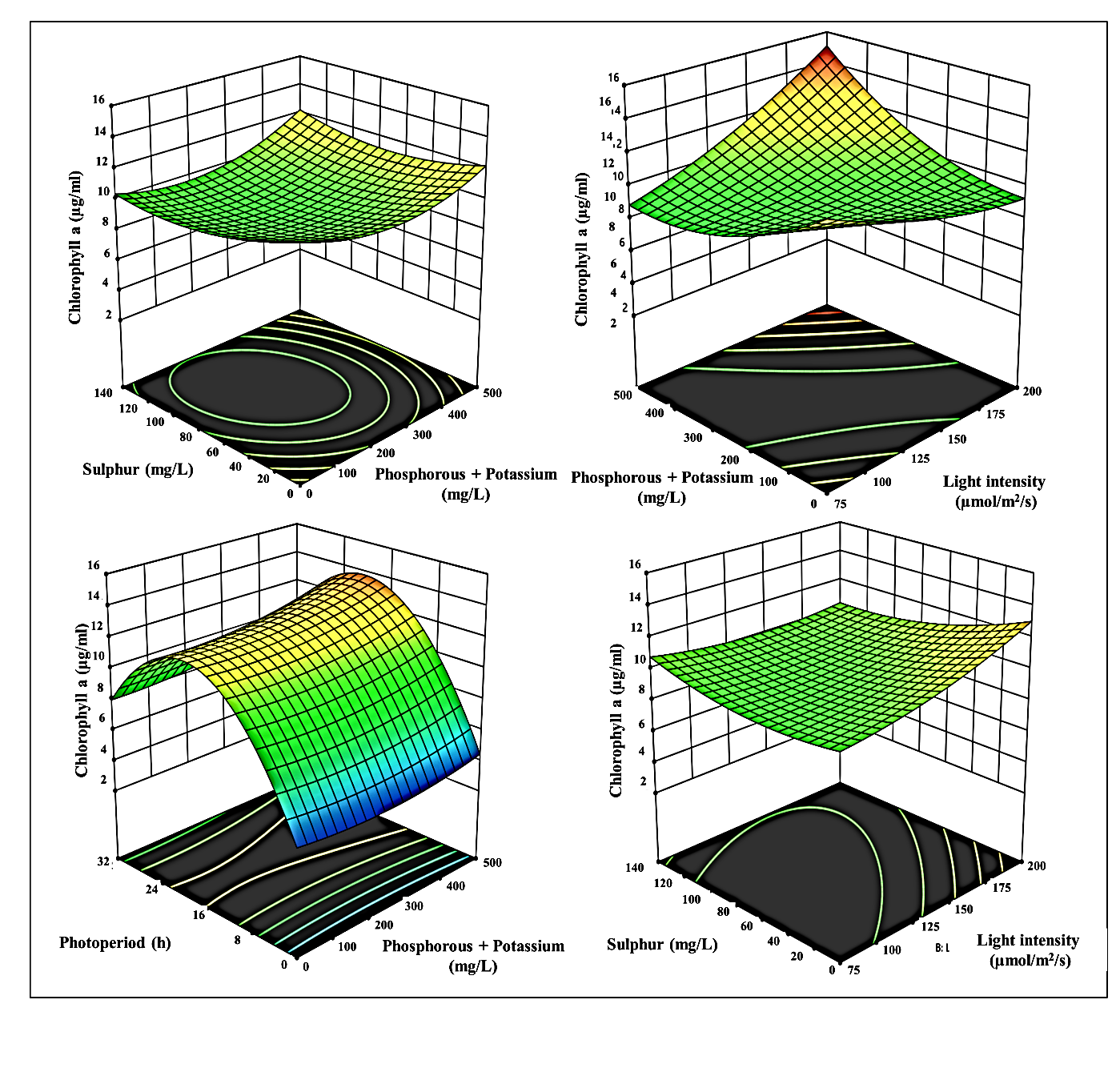
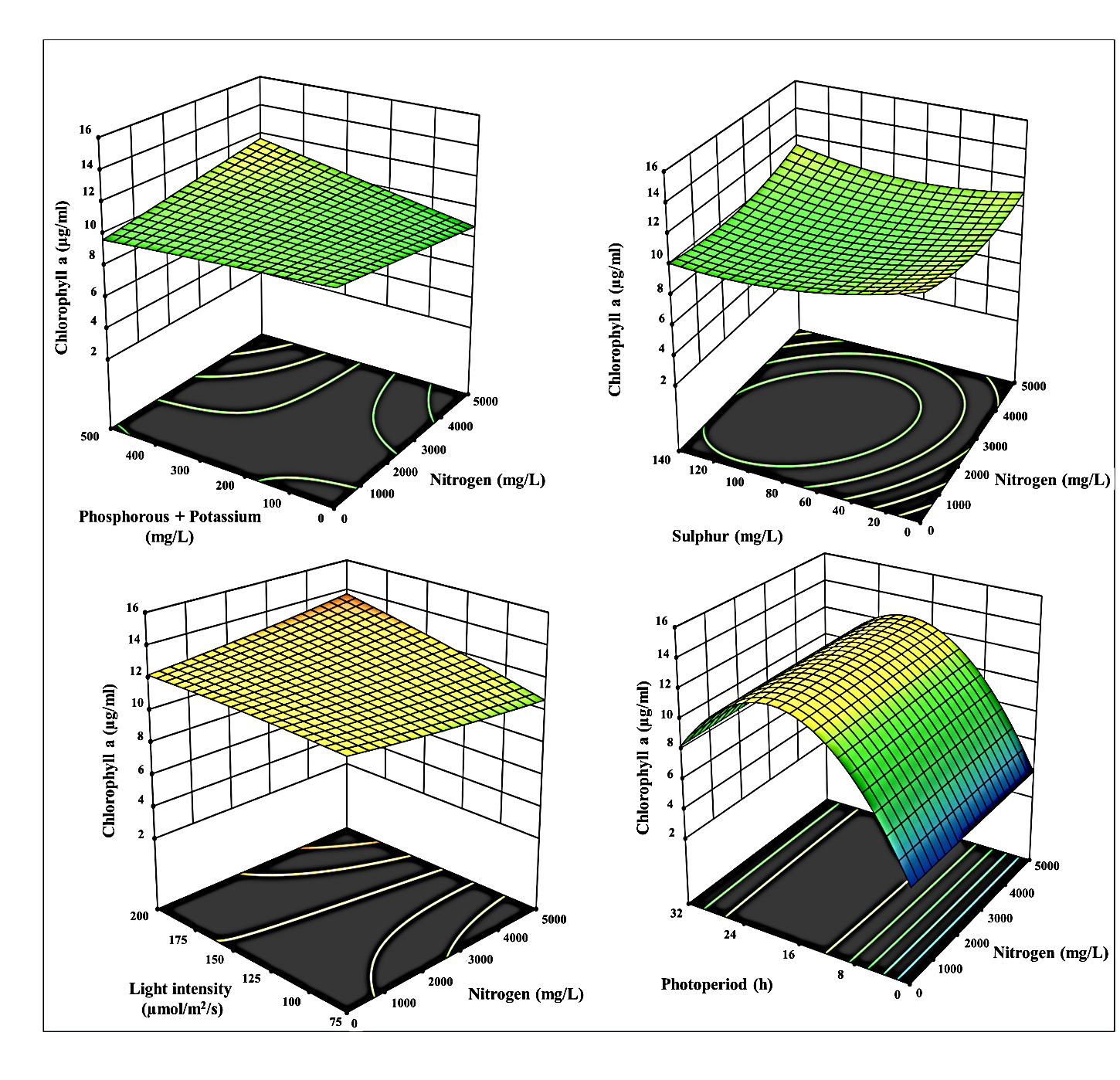
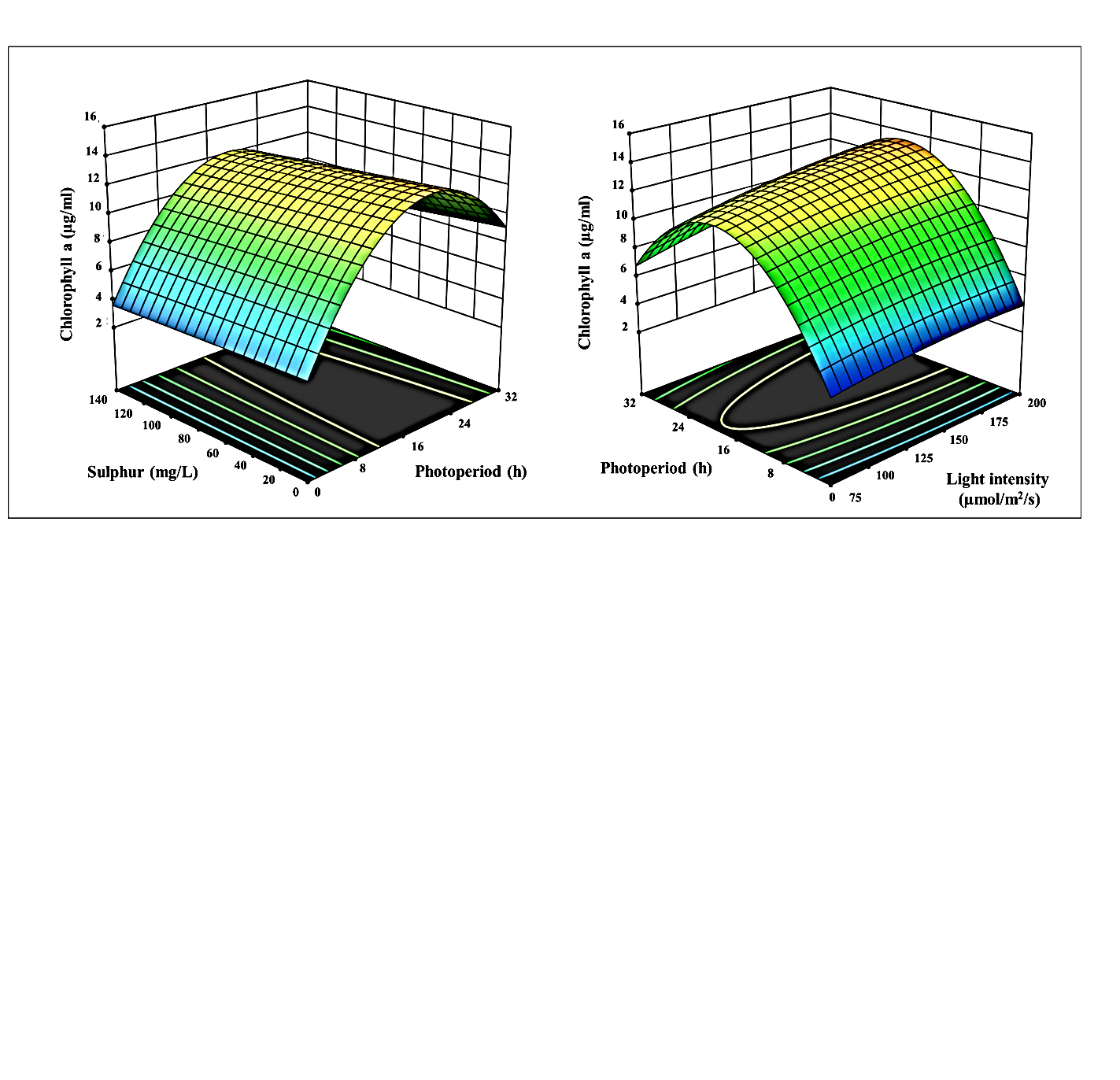
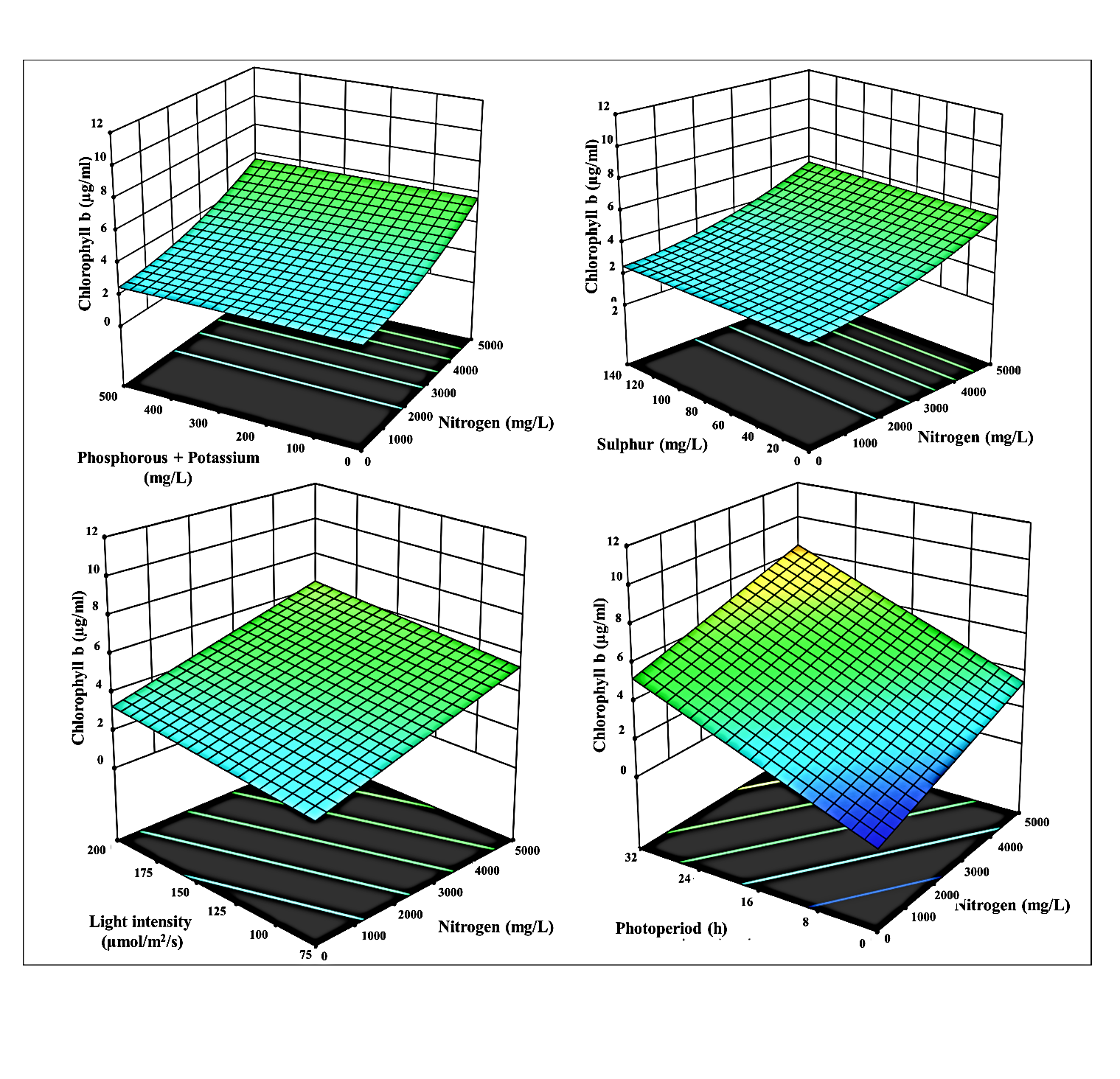
|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Run**  **Supplementary**  **Table S1** Optimization of a combination of nutrients and light by RSM-CCD matrix for the analysis of chlorophyll a and b | **Factor A:N (mg/L)** | **Factor B: P+K (mg/L)** | **Factor C: S (mg/L)** | **Factor D : LI (µmolm-2s-1)** | **Factor E : PP (h)** | **Chlorophyll a productivity** | | **Chlorophyll b productivity** | |
