WHAT IS CLAIMED IS:

1. A system for providing a growth environment for a plant positioned in an automated plant growing system, comprising:

at least one light source with the at least one light source positioned in the automated plant growing system to expose the plant positioned in the automated plant growing system to the at least one light source and configured to generate light to trigger photosynthesis in the plant; and

a controller configured to:

monitor a plurality of growth parameters associated with the plant to determine whether at least one of the growth parameters deviate beyond at least one corresponding growth threshold, wherein each of the growth parameters provides an indicator as to a growth status of the plant and the growth status of the plant decreases when at least one of the growth parameters deviates beyond the at least one corresponding growth threshold, and

automatically adjust at least one environmental parameter from a plurality of environmental parameters when the at least one of the growth parameters deviate beyond the at least one of the growth thresholds, wherein each of the environmental parameters impact the growth environment of the plant positioned in the automated plant growing system,

automatically adjust a light intensity for each light source based on a photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond a photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the light intensity emitted by each light source, and

automatically adjust a speed of rotation of a planting column included in the automated plant growing system when a Daily Light Integral (DLI) associated with the plant deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold.

~~2. The automated plant growing system of claim 1, wherein the controller is further~~

~~configured to:~~

~~automatically adjust a light intensity for each light source based on a photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond a photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the light intensity emitted by each light source.~~

~~3.~~2. The ~~automated plant growing~~ system of claim ~~2~~1, wherein the controller is further configured to:

automatically adjust a spectrum for each light source based on the photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the spectrum emitted by each light source.

~~4. The automated plant growing system of claim 2, wherein the controller is further configured to:~~

~~automatically adjust a speed of rotation of a planting column included in the automated plant growing device when a Daily Light Integral (DLI) associated with the plant deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold.~~

~~5.~~3. The ~~automated plant growing~~ system of claim ~~3~~1, wherein the controller is further configured to:

automatically adjust the pH of the growth environment of the automated plant growing system to adjust in real-time the pH environmental parameter of the automated plant growing system when a pH growth parameter of the plant deviates beyond a pH growth threshold to return the pH growth parameter to within the pH growth threshold, wherein the growth status of the plant decreases when the pH growth parameter deviates beyond the pH growth threshold due to the pH of the growth environment of the plant positioned in the automated plant growing system.

~~6.~~4. The ~~automated plant growing~~ system of claim 1, further comprising:

a CO_2 sensor configured to measure a CO_2 environmental parameter in real-time of the automated plant growing system, wherein the CO_2 environmental parameter includes a CO_2 of the growth environment of the plant positioned in the automated plant growing system.

~~7.~~5. The ~~automated plant growing~~ system of claim 1, further comprising:

an infrared (IR) imaging system positioned in the automated plant growing system to expose the plant positioned in the automated plant growing system to the IR imaging system and configured to emit IR light to expose the plant to the IR light and to detect the IR light that is reflected back to the IR imaging system from the plant.

~~8.~~6. The ~~automated plant growing~~ system of claim ~~7~~5, wherein the controller is further configured to determine whether each of the growth parameters is deviated beyond each of the corresponding growth threshold based on the IR light that is reflected back to the IR imaging system from the plant.

~~9.~~7. The ~~automated plant growing~~ system of claim ~~8~~6, wherein the controller is further configured to:

determine whether a light absorption growth parameter of the plant exceeds a light absorption growth threshold, wherein the light absorption growth parameter includes an amount of the light absorbed by the plant as emitted by the at least one light source that exceeds a light absorption growth parameter of the plant; and

automatically deactivate the at least one light source when the light absorption growth parameter exceeds the light absorption growth threshold, wherein the amount of light required to be absorbed by the plant is satisfied when the light absorption growth parameter exceeds the light absorption growth threshold thereby enabling the plurality of lights to be deactivated to conserve energy consumed by the automated plant growing system.

~~10.~~8. The ~~automated plant growing~~ system of claim 1, further comprising:

a multi-spectral imaging system positioned in the automated plant growing system and configured to capture images of the plant within a spectrum range.

~~11.~~9. The ~~automated plant growing~~ system of claim ~~10~~8, wherein the controller is further configured to:

automatically determine whether a nutrient uptake growth parameter is deviated beyond a nutrient growth threshold based on the images of the plant within the spectrum range captured by the multi-spectral imaging system, wherein the images captured of the plant within the spectrum range identify whether each nutrient required by the plant is deviated from the nutrient growth threshold.

~~12.~~10. The ~~automated plant growing~~ system of claim ~~11~~9, further comprising:

a rotational camera positioned in the automated plant growing system and configured to:

capture images of each portion of the plant as the plant rotates in the automated plant growing system over a period of time, and

generate a time lapsed video that includes each of the images captured of each portion of the plant as the plant rotates in the automated plant growing system of the period of time stitched together to provide the time lapsed video, wherein the time lapsed video displays the growth status of the plant over the period of time.

