

Preliminary study on the preparation of fertilizer utilizing jellyfish

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Summary

We have examined the potential usefulness of jellyfish (dried sludge of *Aurelia aurita* and *Stomolophus nomurai*) as a fertilizer for vegetable fields. Inorganic components in the above jellyfish including *Aurelia aurita* (with and without aeration) were determined by absorptiometry, flame photometry, ICP emission spectroscopy, atomic absorption spectrometry, or ion chromatography. Concentrations of total nitrogen (980 mg/kg), total phosphorus (19000 mg/kg), magnesium (17000 mg/kg), and calcium (27000 mg/kg) in the dried sludge of *Aurelia aurita* were 2.3, 1360, 14, and 96 times higher than those in *Aurelia aurita* (without aeration, 420, 14, 1200, and 280 mg/kg), respectively. The dried sludge of *Aurelia aurita* seemed to have potential as a fertilizer but it contained high concentrations of iron (190000 mg/kg) and aluminum (2200 mg/kg) which might be undesirable for the growth of plant. On the other hand, concentration of total nitrogen (750 mg/kg) in *Stomolophus nomurai* was 1.8 times higher than that in *Aurelia aurita* (without aeration) although concentrations of total phosphorus (2.3 mg/kg) and calcium (75 mg/kg) were 1/6 and 1/4 of those in *Aurelia aurita* (without aeration). *Stomolophus nomurai* could be also expected to have potential as a fertilizer. Spinach was cultivated using the dried sludge of *Aurelia aurita* and *Stomolophus nomurai* etc. as a fertilizer. The dried sludge of *Aurelia aurita* seemed to accelerate the growth of spinach at earlier stage but rather decelerate the growth at later stage. *Stomolophus nomurai* was most effective for the growth of spinach. High concentrations of sodium chloride in jellyfish could be reduced by heating jellyfish suspension in a vacuum. Investigations are in progress to examine concentration conditions such as vacuum pressure and temperature.