

# Experimental study of natural environmental revegetation method in constructed area

## -Case study in cut-slope of power plant in Tsuruga city-

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### 1. Introduction

Recently, in the lots of constructed area, natural environmental revegetation of the protection of nature, restoration of an ecosystem, etc. is being called for more often. Then, in this paper, the comparison experiment research with the technique and traditional method of construction using the forest topsoil which attracts attention recently was carried out, and it tried about having validity as the natural environmental revegetation technique which can perform the reservation of biodiversity in this study site where is called for mitigation in the situation with power plant extension in the nature park zone in Tsuruga-city, Fukui prefecture.

### 2. Methods

After conducting investigation of the existing vegetation of the study site, the correlation of these three investigation and experiments was analyzed using the data obtained from the cut-slope experiment and potential experiment in the greenhouse.

First, in order to check the potential of the forest topsoil placed, A<sub>0</sub> layer topsoil (L layers are included and in general 5cm deep) is selected from seven points where vegetation differs from conditions and locations, and it was placed in 5cm deep at a tray on a scale of about 5 square meters (about 0.7square meter X 7 plot) by making the artificial soil ground (5cm deep) into a lower layer base.

Moreover, the comparison experiment of construction method and the type of seed combination were also conducted for the purpose which examines the conformity as the natural environmental revegetation method to the planned reclamation site, the mortar of established cut-slope (northeast, 1:0.8) was removed, and the geo-textile method which can perform reservation of a growth base in a steep slope was constructed in the lower

layer, and the revegetation method of construction with hydro-spray machine was constructed on it. Construction methods are as follows (1)geofiber method [ 20cm deep of lower layer and 5cm deep of surfaces] (2)roving wall method [ same way of (1) ] (3)texol green method (8cm deep of surfaces] (4)mixed method [ lower layer of 20cm by (1)method and surface of 8cm by (3)method].

Comparison of type of seed combination was also carried out and like these A type [topsoil only], B type [existing vegetation type + orchard glass], C type [existing vegetation type], D type [pioneer vegetation type]. And the scale of the experiment is 320square meters.

### 3. Results and Discussion

First, although it did not exist as trees in a tree investigation appearance kind and its investigation whenever it preceded in the potential experiment, 51% of appearance of the number of the buried seeds which set the kind considered to have been contained in topsoil in the form of a buried seed as an underground individual group can be checked, and it is judged that potential of seed bank is high.

The results indicate that it was able to take the harmony which 49% of a sprout and growth are checked almost similarly compared with the potential experiment to, and ten sorts of invades from the circumference further, and has biodiversity about the number of appearance kinds first in the cut-slope revegetation experiment using forest topsoil on the other hand. However, compared with the conventional method of revegetation, it was somewhat inferior in strength, in view of quantitative indices, such as grass-tree number density and sprout enactment, and rate of coverage which are the valuation basis of the success or failure of revegetation. Finally, it is considered that it is necessary continuing monitoring and study to pursue the revegetation with having the biodiversity.