S2-2

Species Diversity Analysis of Mushrooms Collected in Mt. Chiak

Byung-Kook Lee[1], Kyoung Su Kim[2], Ki-Cheol Eom[1] and Soon-Ja Seok[3,*]

[1]Sejong Institute of Data Analysis Co. Ltd., Gyeonggi R&DB Center Bldg.#527, 906-5, Luidong, Yeongtonggu, Suwon 433-270 Korea

[2]Department of Applied Biology, Kangwon National University, Chuncheon 200-701, Korea

[3]Agricultural Microbiology Division, National Academy of Agricultural Science, RDA, Suwon 441-707, Korea.

This study included the analysis of mushroom data collected from Mt. Chiak in Gangwon-do using various methods. Former studies of Korean mushrooms are limited by regional characters and there is less species diversity among the regions. This study tried to find a way for the forecast of mushroom distribution and appearance by indexes of species diversity. The indexes used in this study include the number of fungi (N), the number of species (S), similarity index (C), richness index (R1, R2), variety index (V1, V2), evenness index (E1, E2, E3, E4, E5), and dominance index (D1) to analyze variety of species diversity. Analyses of data of fungi using a multistage cluster sampling indicate that the average value of C for years was higher than the average value of C for areas. The mushrooms consisted of 208 species in 686 individuals in limited fungal collection from 2002 to 2003. One hundred thirty nine species in 393 individuals were collected in 2002, and 122 species 293 individuals were collected in 2003. The individuals collected in 2003 were smaller than 2002's individuals. Similarity, richness, and variety indexes' values of 2003 were reduced than 2002's values but dominance index of 2003 was increased than 2002's value. Generally the species diversity of the environment to evaluate the index of similarity, richness, and variety was a higher index; dominance index was lower than that of the surrounding environment, suggesting a good diversity. As a result, the occurrence of mushrooms in the surrounding environment and the various factors seem fell in 2002 compared to 2003. The majority genus of the limited fungal collection was *Mycena* genus in 63 individuals; the majority species was *Laccaria laccata* in 34 individuals. Ninety three species in 106 individuals were collected by the extended collection and the majority genus of the extended collection was *Amanita* genus in 17 individuals; the majority species was *Amanita citrina* (Schaeff.) Pers. which was found in 5 individuals. This demonstrates that periodical similarity's value was 0.159 is higher than special similarity's 0.119. This indicates that the probability of the appearance of same mushrooms in the same area in following year is higher than the probability of the appearance of same mushrooms in the surrounding area in same year. The value of coefficient of variation (CV), in which the amount of change is much or less by N is higher than the CV value by S. CV value of dominance index(D) was the highest r point among other indexes, and evenness index (E) was the lowest point among other indexes. The correlation matrix with 66 combinations between the indexes, the combinations with correlations was 46 combinations. These results revealed that indexes of R1, V2, and E1 were proper to represent species diversity of fungi based on the correlation matrix and the theory of statistical independence which means there is no or less mutual association. This research would contribute to the study about variable living creature by measuring method and in the future this would be used to figure out regulation about fungi with their correlation, values in ecosystem, develop improving new models about agricultural fungi species and numbers by investigating agricultural variable species. This study was carried out with the support of the cooperative research program (Project No. PJ009870), RDA.