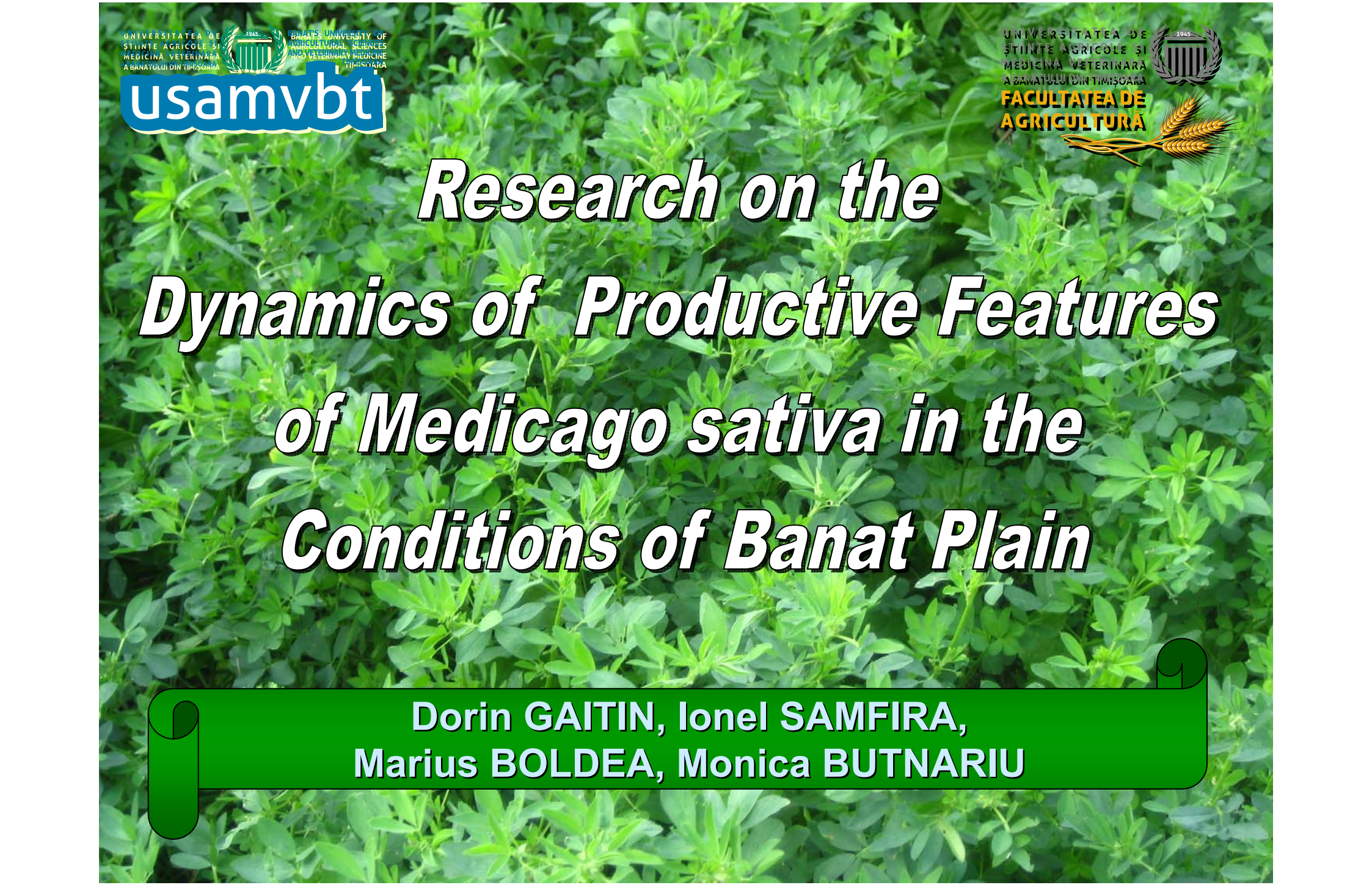
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Research on the Dynamics of Productive Features of Medicago sativa in the Conditions of Banat Plain
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Alfalfa is one of the oldest crop plants to be domesticated. The first references to alfalfa show that it was used for forage as much as 3000 years ago. It was introduced in Greece in 470 BC as forage plant for horses and other animals; it was then that it received the name "*medica*", which, adopted by the Romans, was kept as the name of a genus.

The goal of the present research was to study the dynamics, in plain climatic conditions, of plant height, number of leaves, number of sprouts, leaf width and length, appearance, dimension and number of inflorescences, and number of inflorescences per raceme in alfalfa (*Medicago sativa* L.).