|  | | | | | | **Actual Value** | **Predicted Value** | **Actual Value** | **Predicted Value** |
| 1 | 2500 | 250 | 70 | 137.5 | 12 | 9.76 | 11.19 | 6.11 | 3.71 |
| 2 | 2500 | 0 | 70 | 137.5 | 24 | 11.12 | 11.65 | 3.17 | 5.93 |
| 3 | 2500 | 500 | 70 | 137.5 | 24 | 12.47 | 13.35 | 7.16 | 5.26 |
| 4 | 2500 | 0 | 140 | 137.5 | 12 | 11.16 | 10.63 | 6.4 | 4.11 |
| 5 | 5000 | 250 | 70 | 137.5 | 0 | 3.01 | 3.82 | 2.78 | 3.44 |
| 6 | 5000 | 250 | 70 | 75 | 12 | 9 | 9.85 | 10.19 | 4.75 |
| 7 | 2500 | 250 | 140 | 75 | 12 | 9.55 | 11 | 4.34 | 3.21 |
| 8 | 5000 | 0 | 70 | 137.5 | 12 | 10.52 | 10.55 | 9.07 | 5.65 |
| 9 | 2500 | 250 | 0 | 200 | 12 | 13.97 | 13.23 | 6.9 | 4.22 |
| 10 | 2500 | 250 | 0 | 137.5 | 24 | 12.45 | 12.59 | 6.95 | 5.54 |
| 11 | 2500 | 250 | 140 | 137.5 | 24 | 12.96 | 11.44 | 3.99 | 5.65 |
| 12 | 0 | 250 | 70 | 137.5 | 24 | 12.6 | 11.92 | 1.47 | 3.99 |
| 13 | 2500 | 500 | 70 | 137.5 | 0 | 4.4 | 4.44 | 0.2385 | 1.5 |
| 14 | 0 | 0 | 70 | 137.5 | 12 | 10.3 | 12.26 | 1.48 | 2.45 |
| 15 | 2500 | 500 | 0 | 137.5 | 12 | 12.44 | 12.45 | 1.57 | 3.32 |
| 16 | 0 | 250 | 0 | 137.5 | 12 | 12.41 | 12.32 | 1.85 | 2.05 |
| 17 | 0 | 250 | 140 | 137.5 | 12 | 9.34 | 10.42 | 1.68 | 2.17 |
