Recent improvements in harvesting techniques have led to collecting 30x concentrated yields without input of additional energy or chemicals to the growth system.

**Acid and Rotifer tests:** The primary purpose of these tests has been to look for variables in the algal cultures with the potential to increase the efficiency and effectiveness of current harvesting methods. This is to be done using various observed phenomena.

**PL3LC:** This is the main algal strain used in the AlgaeTown photobioreactors. The name is derived from Perrin Lake 3 Large Cell. The cells are large, round, and thick walled.

**Results:**

There was no significant difference between harvesting applications and effects of Rotifera on culture. Results indicate no significant difference between rates of settling between different levels of tested acidity. (Graph 1) A difference in volume of material that settled between the two sample pH levels was observable. (Graph 2) The difference in volume that settled was not significant according to the Chi Square test performed.

**Materials and Methods**

**Acid Test:** The acid test consisted of two sets of five 250mL flasks. Samples tested were taken from a homogenous 2 liter stock culture of PL3LC for both trials. Five of the flasks were used to adjust to pH 8 and five flasks were adjusted to pH 6. Hydrochloric acid (HCl 2M) was used for adjusting. One set of five of the flasks were measured every hour on the hour for six hours. 10mL of sample was taken out from the center of the flasks with a sterile 10mL pipette and placed in a turbidity meter. The numbers were recorded, averaged to account for random error, and later equally manipulated into ratios of the original turbidity. This was for the accurate comparison of data after different initial starting turbidities.

**Rotifer Test:** Rotifer were taken from a contaminated PBR and concentrated in a 500mL flask placed in the dark for 3-4 weeks. The Rotifer were feed dried algae so that all of the algae from the sample would die off. Concentrated Rotifer were rinsed in 24% bleach solution to kill adult Rotifer and any bacteria present. The mixture was filtered and re-suspended in deionized water. Flasks with Rotifer were inoculated with this Rotifer egg solution. The Rotifer tests consisted of five flasks of both Rotifer inoculated and un-inoculated 250mL samples. These were grown on a shaker table for 1 week.

**Discussion**

**Acid Test:** The results of the acid test hint that it may not be the acid or the acid alone that is inducing the clumping of algae in the falling tanks.

**Sources of Error:** The only apparent two sources of error are related to time and scale. The time frame of the experiment might have been to short for an accurate representation of the observed phenomena in the PBRs. In addition to the scale of time the small scale of the experiment might have had an effect on the results of the experiment.

**Further Research:** Alterations to be performed in a follow-up study would include agitation of the media, readings over the time frame of days, and larger sample flasks.

**Rotifer Test:** The results from this experiment in relation to use in harvest are inconclusive. The “bathtub ring” appeared in both the control and experimental.

**Sources of Error:** There are three possible sources of error that relate to agitation, bleach, and bacteria. A shaker table was used for agitation which was unlike the PBRs mode of agitation. Traces of bleach may have effected the results even though it is unlikely. The bleach solution from materials and methods was filtered off and then the material was diluted. An additional source of error is that bacteria were not completely eliminated from the cultures.

**Further Research:** The best thing that could be done for further research here would be to start over and refine sterilization techniques until all bacteria are killed.

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**References**