~~13.~~11. A method for providing a growth environment for a plant positioned in an automated growing system, comprising:

generating light to trigger photosynthesis in the plant by at least one light source with the at least one light source positioned in the automated plant growing system to expose the plant in the automated plant growing system to the at least one light source;

monitoring a plurality of growth parameters associated with the plant to determine whether at least one of the growth parameters deviate beyond at least one corresponding growth threshold, wherein each of the growth parameters provides an indicator as to a growth status of the plant and the growth status of the plant decreases when at least one of the growth parameters deviates beyond the at least one corresponding growth threshold; ~~and~~

automatically adjusting at least one environmental parameter from a plurality of environmental parameters when the at least one of the growth parameters deviate beyond

the at least one of the growth thresholds, wherein each of the environmental parameters impact the growth environment of the plant positioned in the automated plant growing system;

automatically adjusting a spectrum for each light source based on the photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the spectrum emitted by each light source; and

automatically adjusting a speed of rotation of a planting column included in the automated plant growing device when a Daily Light Integral (DLI) associated with the plant deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold.

~~14. The method of claim 12, further comprising:~~

~~automatically adjusting a light intensity for each light source based on a photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond a photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the light intensity emitted by each light source.~~

~~15. The method of claim 13, further comprising:~~

~~automatically adjusting a spectrum for each light source based on the photosynthesis growth parameter when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold, wherein the growth status of the plant decreases when the photosynthesis growth parameter deviates beyond the photosynthesis growth threshold due to the spectrum emitted by each light source.~~

~~16. The method of claim 15, further comprising:~~

~~automatically adjusting a speed of rotation of a planting column included in the~~

~~automated plant growing device when a Daily Light Integral (DLI) associated with the plant deviates beyond the photosynthesis growth threshold to return the photosynthesis growth parameter to within the photosynthesis growth threshold.~~

~~17.~~12. The method of claim ~~16~~11, further comprising:

automatically adjusting the pH of the growth environment of the automated plant growing system to adjust in real-time the pH environmental parameter of the automated plant growing system when a pH growth parameter of the plant deviates beyond a pH growth threshold to return the pH growth parameter to within the pH growth threshold, wherein the growth status of the plant decreases when the pH growth parameter deviates beyond the pH growth threshold due to the pH of the growth environment of the plant positioned in the automated plant growing system.

~~18.~~13. The ~~automated plant growing system~~method of claim ~~17~~12, further comprising:

measuring, by a CO_2 sensor, a CO_2 environmental parameter in real-time of the automated plant growing system, wherein the CO_2 environmental parameter includes a CO_2 of the growth environment of the plant positioned in the automated plant growing system.

~~19.~~14. The method of claim ~~18~~13, further comprising:

emitting infrared (IR) light to expose the plant to the IR light by an IR imaging system positioned in the automated plant growing system to expose the plant positioned in the automated plant growing system to the IR imaging system; and

detecting the IR light that is reflected back to the IR imaging system from the plant.

~~20.~~15. The method of claim ~~19~~14, further comprising:

determining whether each of the growth parameters is deviated beyond each of the corresponding growth thresholds based on the IR light that is reflected back to the IR imaging system from the plant.

~~21.~~16. The method of claim ~~20~~15, further comprising:

determining whether a light absorption growth parameter of the plant exceeds a light absorption growth threshold, wherein the light absorption growth parameter includes an amount of light absorbed by the plant as emitted by the at least one light source exceeds a light absorption growth parameter of the plant; and

automatically deactivate the plurality of lights when the light absorption growth parameter exceeds the light absorption growth threshold, wherein the amount of light required to be absorbed by the plant is satisfied when the light absorption growth parameter exceeds the light absorption growth threshold thereby enabling the plurality of lights to be deactivated to conserve energy consumed by the automated plant growing system.

~~22.~~17. The method of claim ~~21~~16, further comprising:

capturing images of the plant within a spectrum range by a multi-spectral imaging system positioned in the automated plant growing system.

~~23.~~18. The method of claim ~~22~~17, further comprising:

automatically determining whether a nutrient uptake growth parameter is deviated beyond a nutrient growth threshold based on the images of the plant within the spectrum range captured by the multi-spectral imaging system, wherein the images captured of the plant within the spectrum range identify whether each nutrient required by the plant is deviated from the nutrient growth threshold.

~~24.~~19. The method of claim ~~23~~18, further comprising:

capturing images of each portion of the plant as the plant rotates in the automated plant growing system over a period of time by a rotational camera positioned in the automated plant growing system; and

generating a time lapsed video that includes each of the images captured of each portion of the plant as the plant rotates in the automated plant growing system for the period of time that are stitched together to provide the time lapsed video, wherein the time lapsed video displays the growth status of the plant over the period of time.