CLIMATE AND BIODIVERSITY

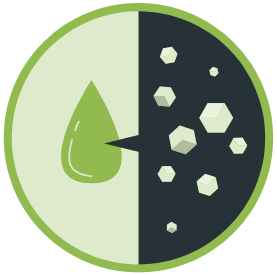
"MIHAI EMINESCU" NATIONAL COLLEGE– SUCEAVA
TEACHER COORDINATOR – MACARIE CAMELIA

” MIHAI EMINESCU” NATIONAL COLLEGE

The goal of ”Mihai Eminescu” National College, Suceava is to ensure an educational environment which will make sure that students will develop harmoniously by promoting excellence and equal access to education. This project is done within the International Erasmus+ Project having the topic Biodiversity- LEAF

The project’s aim

e identification of the main categories of green as (parks and city parks) by modifying the diversity in accordance with the variations of erent abiotic factors.



Objectives

- The identification of green areas (park city parks)
- Their classification
- The identification of the biotope biocenosis components
- The making of the macroscopi microscopic –photometric analyses
- The correlation of aspects and interpretation of data
- The dissemination of activities

The studied areas

Park Forests

01

" Zamca" Park Forest
"Șipote" Park Forest

Leisure and relaxation parks

02

"Ioan Nemeș" Park
"Ștefan cel Mare" University Park
" Mihai Eminescu" National College Park

Square parks

03

"Mărășești" Park
"Vladimir Florea" Park
"Simion Florea Marian"Park

Hanging and private gardens

04

Terraces
Balconies
Private gardens

Park – forests- cover the biggest ground surface and have the highest biodiversity with approximately 150 plant species and about 50 animal species

-They are artificial forests planted with the role of protection curtains against the industrial areas, Șcheia and Burdujeni

"Zamca" Park Forest

Park - forests

University and”Mihai Eminescu” Leisure and relaxation parks

- cover a smaller area and reduced biodiversity at approximately 50 plant species and approximately 20 animal species

Leisure and relaxation Parks –
”Ștefan cel Mare ” University Park- Suceava

”Vladimir Florea”and ”Mărășești” Square Parks

-cover a small area, very anthropised, with reduced biodiversity, 10 -15 plant species and 10 animal species

Hanging gardens

- reduced areas with a specific highly anthropised ecosystem and with a carefully selected biodiversity

200

plant/animal species

In the park forests from Suceava

Collecting data

Methods

Microscopic Analyses

Pollen grains
Stomatal Density
Fungi spores

We-lab

Taking field samples in different phenophases and conducting experiments

Photometric analyses

Amount of pigments anthocyanins, chlorophyllins, etc..

Data collecting

We-lab data collecting

20

Photometry

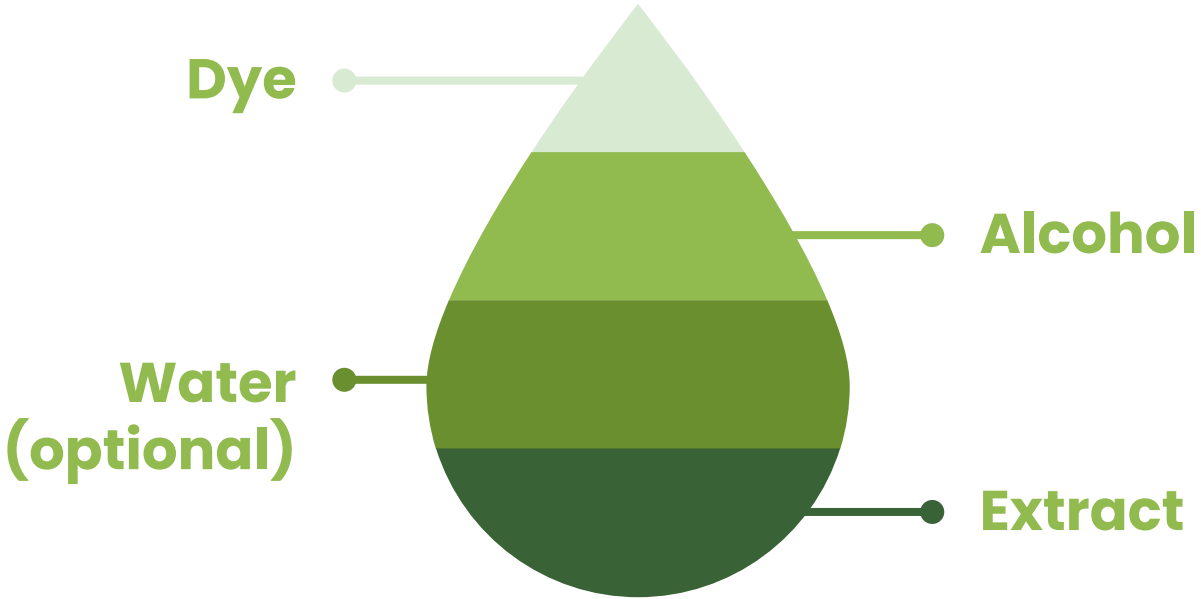
The main element for microscopic and photometric research in this project was - the WE-LAB package, which has the necessary equipment to collect photometric data and microscopy, being equipped with lenses for: photometry/microscopy

