Degradation characteristics of large brown algae *Ecklonia cava* according to environmental conditions

*Takunari Ida[1], Yu Umezawa[1], Shigeki Wada[2], Horikawa Yoshiki[1]

1. Tokyo University of Agriculture and Technology, 2. University of Tsukuba

As a method of reducing atmospheric carbon dioxide, which is one of the causes of global warming, utilization of “blue carbon”, which is carbon fixed by marine ecosystems, has attracted attention. Seaweed have a particularly high production rate and a large area in Japan, but there are few studies on quantification and processes of carbon fixation. Mechanisms of carbon sequestration in macroalgal beds include long-term transfer of deciduous algal tissues and DOC released into water to a deep layer isolated from the atmosphere, and deposition into surrounding sediments. However, because these algae-derived materials are microbially decomposed during transportation, the amount of refractory substances contained in seaweed is important to fix carbon more efficiently in the ocean ecosystem. In addition, the environment in which decomposition occurs varies in the ocean, and the components differ depending on the parts of the algal bodies. Therefore, the decomposition characteristics must be carefully considered in these viewpoints. Therefore, in this study, we focused on “Kajime” (*Ecklonia cava*), a brown algae of the family Laminariaceae, and its related species, “Alame” (*Eisenia bicyclis*). The decomposition characteristics of large brown algae were evaluated by performing decomposition experiments controlling environmental conditions such as dissolved oxygen and nutrients.
The results of this study suggest that it is important to understand where algae-derived organic matter accumulate due to seawater circulation, and to understand the dynamics of refractory DOM, when evaluating macroalgal function as “blue carbon”.

Keywords: seaweed bed, Ecklonia cava, degradation characteristics