| 18 | 2500 | 0 | 70 | 75 | 12 | 13.6 | 12.86 | 1.49 | 3.49 |
| 19 | 2500 | 250 | 70 | 200 | 0 | 3.7 | 3.9 | 2.17 | 2.4 |
| 20 | 2500 | 250 | 70 | 200 | 24 | 12.35 | 12.83 | 6.89 | 6.16 |
| 21 | 2500 | 500 | 70 | 75 | 12 | 7.2 | 9.1 | 2.37 | 2.81 |
| 22 | 2500 | 250 | 70 | 75 | 24 | 11.74 | 10.7 | 5.59 | 5.03 |
| 23 | 2500 | 250 | 0 | 75 | 12 | 10.58 | 9.99 | 1.14 | 3.09 |
| 24 | 0 | 500 | 70 | 137.5 | 12 | 11.47 | 11.44 | 0.3587 | 1.78 |
| 25 | 5000 | 250 | 70 | 137.5 | 24 | 10.88 | 12.07 | 5.82 | 7.2 |
| 26 | 0 | 250 | 70 | 137.5 | 0 | 4.74 | 3.68 | 1.2 | 0.2308 |
| 27 | 2500 | 500 | 70 | 200 | 12 | 14.66 | 15.33 | 6.46 | 3.94 |
| 28 | 2500 | 250 | 70 | 137.5 | 12 | 12.59 | 11.19 | 3.59 | 3.71 |
| 29 | 2500 | 0 | 0 | 137.5 | 12 | 11.21 | 12.22 | 2.75 | 3.99 |
| 30 | 5000 | 500 | 70 | 137.5 | 12 | 15.41 | 13.45 | 5.98 | 4.98 |
| 31 | 2500 | 0 | 70 | 137.5 | 0 | 4.39 | 4.08 | 1.68 | 2.17 |
| 32 | 2500 | 250 | 70 | 137.5 | 12 | 11.23 | 11.19 | 4 | 3.71 |
| 33 | 2500 | 500 | 140 | 137.5 | 12 | 13.99 | 12.47 | 0.5249 | 3.43 |
| 34 | 2500 | 250 | 70 | 75 | 0 | 4.47 | 3.15 | 0.6074 | 1.27 |
| 35 | 2500 | 250 | 140 | 137.5 | 0 | 3.58 | 3.57 | 1.76 | 1.89 |
