm | 0.446 |
| 3 | Organic matter | % | 0.78 |
| 4 | Nitrate Nitrogen | mg/kg | 40.9 |
| 5 | Available phosphorous | mg/kg | 16.24 |
| 6 | Potassium Exchangable K | mg/kg | 75 |
| 7 | Calcium exchangeable Ca | mg/kg | 1505 |
| 8 | Magnesium exchangeable Mg | mg/kg | 355 |
| 9 | Sulfur available S | mg/kg | 34.7 |
| 10 | Zinc available Zn | mg/kg | 1.56 |
| 11 | Lead available Pb | mg/kg | 16.42 |
| 12 | Chromium available | mg/kg | 8.51 |
| 11 | Manganese available | mg/kg | 2.21 |
| 12 | Iron available Fe | mg/kg | 25.76 |
| 13 | Copper Available Cu | mg/kg | 1.5 |
| 14 | Boron available B | mg/kg | 0.9 |
| 15 | Sodium exchangeable Na | mg/kg | 264 |
| 16 | Cation echange capacity (by addition) | meq/100g | 11.82 |
| 17 | K saturation | % | 1.63 |
| 18 | Ca saturation | % | 63.64 |
| 19 | Mg Saturation | % | 25.02 |
| 20 | Na saturation | % | 9.71 |

SM Table I: Physiochemical properties of soil

SM Table II Optimization parameters and experimental design of RSM based on design expert

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Run Order** | **Actual Value** | **Predicted Value** | **Residual** | **Leverage** | **Internally Studentized Residuals** | **Externally Studentized Residuals** | **Cook's Distance** | **Influence on Fitted Value DFFITS** | **Standard Order** |
| 1 | 78.30 | 78.27 | 0.0283 | 0.670 | 0.307 | 0.293 | 0.019 | 0.417 | 3 |
| 2 | 76.10 | 76.15 | -0.0506 | 0.670 | -0.549 | -0.529 | 0.061 | -0.753 | 4 |
| 3 | 75.70 | 75.59 | 0.1129 | 0.670 | 1.224 | 1.260 | 0.304 | 1.794 | 2 |
| 4 | 97.10 | 97.08 | 0.0199 | 0.166 | 0.136 | 0.129 | 0.000 | 0.058 | 18 |
| 5 | 97.00 | 97.13 | -0.1298 | 0.607 | -1.291 | -1.342 | 0.258 | -1.669 | 13 |
| 6 | 77.40 | 77.21 | 0.1918 | 0.670 | 2.080 | 2.620 | 0.878 | 3.732⁽¹⁾ | 1 |
| 7 | 75.50 | 75.45 | 0.0507 | 0.670 | 0.550 | 0.530 | 0.061 | 0.755 | 6 |
| 8 | 78.00 | 77.86 | 0.1385 | 0.607 | 1.377 | 1.452 | 0.293 | 1.805 | 12 |
| 9 | 57.20 | 57.16 | 0.0379 | 0.607 | 0.377 | 0.361 | 0.022 | 0.448 | 10 |
| 10 | 97.20 | 97.08 | 0.1199 | 0.166 | 0.818 | 0.804 | 0.013 | 0.359 | 16 |
| 11 | 97.00 | 97.08 | -0.0801 | 0.166 | -0.547 | -0.527 | 0.006 | -0.235 | 20 |
| 12 | 78.20 | 78.07 | 0.1296 | 0.670 | 1.406 | 1.490 | 0.401 | 2.121⁽¹⁾ | 5 |
| 13 | 78.20 | 78.23 | -0.0338 | 0.670 | -0.367 | -0.350 | 0.027 | -0.499 | 7 |
| 14 | 97.00 | 97.08 | -0.0801 | 0.166 | -0.547 | -0.527 | 0.006 | -0.235 | 15 |
| 15 | 97.00 | 96.98 | 0.0180 | 0.607 | 0.179 | 0.170 | 0.005 | 0.211 | 14 |
| 16 | 61.00 | 61.15 | -0.1497 | 0.607 | -1.490 | -1.602 | 0.343 | -1.992 | 9 |
| 17 | 97.00 | 97.08 | -0.0801 | 0.166 | -0.547 | -0.527 | 0.006 | -0.235 | 19 |
| 18 | 75.00 | 75.11 | -0.1127 | 0.670 | -1.223 | -1.258 | 0.303 | -1.791 | 8 |
| 19 | 97.20 | 97.08 | 0.1199 | 0.166 | 0.818 | 0.804 | 0.013 | 0.359 | 17 |
| 20 | 77.00 | 77.25 | -0.2503 | 0.607 | -2.490 | -3.831 | 0.959 | -4.764⁽¹⁾ | 11 |

SM Table III

1. Quantification data of PGPR traits by VITVJ8

|  |  |
| --- | --- |
| **Assay** | **VITVJ8** |
| Biofim (tube assay) | +++ |
| Biofim (plate assay) | 32% |
| Phosphate solubilization (SE) | 61.5% |
| IAA (µg ml-1) | 59 µg ml-1 |
| Siderophore | 1.165 cm |
| Ammonia production | - |

1. SM Table IV Seed germination

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | RRG % | | |  |
| Isolates | RSG % | *Vigna mungo* | *Vigna radiata* | *Glycine max* | GI |
| Water | 100 | 100 | 100 | 100 | 100 |
| VITVJ1 | 80 | 73.6842 | 91.02564 | 61.66667 | 58.94 |
| VITVJ1+HM | 60 | 61.4035 | 57.69231 | 30 | 36.84 |
| VITVJ6 | 80 | 66.6667 | 87.17949 | 31.66667 | 53.33 |
| VITVJ6+HM | 60 | 35.0877 | 64.10256 | 85 | 21.05 |
| VITVJ8 | 100 | 89.4737 | 96.15385 | 90 | 89.47 |
| VITVJ8+HM | 90 | 84.2105 | 91.02564 | 83.33333 | 75.78 |