Student 4.

Aim: To investigate the best number of leaves to produce the most roots [1].

Hypothesis: I predict that the more leaves there are the more roots will grow.

Independent variable: The number of leaves should be the only thing that is changed. The will be 0, 2, 4, and 6 leaves on each 6 cuttings [3].

Dependent variable: The dependent variable is the number of roots that have grown after 2 weeks of sitting in test tubes with 50ml of water in each tube [4].

Other variables:

- Water – I will keep the amount of water in each test tube exactly the same and fill each tube each day.

- Temperature, air, light – These will be kept the same by putting them at the same window that is exposed to the sunlight and oxygen from the wind.

- Type of plant – the type of plant will be kept the same – Tahitian Bridal Veil [5].

Equipment needed: Ruler, 24 test tubes, test tube stands, 50ml of water per tube, scissors, Tahitian Bridal Veil plant.

Method. Buy the plant from the garden shop.

Place the 24 test tubes into the test tube stand.

Pour 50ml of water in each test tube.

Cut 24 cuttings from the plant.

Remove all leaves from 6 cuttings.

Remove all but 2 leaves from six more cuttings.

Remove all but 4 leaves from six more cuttings.

Remove all but 6 leaves from the last six cuttings.

Place each of the six cuttings into test tubes and place in their stands.

Place the stands with the test tubes and cutting onto a window sill where the sun can easily reach the leaves of the cuttings.

Take observations every 3 -4 days and refill the tubes back to 50ml if osmosis has occurred [2].

Results: The graph shows that the more leaves you have on your plant, the more photosynthesis can take place which therefore means more roots. The average number of roots produced be the cuttings with no leaves is zero. The average number of roots on the cuttings with 2 leaves is 3.66 roots per plant. The average number of roots with the cuttings

[6].

Number or leaves on each cutting	Number of roots on each cutting
0	0,0,0,0,0,0,
2	5,7,4,6,0,0,
4	1,4,2,9,9,1
6	10,17,11,12,31,5
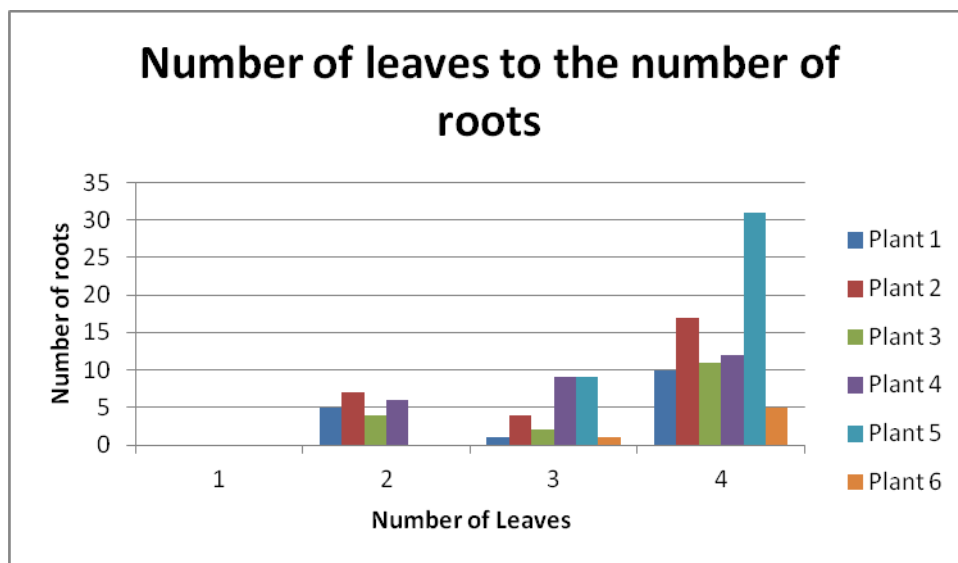
Conclusion: In conclusion, my hypothesis was proved to be correct. The more leaves you have on a cutting, the more roots will grow. I found that if you want roots to grow on a plant. You must have as many leaves on the cutting as possible because the more leaves you have on a cutting, the more photosynthesis can take place [7].

So the plants with more roots can get more water and the plants with more leaves get more energy from the sun. The carbohydrates supplied by the leaves influences root growth. One resource that proved that my hypothesis was correct was http://www.tekura.school.nz/departments/horticulture/ht105_p2.html, it states "If a cutting is to survive it must grow its own roots, otherwise it cannot take up water and will die. To encourage root development on cuttings you need to provide moisture, high humidity, warmth and light. Cuttings need enough light for their leaves to continue to carry out the process of photosynthesis to make food. The food is then broken down during respiration to provide energy for root growth. The cuttings need plenty of light to carry out photosynthesis, but not direct sunlight as that could cause high water loss"[8].