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Sveučilište Josipa Jurja
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Faculty of Agriculture
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44. HRVATSKI I
4. MEĐUNARODNI
SIMPOZIJ
AGRONOMA

44th CROATIAN AND
4th INTERNATIONAL
SYMPOSIUM ON
AGRICULTURE

16. – 20. veljače 2009. | Opatija | Hrvatska
16th – 20th February 2009 | Opatija | Croatia

ZBORNİK SAŽETAKA

BOOK OF ABSTRACTS

Opatija, Grand Hotel Adriatic

Accumulation of biogenic elements and heavy metals in various parts of Prilep tobacco during its development and growth

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Abstract

Tobacco plants are among major accumulators of macro and micro elements, especially of heavy metals (Miner, 1997). Tobacco quality, however, depends more on the balance of mineral matters and variation of their contents in various parts of the plant.

Investigations of economic importance of C, H, O and other micro (N, P, K, Ca, Mg, S) and macro elements (B, Cl, Cu, Fe, Mn, Mo, Zn) revealed that the elements C, H and O constitute 90% of dry matter and the other elements, which are easily movable, significantly affect the quality of tobacco leaves (Barney, 1998).. The contents of these elements and heavy metals vary in various parts of tobacco plant (leaf, root, stalk).

According to Adamu et al. (1966), deposition of heavy metals, especially Cd, in the leaf is higher than that in the root. Still, the heavy metal content depends mainly on tobacco type, environment in which tobacco is grown, the level of industrial development of the region, soil and climate conditions, etc.

The aim of this work was to study the content of biogenic elements and heavy metals in some varieties of Prilep tobacco, especially in the leaf, with reference to their usability in cigarette manufacture.

Varieties P 12-2/1, P 112-2/1, P 146-3/2 and P 23 were included in investigations. Leaves, stalks and roots were dried at 75°C and content of the elements (K, Ca, Mg, Mn, Fe, Cu, Zn, Cd, Pb) was assessed on Atomic absorption spectrophotometer (AAS Varian 220). Samples were burned by the method of wet combustion in a mixture HNO₃ : HCL: H₂SO₄ = 40:1:0.25. It could be seen from the results that the contents of biogenic elements and heavy metals differs, depending on the parts of the plant and on tobacco variety. The content of Cd ranges from 0.00005 mg/g in roots to 0.572 mg/g dry matter in leaves and the content of Pb from 0.05 mg/g in roots to 0.148 mg/g dry matter in leaves.

Key words: biogenic elements, tobacco, oriental, Type Prilep, heavy metals