

Timisoara, 25-26 May

## ASSESSMENT OF MINERAL COMPOUNDS IN DIFFERENT POPULATIONS OF THYME (*THYMUS L.*)

Rodica BEICU, Adina BERBECEA\*, Sorina POPESCU, Georgeta POP, Giancarla VELICEVICI, Alina NEACȘU, Marius BALINT, Ilinca-Merima IMBREA

University of Life Sciences „King Michael I” from Timișoara, Aradului St. 119, Timișoara 300645, România

**Abstract:** The mineral profile of thyme, a species so often used as a medicinal plant or spice, represents a permanent and significant research topic for the fields of agronomy, chemotaxonomy, biochemistry. The study evaluates the mineral profile related to 17 spontaneous populations of thyme identified in the Banat area, compared to a cultivated population, investigating the quality of the biological material analyzed. The characteristics of the biotope are defining and influence the mineral profile of the thyme populations in natural areas. Among the mineral elements analyzed in the present work, those related to the analysis of the macroelement content are presented. The amount of calcium accumulated in the dry vegetable mass can represent a relevant indication as a species character, if it will be confirmed by other specialized studies.

### Introduction

Wild thyme is difficult to determine taxonomically, due to the similarity of the morphological characters of different populations, interspecific hybridization, causing confusion even for specialists. The present study aims to provide additional information regarding the chemical characteristics and mineral profile for 17 spontaneous populations of thyme, compared to a cultivated population, all from the Banat area.

### Material and method

The macroelements were determined by atomic absorption through an official method certified by the AOAC at the wavelength specific to each element.

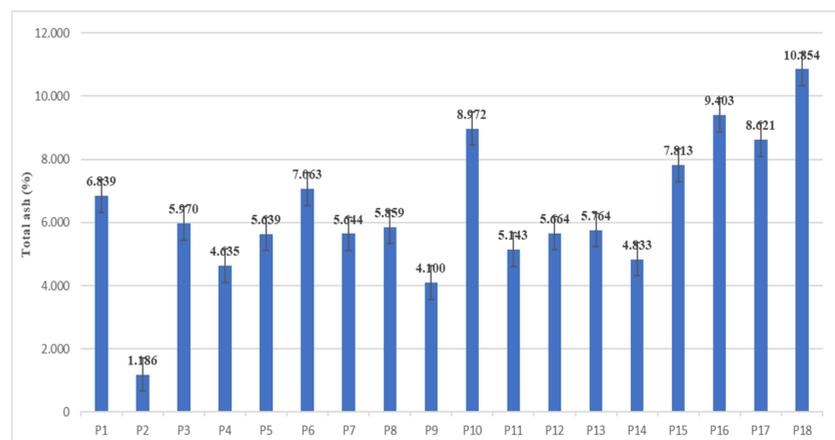
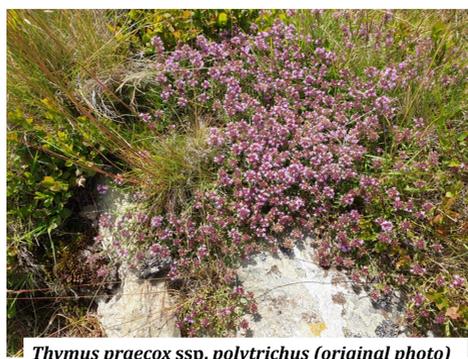


Figure 1. Individual variations ash content, by species and harvest area



Thymus praecox ssp. polytrichus (original photo)



Thymus praecox ssp. jankae (original photo)

### Results and discussions

For each plant sample collected, the calcined mass was calculated, expressed in grams. The percentage of total mineral substances, relative to the dry plant sample, was determined. The average concentration for the 18 populations studied was  $6.33 \pm 2.24\%$  (figure 1).

The macroelements identified in the 18 *Thymus* populations studied, were the following: potassium, with an average value of  $7,926 \pm 4,198$  g/kg, calcium, with an average value of  $4,372 \pm 1,394$  g/kg.

At the individual level, the maximum amount of K (figure 2) was detected in the population of *Th. praecox ssp. polytrichus* from Semenic Peak (15.084 g/kg), and the minimum amount was detected in the population of *Th. pulegioides ssp. pulegioides* (2.092 g/kg) from the Carașova area.

The maximum amount of Ca (figure 3) was detected in the population of *Th. dactylicus* from the Coronini area (53.039 g/kg), and the minimum amount was detected in the population of *Th. praecox ssp. jankae* from the Domogled Cruce area (3.526 g/kg). In the specialized literature, the values reported for this macroelement vary around 18-20 g/kg.

