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Perspective

Uses of Microalgae in Meat Production of Aquaculture

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DESCRIPTION

To accommodate the demands of an expanding population, aquaculture and meat production have greatly increased. Tiny fish and agricultural goods used for the production of feed will result in waste of resources and competition with food, respectively. Microalgae may be the next alternative source for the environmentally and economically sustainable production of animal and aquatic feed. The entire human population should essentially be supported by agriculture, and in recent decades, the population has been growing steadily. In 2017, there were 7.6 billion people on earth; by 2050, this number is expected to rise 9.8 billion. According to some reports, to fulfil the rising demand, food output must double by 2050. A 25–60% increase is required to feed the entire population by 2050, according to some revised predictions and assessments. We must protect all available land and water resources so they can be used for food production rather than for the production of animal fodder.

Aquaculture has been producing more greenhouse gas emissions recently, and reducing the output of fishmeal, fish oil, and feed conversion ratio could lower those emissions. Global fish production in 2016 totaled 171 million tonnes, valued at USD 362 billion (including aquaculture and capture fishing). The meat industry is a small subsection of agriculture that deals with raising and killing animals for human consumption, including cows, pigs, sheep, and other livestock. Production of meat is expected to increase by 1.5 percent in 2018 to 335 million tonnes in order to meet population demand. Following chicken, beef, and ovine meat in terms of volume rise is pig meat. Demand for pork and poultry meat has increased as a result of widespread and rapid urbanisation, dietary changes, and a preference for processed foods. Eventually, the demand for pig and poultry feed will also increase quickly, thus feed production must be increased to keep up with the expansion. Microalgae have the potential to help with these problems while remaining affordable and effective. They are tiny, photosynthetic organisms with rapid growth that can live in every ecosystem, including springs, frigid mountains, rivers, lakes, and oceans.

They may create a variety of useful goods and make up more than 50% of the earth's natural primary photosynthetic productivity. We are still unable to fully use these microscopic bio-factories for financial purposes in a sustainable manner. Utilizing microalgae as a fish feed or feed supplement could ease the strain on fishmeal-based aquaculture, which would in turn help close the supply-demand gap in fish. There are several different types of algae, including macroalgae (seaweed) and microalgae, which are aquatic, photosynthetic living organisms (unicellular and filamentous). Microalgae thrive in an aerated, liquid environment with the right amount of light, carbon dioxide, and other nutrients. They can be cultivated heterotrophically, therefore they are not strictly photosynthetic. They can be found in a variety of environments, including hostile ones like hot springs, deserts, icy lands, etc. They can either be freshwater or marine species. Microalgae outperform land plants in terms of photon conversion efficiency, CO2 sequestration, growth rate, and biomass yield. Food derived from microalgae some microalgae species have a protein concentration so high that it makes up about 50% of their biomass. Most Spirulina strains, a few Chlorella strains, and Nannochloropsis strains have protein contents that range from 40 to 65%. It depends on the surroundings and the elements of their medium. Since humans are unable to produce all of the amino acids they need, they must be obtained from diet. Algal protein almost entirely contains EAA, making microalgae tablets or capsules a worthwhile and straightforward dietary supplement.

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