CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY

Name(s)

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Project Number

S1905

Project Title

Furious Feeding Frenzy: Developing a Feeding Protocol for Lytechinus pictus

Abstract

Objectives/Goals

We used the species Lytechinus pictus in an attempt to develop a feeding protocol employing the algae Tahitian blend that will enable the developing urchin to survive through the pluteus stage to metamorphosis while being economical and simple enough for the classroom setting. Through our initial experiment we concluded that the Tahitian Blend was the only algae mixture they were feeding on. Using this information, we planned a revised experiment.

Methods/Materials

We have been testing various concentrations of Tahitian blend algae paste on Lytechinus pictus pluteii. By observing the survival rates of the Lytechinus pluteii, we found the most beneficial concentration of Tahitian blend algae was approximately 8600 cells/ml. We have worked with a constant concentration of 300 embryos per ml. in 40 ml. of filtered seawater and narrowed the range of algae concentrations and tested which concentration was most successful in prolonging the urchins' survival rate. We also tested the pH level to determine if a change in acidity had occurred. A constant temperature of 18 degrees Celsius was enforced.

Results

Urchin embryos survived 14-16 days longer than cultures containing no Tahitian blend algae. These results indicate that the urchins indeed feed on the algae. We have observed a decrease in pH over the course of the feeding protocol and hypothesize that an increase in bacterial growth caused an increase in acidity. Further study is needed to determine if bacterial growth (and if so, which species of bacteria) is causing this change in acidity.

Conclusions/Discussion

We conclude that using approximately 8600-cells/ml. concentration of Tahitian blend per 40 ml. of a 300-embryos/ml culture can extend the survival of the Lytechinus pictus pluteii to 23 days. This is a vast improvement over the urchin larvae that died within 7-10 days when a food source was not provided.

Summary Statement

We are attempting to develop a feeding protol for Lytechinus pictus using the algae paste Tahitian Blend

Help Received

Chris Patton (Hopkins Marine Station) provided the Lytechinus pictus, filtered sea water, and project support, and Pam Miller helped with project planning and materials.