Laboratory report on the effect of acid rain

Science

1. Problem

According to an article, Acid Rain, by Novi Meadows Elementary, acid rain occurs in many parts of the world, no matter the climate difference. It is harmful not only to non-living things but especially to living things. It can affect humans, sea life and forests. This is because when the surroundings become too acidic, some living things die, like fish. Acid rain is formed when the pH, which is the measurement of acidity and basicity, of water is lower than 5. 6.

In relation with this, the group would like to investigate the effect of acidity on different seed crops by varying the pH level of its surroundings.

2. Hypothesis

The amount of seed germination will decrease as the surrounding of the seeds gets lower pH level, or becomes more acidic.

3. Procedure

The effect of varying pH levels on the germination of three different seed crops, Triticum aestivum (Wheat), Phaseolus sp. (Mung Bean) and Zea mays (corn) were investigated. Each group counted 25 seeds and placed them in petri dishes. Next, 20ml of solution of desired pH level (1, 3, 5 and 7) were poured into the petri dishes containing the seeds. The seeds were then observed for seven days wherein morphological changes in the seeds were noted. At the end of seven days, the number of seeds germinated in the petri dish was counted and the percentage of seed germination was calculated. The data was then compared with the other groups.

4. Results

Table 1 below shows the data gathered from the experiment. From the table, it can

Table 1. Percentage of seed germination of Triticum aestivum (Wheat), Phaseolus sp. (Mung Bean) and Zea mays (corn) in pH levels 1, 3, 5 and 7.

pH level

Percentage of seed germination

Triticum aestivum

(Wheat)

Phaseolus sp.

(Mung Bean)

Zea mays

be seen that there was 0% seed germination for Triticum aestivum in pH levels 1, 3 and 5. This is because in highly acidic environments, the cells in the seed are unable to absorb the nutrients it needs to grow. In accordance with that, there was also 0% seed germination at pH level 1 for both Phaseolus sp. and Zea mays.

At pH level 3, there was 12% seed germination for Phaseolus sp. and 4% for Zea mays. This means that the seeds of these plants can grow in semi-acidic environments. However, it can also be noted that at a less acidicenvironment, pH level 5, the percentage of germination for Phaseolus sp. and Zea mays increased to 60% and 12%, respectively. This probably means that the cells of the seeds of the two plants are able to absorb more nutrients in less acidic conditions.

On the other hand, at pH 7, the seed germination of Phaseolus sp. and Zea mays decreased to 28% and 0%, respectively. Probably these two plants cannot properly absorb the nutrients needed in a neutral condition. Interestingly, though, it is only at this pH level that Triticum aestivum begins to germinate. This means that it is only at this point that the conditions for seed germination are favorable for the seed.

According to the article, Soil Facts - It's What We Don't See That Counts, by FrostProof. com, different plants require different pH levels to properly absorb the water and nutrients it needs. This is probably the reason why the maximum percentage of seed germination for each plant was in varying pH levels: 16% at pH 7 for Triticum aestivum, 60% and 12% at pH 5 for Phaseolus sp. and Zea mays, respectively.

5. Conclusion

From the results of the experiment and as stated in the hypothesis, it was concluded that the amount of seed germination will decrease as the acidity of the surrounding increases. In relation to this, acid rain could inhibit the growth of plants especially if its acidity is too high.

Works Cited

FrostProof. com. “ Soil Facts - It's What We Don't See That Counts.” FrostProof. com. 6 November 2007

Novi Meadows Elementary. “ Acid Rain.” 2002. OracleEducationFoundation: ThinkQuest Library. 6 November 2007