

## Examination of potential effects of nitrogen supply on nitrogen content and decomposition characteristics of eelgrass (*Zostera marina*)

\*Toru Miyata<sup>1</sup>, Yu Umezawa<sup>1</sup>, Makoto Watanabe<sup>1</sup>, Yoshiki Horikawa<sup>1</sup>, Masahiro Nakaoka<sup>2</sup>

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

Nitrogen is one of the elements that can limit the primary production of plants, therefore nitrogen supply potentially affects coastal primary production. On the other hand, it is known that some secondary metabolites such as phenolic compounds that are not directly involved in growth and catabolism such as photosynthesis, respiration, and assimilation act as protective compounds against predators and pathogens. Some report that the abundance of these substances varies with the supply of nitrogen. Thus, differences in nitrogen supply may contribute not only to the growth of these plants, but also to the biodegradation properties of the plant.

In this study, we focused on the eelgrass (*Zostera marina*) widely distributed in the coastal area of Japan, and examined the followings, potential effects of the nitrogen supply in the coastal area on the function as “blue carbon” .

1) Nitrogen content of eelgrass leaves at several locations with potentially different nitrogen supply

The relationship between nitrogen content in sediments and nutrients in the water column in the eelgrass beds were measured along the coast in the temperate zone and in the subarctic zone and compared with the nitrogen content of the eelgrass leaf.

2) Possibility of measuring nitrogen content in eelgrass leaf using portable nitrogen meter

The measured values of multiple portable nitrogen meters for land herbs were compared with the chlorophyll content and actual nitrogen content of the eelgrass *Z. marina*. Conditions that enable us to effectively estimate the nitrogen content of eelgrass are discussed.

3) Relationship between nitrogen content and the amount of structural and repellent substances in the eelgrass leaves

The amount of structural substances and repellent substances of eelgrass plants were evaluated using chemical (KOH, NaClO<sub>2</sub>, and NaOH) treatments and Folin-ciocalteu method, respectively, and compared with the nitrogen content in each part of the leaf.

Keywords: seagrass meadow, eelgrass (*Zostera marina*), portable nitrogen measurement device