

Observations on the Chemical Composition of Red Oak Acorns According to the Climatic Conditions and the Changes Suffered by the Treatment with DEA Type Modulators

Marcel DÎRJA, Tudor SĂLĂGEAN, Horea CRIVEANU

Faculty of Horticulture, University of Agricultural Sciences and Veterinary Medicine,
3-5 Mănăştur Street, 400372, Cluj-Napoca, Romania; salagean_tudor@hotmail.com

Abstract. In this study was analyzed the chemical composition of *Quercus rubra* acorn and the values modifications of the acorns chemical compounds treated with DEA biophytomodulators.

Keywords: biophytomodulators, acorn, red oak, microelements

INTRODUCTION

Red oak is native to the eastern half of North America. Introduced in Romania at the beginning of the century, in forest cultures from Mihăieşti, Lipova, Rîşnov and on the streets, in parks as decorative tree.

Deciduous tree, exotic, with wide ecological amplitude, vegetates well on podzolic, gleic and pseudogleic soils, loose, light texture, moist enough, nowadays also in poor soils, compacted clay soils (Harald and Tietze, 2008).

It makes fruits every 6-10 years. The first fruition, at 70 years, when they are in massive and at 40-50 years, when grows in isolation. Possess a high capacity to regenerate vegetatively by brushwoods. Actively grows till 150-200 years with a maximum between 50-70 years.

MATERIALS AND METHODS

For determination of metals in samples of acorn was used the Mass Spectrometer Perkin Elmer ELAN DRC II type, as well as the analytical balance 220A SCS, Precisa Instruments AG Switzerland. Acorn samples were treated with DEA biophytomodulators.

RESULTS AND DISCUSSION

For the paper taken into study were analyzed three origins of *Quercus rubra* acorns from three areas of different pollution.

Values measured in carbohydrate increased by treatment with 0.15%, 2,52% and decreased by 0.85% of other origins (Fig. 1).

The microelements (named *oligoelements*) are chemicals which are found in very small quantities in soils, rocks, water and bodies which are needed to increase yields, improve product quality and protection of plants and animals against diseases and pathogens. In vegetable and animal bodies are identified about 80 elements, of which 75% are microelements.

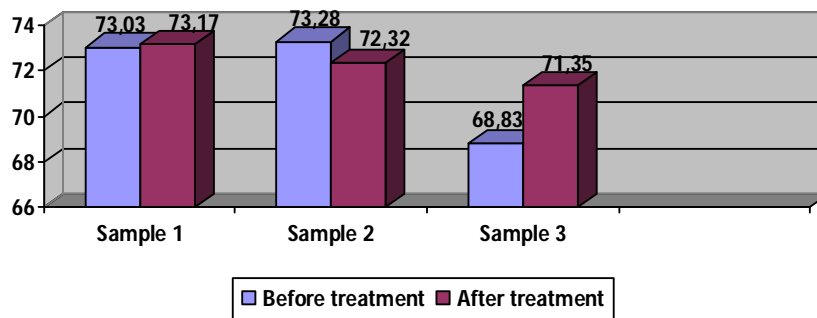


Fig. 1. Carbohydrates (%)

Manganese is present in various body fluids and tissues and provides the activity of enzymes such as lactase. Manganese deficiency in soil leads to specific plant diseases. In animal and human body it stimulates growth and cell multiplication.

Zinc plays an important role for the existence of living things. In plants it takes part in the formation of chlorophyll. Insufficient zinc in plants leads to chlorosis. Zinc stimulates the ripening of fruit and seed formation.

Iron is the most abundant of the trace elements, these are in many fruits (almonds, hazelnuts), wheat, oats, rye, carrots, chestnuts, acorns, pollen, etc.

The microelements from *Quercus rubra* acorns were also affected after treatment with DEA biophytomodulators as shown in Figure 2 and Figure 3.

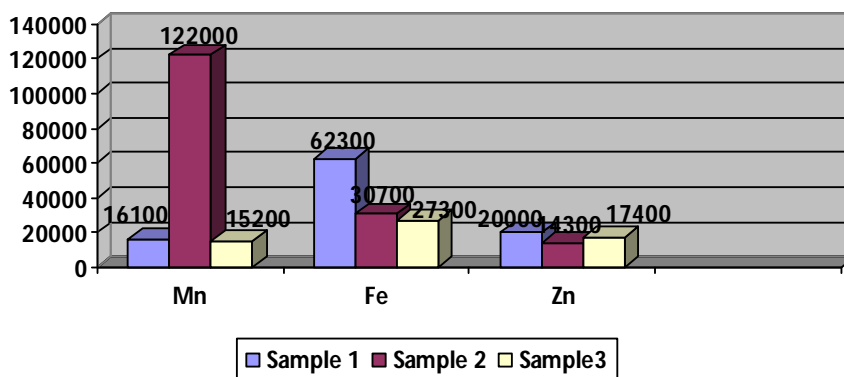


Fig. 2. Microelements (µg/kg S.U.) before treatment

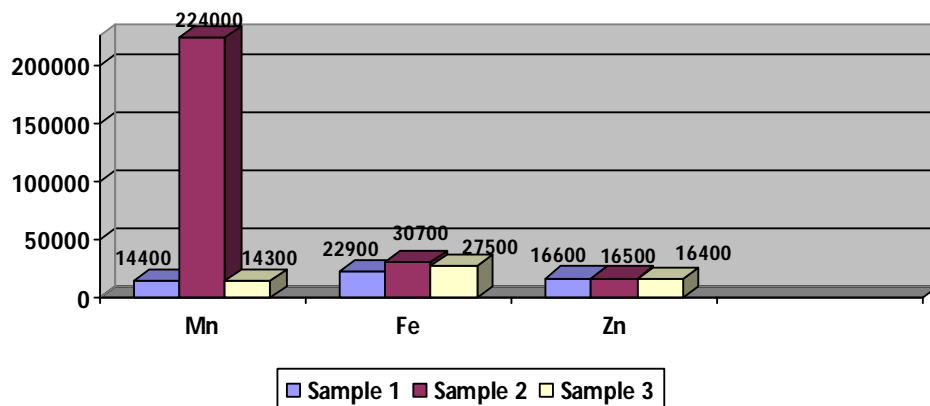


Fig. 3. Microelements (µg/kg S.U.) after treatment

For the core of Red Oak acorns, has determined the percentage of protein, fat, ash and moisture, result the values shown in Table 1.

Tab. 1

The percentage of protein, fat, ash and moisture

Feature / U.M.	Obtained value		
	Sample 1	Sample 2	Sample 3
Protein %	8,52	8,43	8,01
Fat %	9,59	9,43	9,28
Ash %	2,03	2,04	1,86
Moisture %	6,83	6,93	7,57

CONCLUSIONS

By treating the acorns with DEA biophytomodulators, is observed in all three acorn samples an improvement of microelements content. After treating the sample 1 was found a decrease of the content of manganese, iron and zinc and in the other two samples the content of manganese, iron and zinc increased significantly, except sample 2, where the iron content remained unchanged.

REFERENCES

1. Harald, W. and Tietze (2008). *Întinerirea, cum să inversezi procesul de îmbătrânire*, Editura Mix.
2. ***www.hydrop.pub.ro/AlcalinitateAciditate.pdf.
3. *** <http://www.ecosistem28.ro/>.
4. ***.<http://www.hydrop.pub.ro/DeterminarepH.pdf>.