34

Microscopy

The We-Lab

Method



The composition of a compound

Photometric analyses

This part was made with the help of WE-LAB- equipped with photometry lenses, cuvettes reagents and the necessary instruments, pistil mill, crushed glass, 90% alcohol for cold extraction.

Method of working

Field sampling: leaves and flowers of conifers, organs of spring, summer and autumn plants are wetted for extraction, then the photometer is used to indicate the presence and concentration of chlorophyll or anthocyanin pigments, depending on the variation of environmental factors.

Using the kit

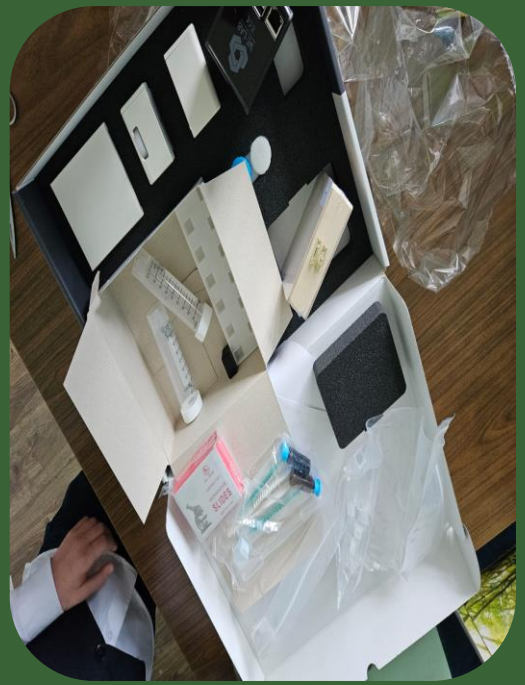
To carry out the chemical part of this project, we used the WE-LAB kit + the guide provided in the application where the research results will be displayed.

