

# Air Quality And Carbon Dioxide Enrichment

Have you ever walked into the garden room and felt hot, sweaty, dizzy, or just felt uncomfortable, and you just want get out of the grow room as fast as possible. You know what, your plants probably feel the same, but they have no method of getting out of there. So they spend all their energy fighting the harsh elements wasting valuable growing time. The stress caused by improper control of the atmosphere can cause woody texture, bitter taste, slow growth, poor fruit set and allow more molds, fungus, viruses to get a foot hold in your garden.

Ventilate, bring in fresh air that is all they want. When fresh air is brought in from outside, the humidity, temperature, oxygen and Co2 are all brought back to desirable levels. Now if it is 90 degrees outside and you are trying to get the inside temperature down to 72 degrees, you will need to use some sort of air conditioning. Clean, fresh, air how does mother nature create it? Charcoal or Ozone cleans the air.

Charcoal is a natural substance produced by burning material. When air is passed over it, air gets caught in its pores catching unwanted odours, poisons, dust and pollens. 5 grams of charcoal has the same surface area as a regulation football field. Carbon filters contain many pounds of activated charcoal the best type of charcoal.

Ozone a third molecule of oxygen. By passing air over an electrical charged field of energy we zap the oxygen molecules, attaching a third oxygen molecule onto the oxygen. This third molecule has a half life, meaning that half of all molecules will have jumped from O3 to anything it comes in contact with and oxidizing it. If small enough it will destroy its character. Ozone alters the molecular structure of offensive micro-organisms, to eliminate smells from plants, pets, cooking, and smoke. It also kills mold, mildew and bacteria. Ozone is produced when oxygen is zapped with high voltage. Lightning creates ozone and is nature's way of purifying the air we breathe.

Co2 90% of plants dry weight consists of hydrogen (H), oxygen (O) and carbon dioxide (Co2). Co2 is found in the air at 300 - 450 ppm and plants can absorb all the usable Co2 that is in your grow room in a matter of hours. By venting out the stale air from the grow room we bring in fresh outside air, this will keep your plants growing properly. But by enriching the grow rooms air quality to 1500 ppm will greatly increase plants growth and yield. The Martin Co2 generator burns propane and the by product is Carbon dioxide, heat and water. Another way of



enriching the grow room is by releasing compressed Co2 gas from a welding tank. By using a regulator that has a cubic flow meter, we can calculate the on timing of the solenoid to release a precise amount of Co2 into the room. In commercial greenhouses they are now using 4000 ppm of carbon dioxide to suffocate the bugs during the night. Plants do not use carbon dioxide during night cycles so no harm is done to the plants. Great inexpensive way of

getting rid of those bugs. Remove all air inside growing area before you go in. If when you are working with carbon dioxide you feel light headed turn on fans to remove all air in grow room. Or get out of room. To maintain the 1500ppm of Co2 in the growroom there are automatic controllers that will determine the Co2 in the room and automatically turn on controls to allow Co2 enrichment. They will also keep fans from venting out Co2 when injecting Co2 and turn fans on when temperature or humidity become too high.

Calculating on time for Co2. L 10' X W 10' X H 8' = 800 cu.ft. Co2 needed 1200 ppm = 0.0012  
0.0012 X 800 cu. ft. = .96 cu. ft. .96 cu.ft.divided by flow rate of 10 = .096 hour.

.096 hours X 60 minutes = 5.76 minutes on time to receive 1500 ppm of Co2 1200 ppm + 300 ppm naturally in air = 1500.

