Elemental Analyses of *Dacia-Tetra* Cultivar in Some Crop Variants for Determine the Concentrations of Biominerals and Heavy Metals

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**SUMMARY**

*Trifolium pratense* is one of the most important plant as well for soil enriching in nitrogen as for animal nourishment. At the Center for Testing and Ratifying the Cultivars from Ulmi near Targoviste, Dambovita County, were set up some crops with four Romanian created cultivars belonging to *Trifolium pratense*: *Dacia-Tetra*, Select, Roxana and Flora, each of them cultivated in pure culture as well in mixed culture with *Dactylis glomerata*. Both type of cultures were fertilized with manure and fertilizers (PK) after a schema, in the view to releave the capacity of these plants for accumulating biominerals, but also their afinity for storage heavy and rare metals in correlation with the quality and quantity of fertilization.

This paper is about the determinations concerning biominerals and toxic metals content of *Trifolium pratense* - *Dacia-Tetra* cultivar. All samples were analysed by PIXE (Particle Induced X-ray Emission) method, at the Nuclear Physics Research Institute Bucuresti. Principle of PIXE method consist in ionization of the levels near the atomic nucleus. This ionization is followed by a rearrangement of the electronic architecture with emission of characteristic X-ray. Detection of X radiation with Si (Li) or intrinsic Ge semiconductor detectors. Characteristics of the method: destructiveness, rapidity (only 15-30 minutes), easy preparation of the samples, multielementarity - determination of the most of elements with Z higher than 13, a good confidence, and the sensibility of this method is 1ppm. Biological samples consisted in whole plants harvested from each field experience, drying at 105ºC one hour, then reduced to dusty and put on a special ray beam target.

By PIXE method were determinated the highest potassium (K) quantities in all variants of fertilization between 2600 and 2750ppm, the maximum being registrated in culture variant fertilysed with PK. Calcium concentration was higher too, (1450 -1527ppm) but maximum of concentration was in plants unfertilized. The content in phosphorus and sulphur was a important one. Concerning heavy metal content only iron (Fe) was in moderate quantities between 54ppm in the plans unfertilized and 92ppm in the plants fertilized with PK. Manganese and copper were registered in very low concentrations, under 0,1ppm. Vanadium was also in trace quantities in all cases of fertilization, but its concentration was at random in correlation with the type of fertilization.

**REFERENCES**