Regarding the analysis of Mg content (figure 4), the maximum values were recorded in the population of *Th. dactylicus* from the area of Lescovița (6.580 g/kg), followed by the population belonging to the same species *Th. dactylicus*, from the Coronini area (6.491 g/kg). The minimum amount was detected for the population of *Th. praecox ssp. jankae* from the Domogled area (1.319 g/kg).

### Conclusions

The results of the study indicate variations in the recorded values, both according to the analyzed genotype and also according to the biotope conditions.

The potassium content varied widely, being between 2 g/kg and 15 g/kg, depending on the species and location. In the cultivated species, the potassium value was 13.454 g/kg, among the wild populations, only two exceeded this value, *Th. comosus* (Coronini) and *Th. praecox ssp. polytrichus* (Semenic).

Regarding the calcium content, we recorded variations between 3 g/kg and 53 g/kg, over 60% of the analyzed wild populations, exceeded the calcium content of the cultivated thyme. Three spontaneous populations, with a calcium content of over 40 g/kg were highlighted (*Th. dactylicus* - Lescovița, *Th. praecox ssp. jankae* - Coronini, *Th. dactylicus* - Coronini). It should be noted that, within the species *Th. dactylicus*, we observe two of the highest values, while the species from Ostrov records much lower values, similar to the cultivated population. Similar content variation, depending on the harvesting area, we also observe in the case of the population *Th. praecox ssp. jankae*, the sample collected from Coronini was reaching a value close to the maximum content reported, while the sample from Domogled was determined as the minimum value.

The magnesium content values, were recorded between 1 g/kg and 6 g/kg, being close to the data reported in other studies. Less variation in the content of this macroelement is observed, both within the genus and also according to the location.

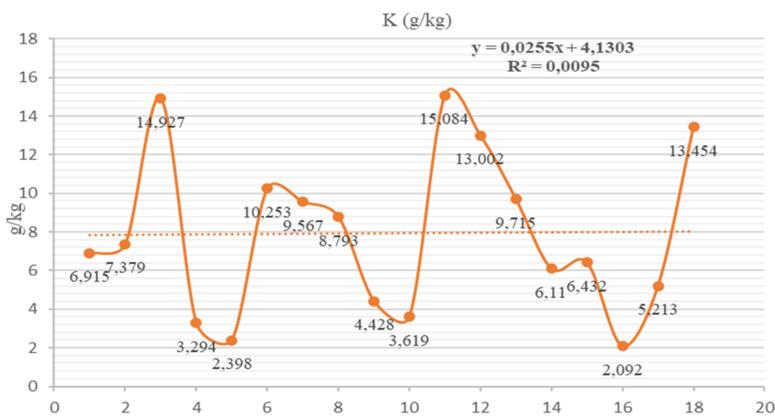


Figure 2. Distribution of potassium in the analyzed thyme populations

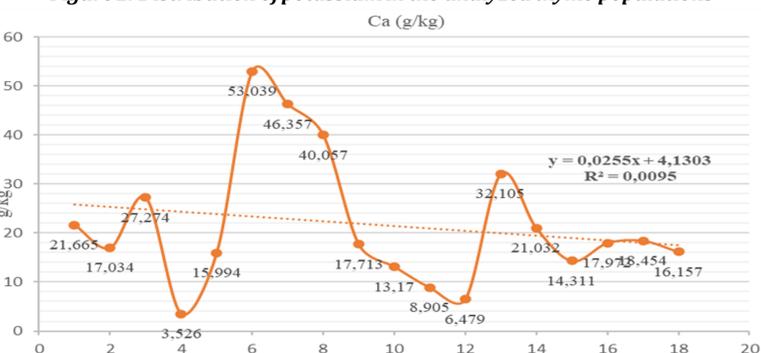


Figure 3. Distribution of calcium in the analyzed thyme populations

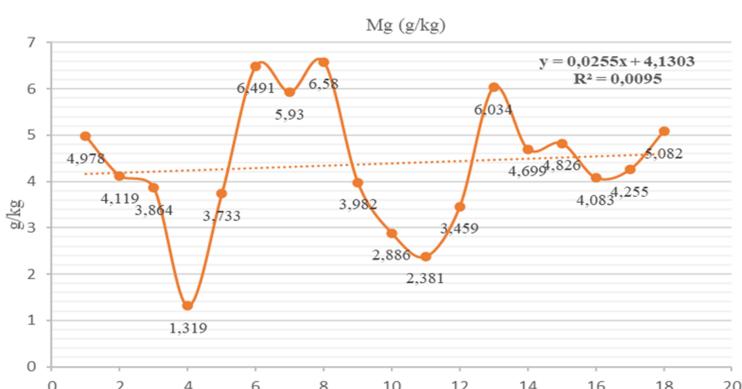


Figure 3. Distribution of magnesium in the analyzed thyme populations

