Automatic Spirulina Culturing System Using Arduino

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Algae, as primary producers, are important in every aspect of our daily lives. Ecologically and economically, they have been used to produce food and medicines for a long time. Various species of algae supply food as well as being the source of extracts such as agar, carrageenans, and alginates. Numerous food, pharmaceutical, cosmetic, and industrial applications are all included for algae. Therefore, the most optimal system design for algae culturing system has also been receiving attention. One major challenge to industrial microalgal culturing is devising and developing a technical apparatus. Cultivation procedures and algal strains are able to undergo substantial increases in efficiency with the modification of solar energy and carbon dioxide. Despite several research efforts developed to date, there is no consensus as the best reactor system in an absolute fashion, as the one able to achieve maximum productivity with minimum operation costs. In this study, an automatic algae culturing system has been assembled using Arduino to control the peripheral conditions optimal for improved growth of algae. And, the algae growing ability of the automatic controlled system will be compared with that of the system that stays in the sun under the normal room conditions. The automatic Arduino system senses temperature and control an electric fan to cool down or turn on a heating lamp to heat it up. It senses light and makes a fluorescent bulb dim when too bright, and vice versa. A durable high-industrial quality of pH electrode is installed. It senses the pH in the algae culturing tank and makes beep sounds when it is too high, or low. The algae growing rate has been monitored. Data shows that the spirulina in the automatic controlled-algae system grows faster.

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