

collected plants were 0.519 ~ 921.400ppm of Al, 0 ~ 4.180ppm of As, 0 ~ 0.313ppm of Cd, 0.010 ~ 3.007ppm of Cr, 0 ~ 1.997ppm of Cu, 0.036 ~ 216.700ppm of Fe, 0 ~ 2.660 ppm of Pb and 0.002 ~ 86.400ppm of Zn. In a result of compare the heavy metal contents between trees and herbs, it was showed a tendency which herbs contained more heavy metals than trees generally. There was variety appearances of correlation in fresh weight, chlorophyll content, dry weight and water content each species and heavy metal. The relation with water content closed specially.

#### **B523** Implication of enzyme activities on decomposition process in subalpine marshes in Lake Tahoe basin, USA

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Process in surface sediment was not significantly affected by temperature change in the study sites. To reveal the fluctuation of enzyme activities in sediment, alkaline phosphatase,  $\beta$ -glucosidase, and  $\beta$ -xylosidase activities were determined by a fluorogenic method using MUF-substrates in five subalpine marshes in Lake Tahoe basin, USA. Enzyme activities in all marshes did not show any significant seasonal change. Enzyme activities were high in Miller Meadow (dominated by *Nuphar* and *Scirpus*) as 27, 25, and 4 and low in Beaver Pond (dominated by *Ranunculus*) as 7, 5, and 1  $\mu$  mole/h/g DW of phosphatase, glucosidase, and xylosidase, respectively. Phosphatase activity in Upper Grass Lake (dominated by *Nuphar*) was high as 30  $\mu$  mole/h/g DW. This study did not show any relationship between interstitial water characteristics and enzyme activities, which was reported in other studies. This study showed that there were differences in enzyme activities according to dominant species in marshes and that decomposition

#### **B524** 낙동강 하구지역에서의 인간간섭도를 이용한 환경보전립의 입지선정에 관하여

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본 연구는 낙동강 하구 지역에 대한 인간간섭도(hemeroby)에 의한 입지 평가, 생태적 완충입지의 선정과 그에 따른 환경보전립 조성 전략을 개발하는 데에 목적이 있다. 조사지역 전역에 걸쳐 380개 격자가 설치되었으며, 인간간섭도 분류는 사람들의 '접근성'을 정량적으로 산출하는 기법을 개발하여 적용하였다. 현존식생도를 토대로 직접평가 항목, 간접평가 항목, 습지평가 항목 등의 세 가지 평가항목을 총화하여 등급화 과정을 거쳐 등급선별을 이용함으로써 인간간섭지도를 완성하였다. 낙동강 하구지역의 물새서식처로서의 핵심서식처와 인간간섭지역이 연접함으로써 생태적 완충기능을 수행하는 환경보전립이 우선적으로 조성되어야 할 곳은 다섯 개소임이 밝혀졌다. 4 개소의 기존 도로 영역과 1 개소의 울타리 공간에 조성되어야 할 환경보전립은 식물사회학적 조건과 물리적 생리적 건조조건을 고려한 구조(종조성)와 형태가 제안되었다. \* 김종원. 1993. 환경과 조경 60: 148-153. \* Lee, C.-S. et Y.-H. You. 2001. Korean J. Ecol. 24: 101-109. \* Miyawaki, A. 1975. Sukzessionsforschung: 237-254. Gantner Verlag.

#### **B525** Allelopathic effect of *Quercus dentata*

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To understand the allelopathic effect of *Quercus dentata*, aqueous extracts from *Q. dentata* were treated to several selected plants included fungus. The aqueous extracts of *Q. dentata* were evaluated on

seed germination of several test species such as *Brassica campestris* subsp. *napus* var. *pekinensis*, *Bidens bipinnata*, *Taraxacum officinale*, *Aeschynomene indica*. The plant growth inhibited on seed germination, root hair developments, shoot and radicle growth as increased aqueous extract concentration. The radicle growth was more affected than shoot growth of test species by aqueous extracts of *Q. dentata*. The aqueous extracts of *Q. dentata* not inhibited mycelial development but sporulation inhibited in fungal growth. The H<sub>2</sub>O fraction of result in MeOH fraction(EtOAc, H<sub>2</sub>O, MeOH layer) of *Q. dentata* indicated strong antifungal activity on *Candida albicans*. These results obtained in seed germination, seedling growth and microbial activity suggested that the chemical substances from aqueous extracts of *Q. dentata* would be responsible for allelopathic effects.

#### **B526** Allelopathic Effects of Essential Oils of *Artemisia iwayomogi*

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Allelopathic effects of essential oils extracted from *Artemisia iwayomogi* (EOAI) on weed and crop plants were investigated. The treatment of the volatile essential oils of the *A. iwayomogi* caused significant inhibition in the germination, shoot and radicle growth of the receptor plants. The radicle growth of receptor plants was inhibited more severely than shoot growth. The essential oils of *Artemisia* inhibited the induction and growth of callus of the receptor plants. Light microscope observations of treated root tips of receptor plants showed that development of root hair inhibited. Transmission electron microscope observations showed that treated root of *A. japonica* had ultrastructural alterations of

certain organelles and cell walls such as increased vacuoles, wavy-form cell wall, increased intercellular space. GC/MS was used for analysis and identification of chemical substances from EOAI. Terpenoid compounds from *A. iwayomogi*, 1,8-cineole (31.81%), camphor (30.86%) and 1-borneol (27.91%). 1,8-cineole showed as the strongest growth inhibitor of the chemicals.

#### **B527** Allelopathic Potential of Secondary Metabolites from *Artemisia* Species

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To verify allelopathic effects of some *Artemisia* plants on selected species and to test germination, seedling growth, chemical analysis and bioassay were carried out with secondary metabolites of the *Artemisia* species. Seed germination percentage of selected species included *Lactuca indica* var. *laciniata* showed decreases according to increases of aqueous extracts of *Artemisia capillaris*, while those of the others such as *Leonurus sibiricus* did not. However, the dry weight growth of selected species treated with the same extracts as the above experiment was inhibited remarkably compared with the germination test. The treatment of the volatile oils of the *Artemisia scoparia* caused significant inhibition in the germination, shoot and radicle growth of the selected species. Bioassay with several compounds detected from those *Artemisia* plants was tested and terpinen-4-ol was the most toxic among the tested substances.

#### **B528** The Effects of Storm Runoff on the Ecosystem of (Lake Wanggung) an Agricultural Reservoir.