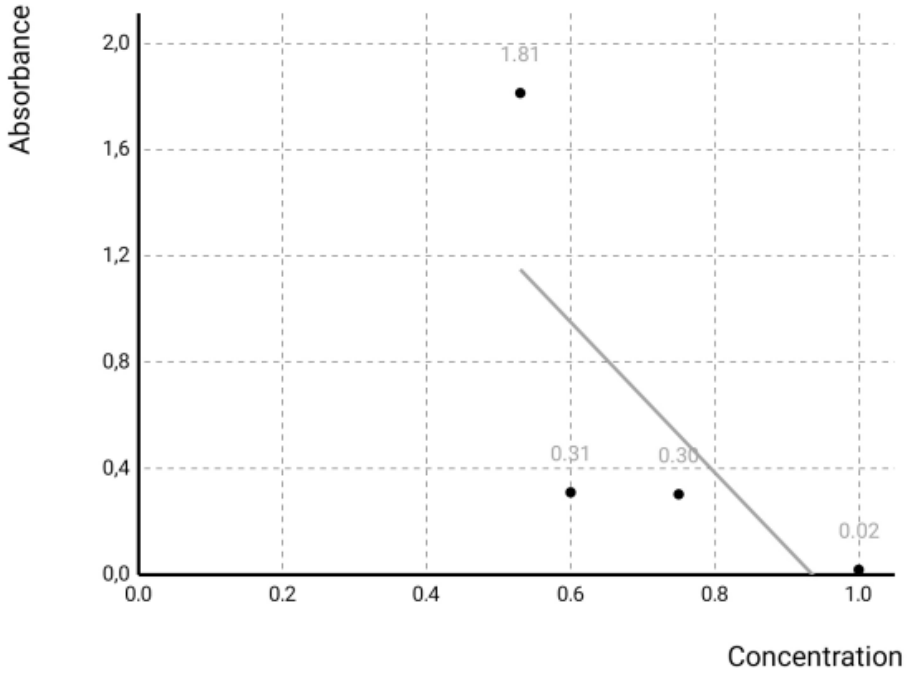
Microscopic Analyses

- We have carried out microscopic work on the comparative study of pollen grains in different species in different phenotypes: spring plants (snowdrop, tulip, lily, poppy, hyacinth, etc.), summer plants (rose, dandelion, bulb, daisy, rocket), autumn (roses, chrysanthemums, Chrysanthemum indicum).
- We observed that sudden temperature variations between day and night, as well as during the week, affected the amount of nectar synthesized by the plants and the amount of pollen, hence pollinating insects, with beekeepers experiencing large losses in bee populations.
- Mycorrhizal fungi have helped the plants to resist the climate changes
- In conditions of high humidity one can notice an increase of the attack of parasite fungi (blight, rust, smuts) and saprophytes (mildew).

