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WASTE WATER SOLUTION WITH LOCAL TREES

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Abstract : In this paper, I will try to highlight that how Mathematics and science helps us to save our local environment. The mathematical data of EUCALYPTUS about their production of oxygen, absorbing co urban and also how much water it consumes every day. (Different type of trees have differ type of capacity to consume water). I strongly use these characteristics and try to raise a better idea to save our local environment and provide a health environment also.

Introduction :

Tree

In Botany, a tree is a perennial plant with an elongated stem, or trunk supporting branches and leaves in most species. Although "tree " is a term of common parlance, there is no universally recognized precise definition of what a tree is ,either botanically or in common language . In its broadest sense, a tree is any plant with the general form of an elongated stem, or trunk, which supports the photosynthetic leaves or branch at some distance above the ground. Tree is also typically defined by height, with smaller plants from 0.5 to 10 m.

- The tree facts that helps us to make our environment healthy.
- Trees help our soil remain healthy by reducing soil erosion and by creating a soil climate suitable for microorganism to grow.
- A tree can absorb as much as 48 pounds carbon dioxide per year and can sequester 1 ton of carbon dioxide by the time it reaches 40 years old.
- One large tree can lift up to 100 gallons of water out of the ground and discharge it into the air in a day
- One large tree can provide a days' supply of oxygen for up to 4 people.
- Each year , one person uses of wood and paper products equivalent to 100 foot tree 18 inches in diameter
- Over 5000 products are made of trees.
- Tree does not restore and repair wood that is injured and infected – instead they compartmentalize off damaged tissue. New cell are not produced to replace the damaged cell.
- A tree branch is not actually attached to the rest of the tree. It is held in place by a series of interlock "collar ". Collars overlap and mesh to from a tight woven pattern of tissues.
- Different parts of the tree grow at different times of the year. a typical pattern is for most of the foliage growth to occur in the spring , followed by trunk growth to occur in the spring, followed by trunk growth in summer and root growth in the fall and winter. Not all trees follow the same pattern.

- In addition to cycling carbon dioxide and oxygen , trees have the added effect that they provide many other benefits to the ecosystem. Not only do they release clean air and water they also provide habitat for birds and wildlife, prevent soil erosion, and provide recreation opportunities.

How much oxygen does a person consume in a day?

The average adult at rest inhales and exhales something like 7 or 8 liters (about one fourth of a cubic foot) of air per minute. That totals something like 11000 liters of air (388 cubic feet) in a day.

The air that inhaled is about 20 percent oxygen and the air that is exhaled is about 15 % oxygen, so about 5-% of volume of air is consumed in each breath and converted to carbon dioxide. Therefore, a human being uses about 550 liters of pure oxygen per day.

A person who is exercising obviously uses a lot more oxygen than that. We could determine how much air is moving through your lungs by exhaling into a plastic bag of known volume at each breath and seeing how long it takes to fill the bag.

How many EUCALYPTUS does it take to transform one ton of Co2 into oxygen over the time of one year?

Estimate that 1000 trees will sequester 25 tons of carbon per year, which is figures, 1000/25= 40 trees would absorb 1 ton of co2 per year . this figure does not take into account carbon in the fruit or nuts that are taken from the trees or leaves that fall from them , these figures are rough and are averaged over the various types of trees they plant.

Let we pick a tall tree EUCALYPTUS. The tree reaching height of 60 feet or so , and its trunk thickness about 6 feet diameter and canopies 30 feet around. I have read that a tree of given height has a volume roughly equivalent to a cylinder whose diameter is that of the trunk at the base. so 100 foot tree with a 9 meter trunk has a volume

V= $\boldsymbol{\pi}$ X r X r X h

= π X 3 X 3 X 100

= 2830 cubic feet.

One cubic foot of EUCALYPTUS weight 47 lbs. So the tree at maturity weight 133,010 pounds (133,010 x 320/1000 =42,563 kg) . I will think tree grows at a uniform rate, 1330 pounds per year over its 100 year lifespan. About 60% of living trees is cellulose, the rest is mostly water, and only the cellulose contains carbon. so that is 1330 x 0.6=798 pounds of cellulose or (798 x 320/1000=255.36 kg)

From polyglot, cannot see the forest for the carbon absorption rates

Cellulose, C6H10O5, is produced from Co2 as: 6co2 +5H2o --→ C6H10O5 +6o2

A 1000 kg weight tree soaked up 1630 kg of co2,in a year a eucalyptus tree gain 1330 lbs , 693.7769 kg of co2. And release near about 600 kg of oxygen.

Young tree absorb co2 at the rate of 13 pounds (4.16 kg) per year. Trees reach their most productive stage of carbon storage at about 10 years at which point they are estimated to absorb 48 pounds (15kg) of co2 per year.

Eco friendly water treatment plant and air clean model with the help of eucalyptus tree

Let we pick a small town of average population near about 4000 t0 5000 families. we know that a average family use 40 to 100 litter water daily . if we make two circular waste water canal over the town. One with cc(inner canal) with depth 2.5 feet and its one side make a road for morning or evening walk and

grow some evergreen bush .Outer canal Next with cc also but its base partially cc .(like cc block and mud block) it depth six feet . 2nd one half full with mud. and grows kamal cacdi(special type of kai). Next on boundary of that canal planting EUCALYPTUS trees. At the distance of 50 feet and all small canal or (nalies) tie up with this canal. And also their (according to ground level downward of town) we also make a plane ground of 48000 square yard with zik zak canal. Now we should make a another water pond (500 square yard in area) . And grows kamala cacdi there. And rest of the ground be partition in ten partition And every year we will planting EUCALYPTUS. Near about in the ratio of town population. A young eucalyptus wants 40 to 50 litter of water .and kamala cakadi clean water for eucalyptus and also absorbs dirty smell of water. And also clean the air absorbs co2 and produces o2. 4000 to 5000 EUCALYTUS should enough to use for making a eco friendly water treatment plant in a small town. Its gives a method that

One family =planting one eucalyptus per year in eco friendly treatment plant

Other use of eucalyptus

- Cultivation
- Pulpwood
- Eucalyptus oil (use for cleaning and as an industrial solvent)
- Honey
- Musical instruments
- Dyes

Conclusion

In our area one family one eucalyptus formula will apply successfully. Especially in village area. That's model will work. In dry area it not working. It easy to handle and earn its own expenditure time by time.

Reference

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