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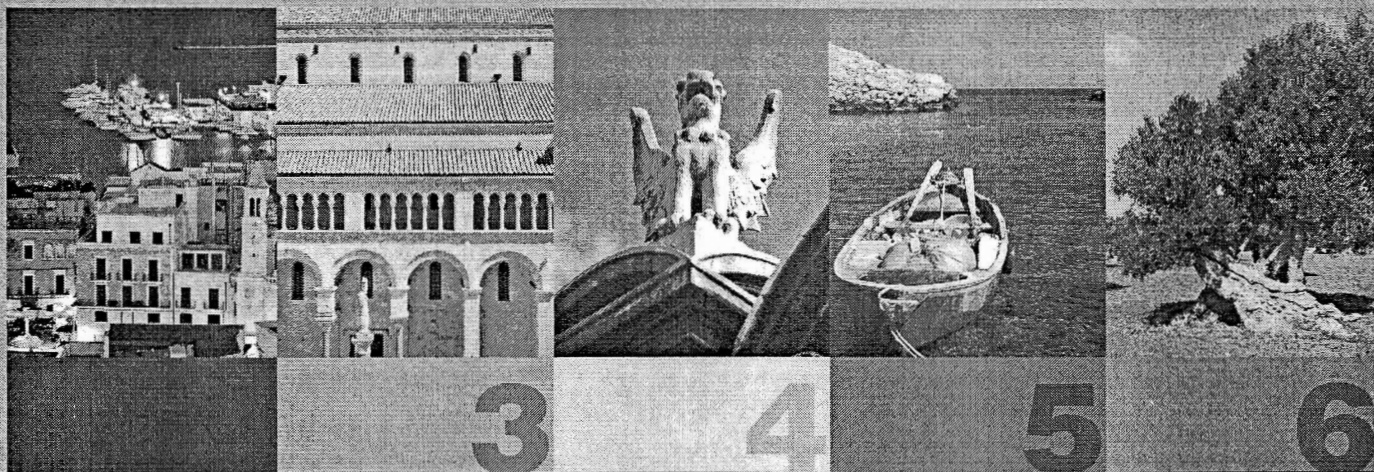
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INFLUENCE OF CHEMICAL COMPOSITION AND ANATOMICAL STRUCTURE OF LEAVES ON LITTER DECOMPOSITION RATE OF QUERCUS FRAINETTO TEN. AND QUERCUS CERRIS L. IN SITU

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Leaf chemical composition and anatomical structure have a cause and effect relationship. Traits of fresh leaves, remain operational in the leaf litter and control interspecific variation in decomposition rate. This paper presents the results of a one-year experiment of litter decomposition of Quercusfrainetto Ten. and Quercus cerris L. in natural conditions of the oak forest. The results indicate a clear difference in decomposition rate between the two species, which are induced by the differences in chemical composition and anatomical leaf structure. The decomposition rate constant (k) was 0.831 ± 0.14 yr⁻¹ for Q. frainetto and significantly lower in Q. cerris (0.458 ± 0.12 yr⁻¹, $P < 0.001$). During the initial chemical composition of oaks' leaf litter, differences were found in water-soluble matter ($P < 0.001$), hemicellulose ($P < 0.01$) and cellulose ($P < 0.05$). In the beginning of the experiment differences were noted in the thickness of mesophyll ($P < 0.01$) and upper epidermis ($P < 0.05$). Later decomposition stages indicated that lignin and fats, waxes and oils fractions had a considerable influence on oaks' litter decay rate. Results after 12 months of decomposition revealed that, 48.04% of the entire leaf, 53.30% of mesophyll and 32.93% of lignified upper and 47.67% of lower epidermis of Q. frainetto, and 28.70% of the entire leaf, 31.60% of mesophyll, 25.17% of lignified upper and 20.93% of lower epidermis of Q. cerris was decomposed. Reduction in leaf thickness during the course of decomposition mainly occurred due to the reduction of mesophyll parenchyma, which consists of easily degradable plant materials available to decomposers.