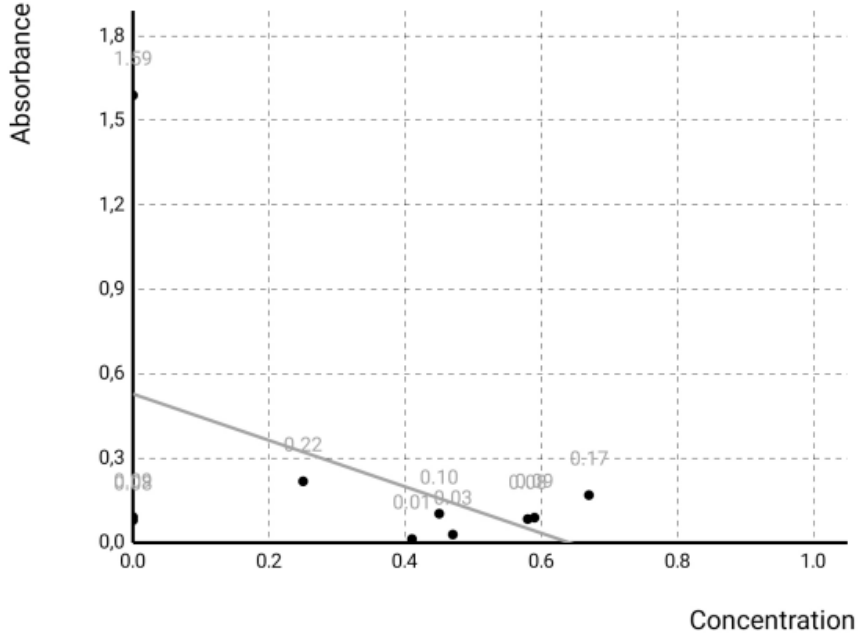
Photometric Analyses

Yellow Rose





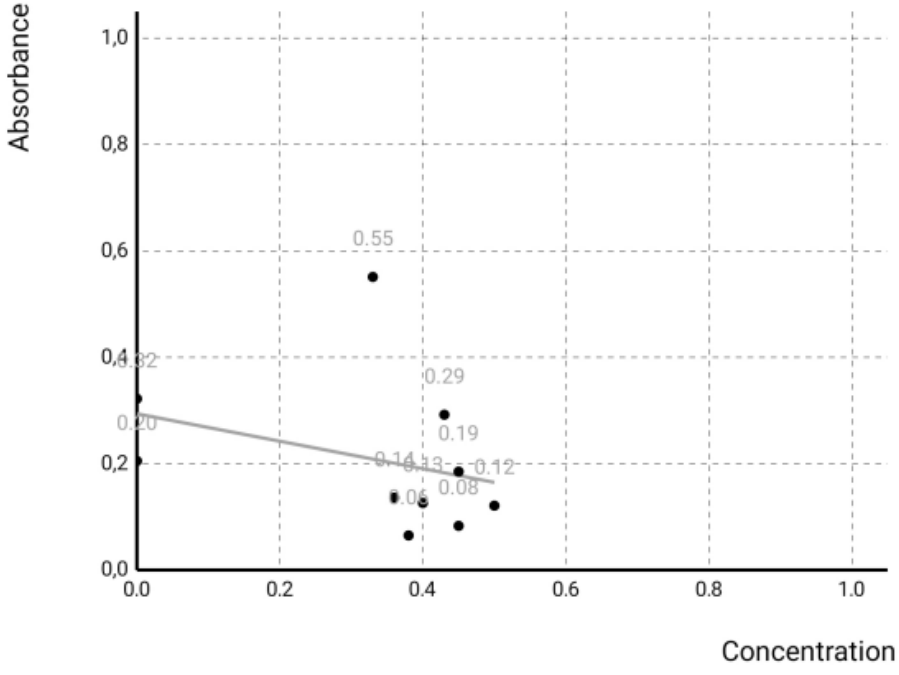
Photometric Analyses



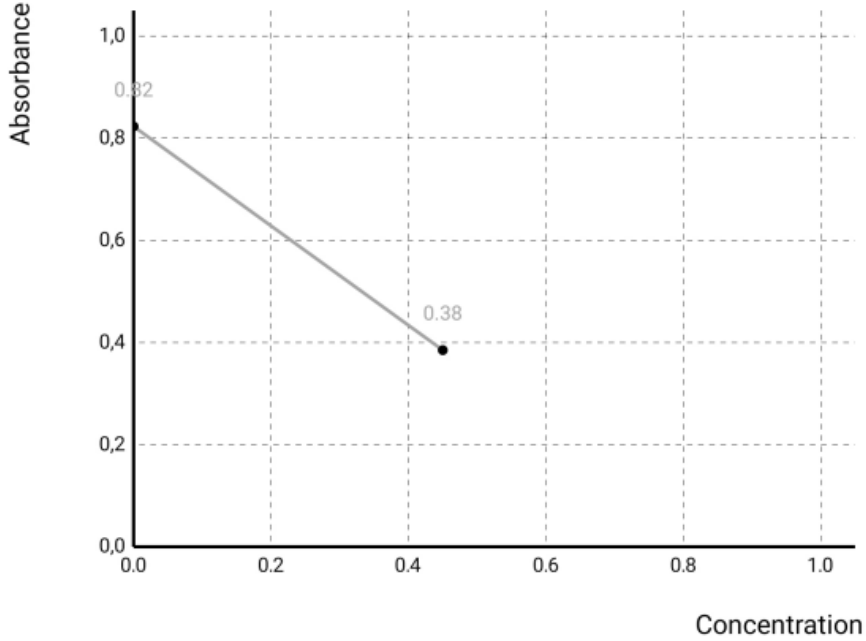
Dwarf Elder

Photometric Analyses

Hawthorn

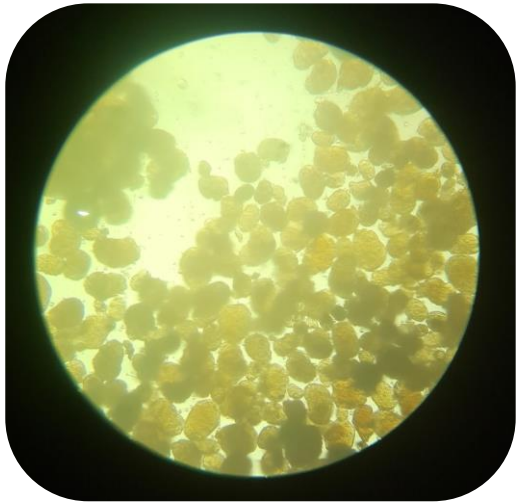


Photometric Analyses

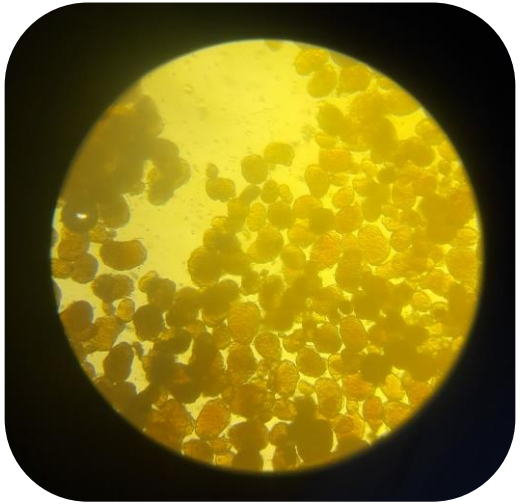


Black Berry

Microscopic Analyses



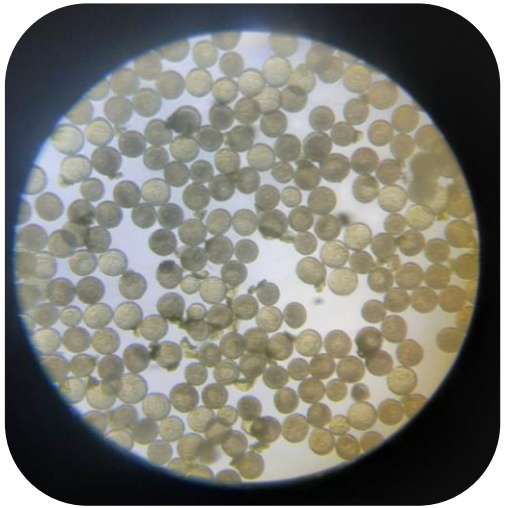
Snowdrop pollen grains



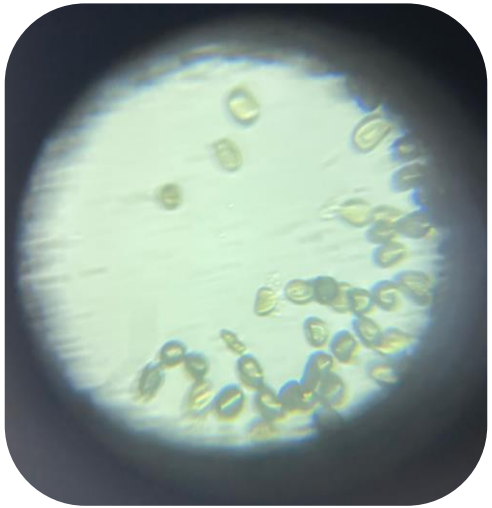
Tulip pollen grains

Starch grains

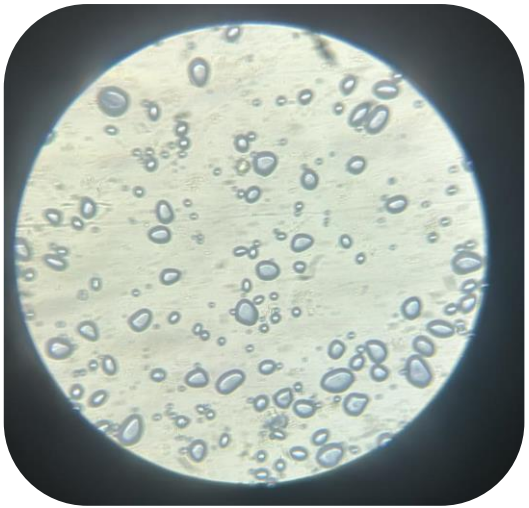
Microscopic Analyses



Crocus pollen grains



Crocus starch grains



Crocus starch grains

Microscopic Analyses

Lily pollen grains

Lily pollen grains

Spores of mycorrhizal fungi

- Biodiversity is higher in park forests - sudden temperature variations (1 - 7 degrees) affect the maturation of pollen grains and thus sexual reproduction.
-climate variations affect the basic physiological processes of plants (respiration, photosynthesis, reproduction)

In high humidity conditions one can notice:

- an increase of the attack of parasite fungi (blight, rust, smuts) and saprophytes (mildew)
- Drying of conifers (to fluctuations in temperature and humidity).
- Better resistance and synthesis of a greater quantity of chlorophyll and anthocyanin pigments in forest park plants, where they achieve symbiosis with mycorrhizal fungi of the genus Elaphomyces.

Conclusions

These variations in temperature and humidity affect:
-nectar synthesis, and therefore the activity of the bees, they will produce less honey.
-The population density of bee families (and other pollinating insects) is reduced and beekeepers suffer great losses.

Credits

This project is done within Erasmus+ Project with the theme Biodiversity, in collaboration with other member states – Italy, Greece, France, Serbia, Croatia

LEAF Project

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LEAF Project

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