| 36 | 2500 | 250 | 0 | 137.5 | 0 | 2.32 | 3.98 | 0.5298 | 1.78 |
| 37 | 5000 | 250 | 140 | 137.5 | 12 | 11.92 | 11.68 | 4.92 | 5.37 |
| 38 | 0 | 250 | 70 | 75 | 12 | 11.61 | 11.09 | 4.77 | 1.55 |
| 39 | 2500 | 0 | 70 | 200 | 12 | 11.47 | 9.51 | 3.97 | 4.61 |
| 40 | 0 | 250 | 70 | 200 | 12 | 11.81 | 11.15 | 7.22 | 2.67 |
| 41 | 5000 | 250 | 70 | 200 | 12 | 11.96 | 12.68 | 4.29 | 5.88 |
| 42 | 2500 | 250 | 140 | 200 | 12 | 9.34 | 10.64 | 1.63 | 4.33 |
| 43 | 5000 | 250 | 0 | 137.5 | 12 | 12.76 | 11.35 | 2.64 | 5.26 |

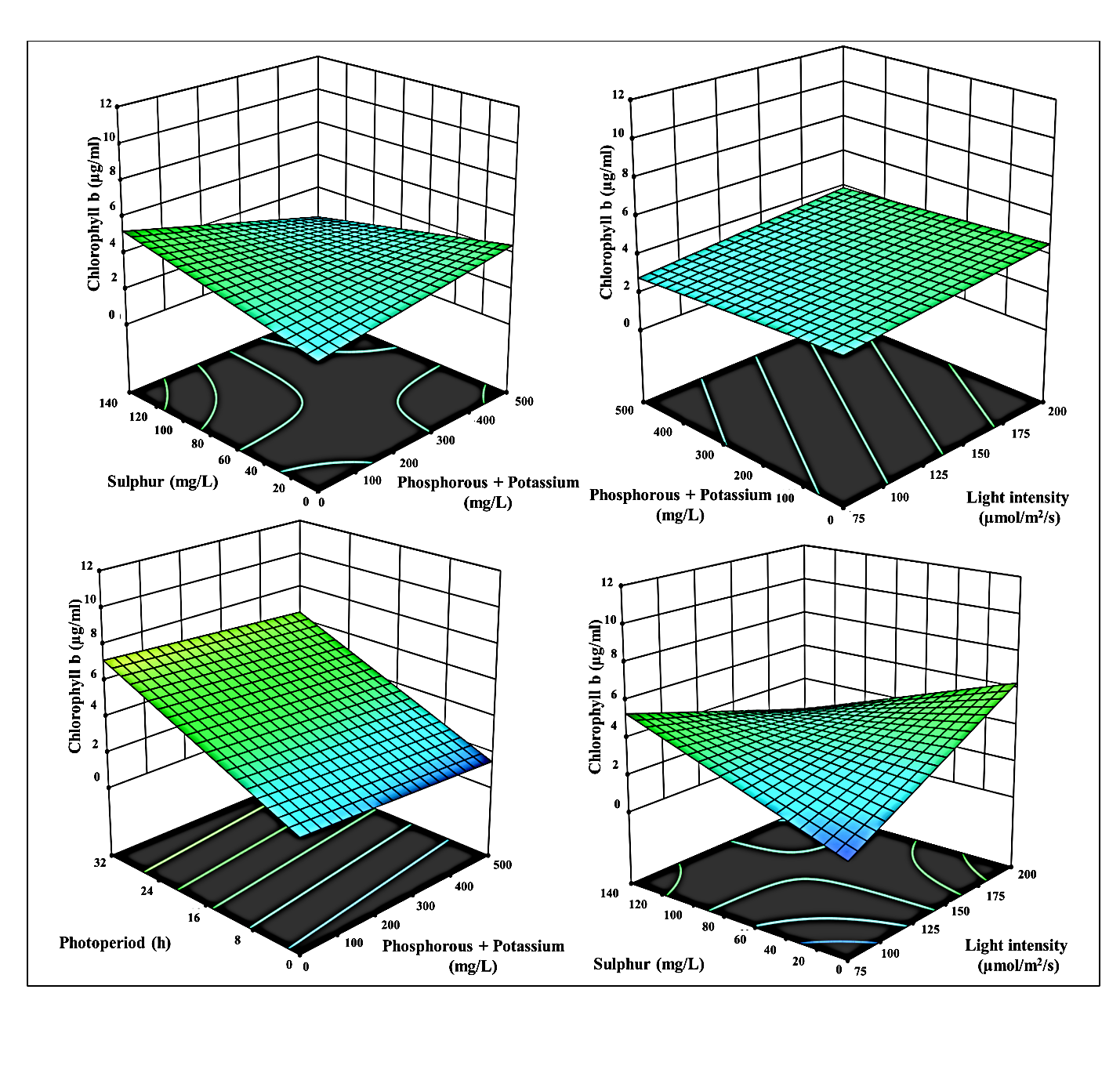


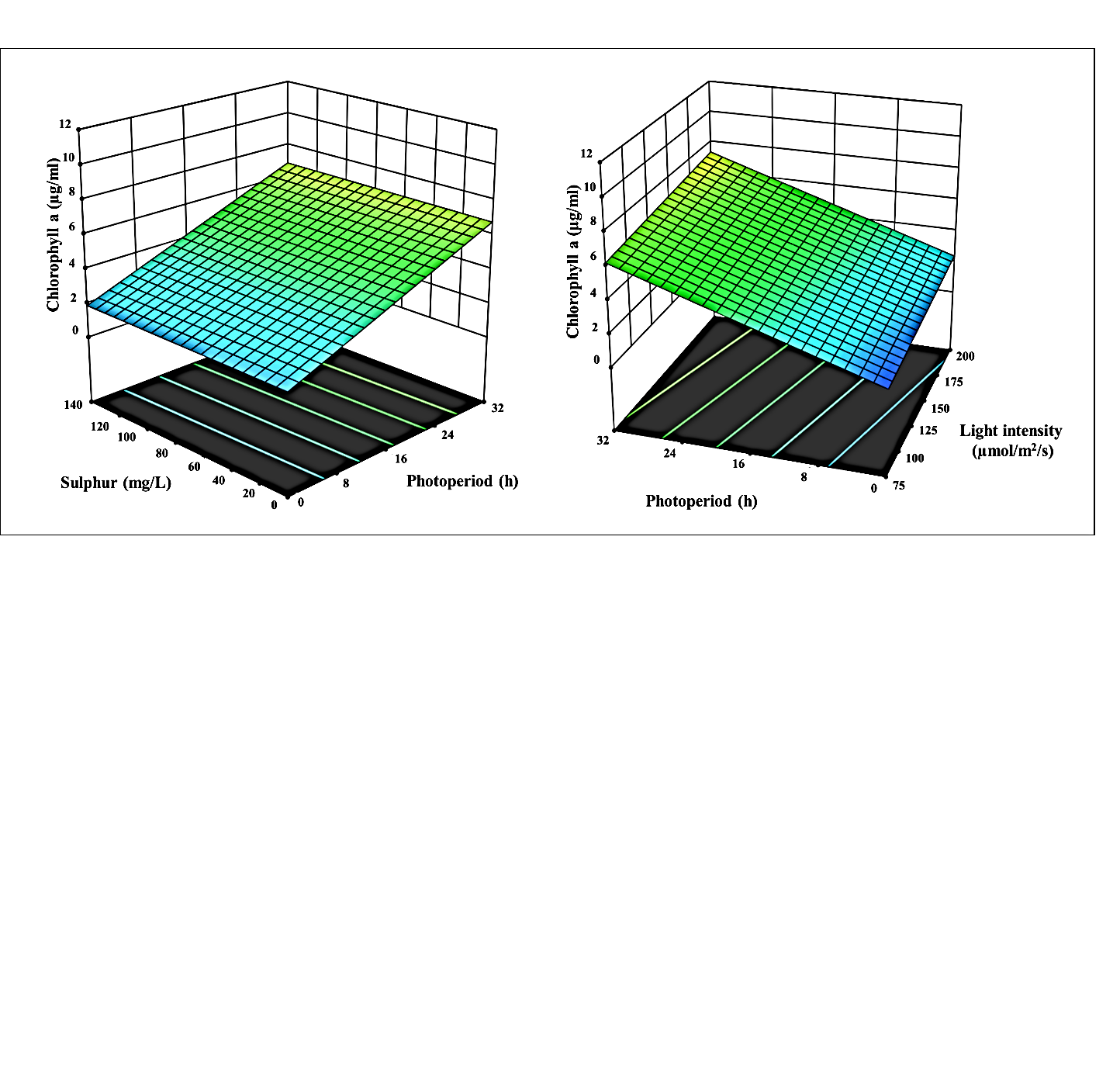


**Fig S1** 3-D surface and contour plots representing the interaction between the selected

parameters on Chlorophyll a yield (µg ml-1), a) N with P+K, b) N with S, c) N with LI, d) N with PP, e) P+K with S, f) P+K with LI, g) P+K with PP, h) S with LI, i) S with PP, and j) LI with PP







**Fig S2** 3-D surface and contour plots representing the interaction between the selected

parameters on Chlorophyll b yield (µg ml-1), a) N with P+K, b) N with S, c) N with LI, d) N with PP, e) P+K with S, f) P+K with LI, g) P+K with PP, h) S with LI, i) S with PP, and j) LI with PP