In the conditions of a climate with hydric deficit and high temperatures, common almost every year in the plain area, it is important to know the dynamics of morpho-productive features of alfalfa if we need to improve cultivation technologies and particularly if we need to improve the species

Present research has pointed out alfalfa cultivars adapted to environmental conditions, identifying alfalfa adapted to dry climate conditions associated with high temperatures (a climate that has been more and more common during the last decade) and alfalfa adapted to the temperate climate.

The alfalfa root system is very deep (it can reach up to 2 m in length), which explains its particular drought resistance (almost the entire root system is formed in the first year of vegetation) .

The biological material was represented by NS Banat ZMS II variety and mainly morphological features under study were plant height, number of leaves, number of sprouts, leaf width and length, the appearance, dimension and number of inflorescences, and number of inflorescences per raceme. The biological material was studied in two different locations for a better knowledge of the dynamics of the morpho-productive features. One location was in the low Banat Plain, at the Didactic Station of Banat University of Agricultural Sciences and Veterinary Medicine in Timişoara, on a moderately acid soil of the vertic cambic chernozem type, pH = 5.83. For the climatic characterization, we used data recorded at Timişoara Meteorological Station in 2010 and 2011. The other location was in Mănăştur, the low Vinga Plain, on a phaesiom soil type, pH = 7.53. For the climatic characterization, we used data recorded at Arad Meteorological Station in 2010 and 2011.

The same impact of climate conditions on plant growth is represented in Figures 3a and 3b for Mănăştur. Thus, there was a height growth of 0.3 cm per 10 mm precipitations, and a height growth of 0.06 cm per 10°C.

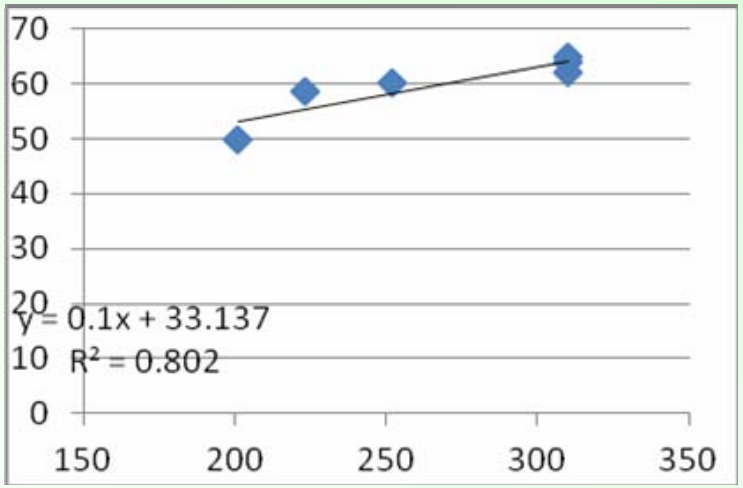

Figure 2a. Plant height growth depending on precipitations – Timişoara

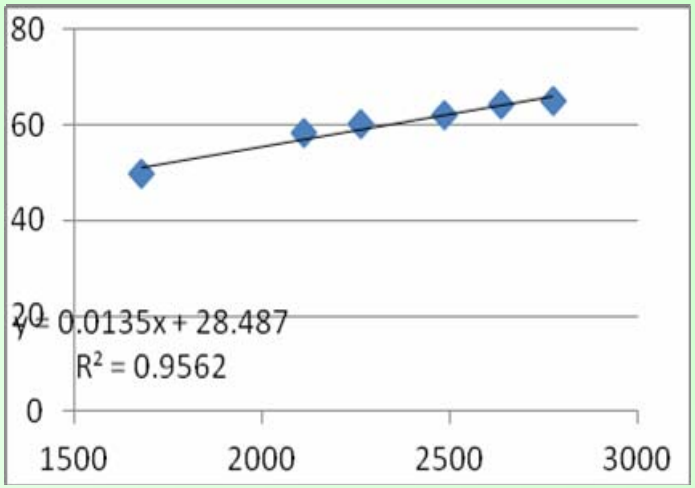

Figure 2b. Plant height growth depending on temperature – Timişoara

This allows us to represent proper regression lines. Figure 2a shows regression line and experimental data of height growth depending on precipitations in Timişoara, i.e. a height growth of 1 cm per 10 mm of precipitations. Figure 2b shows the impact of temperatures on medium height in the same location, i.e. a height growth of 0.1 cm per 100C.

The same impact of climate conditions on plant growth is represented in Figures 3a and 3b for Mănăştur. Thus, there was a height growth of 0.3 cm per 10 mm precipitations, and a height growth of 0.06 cm per 10°C.

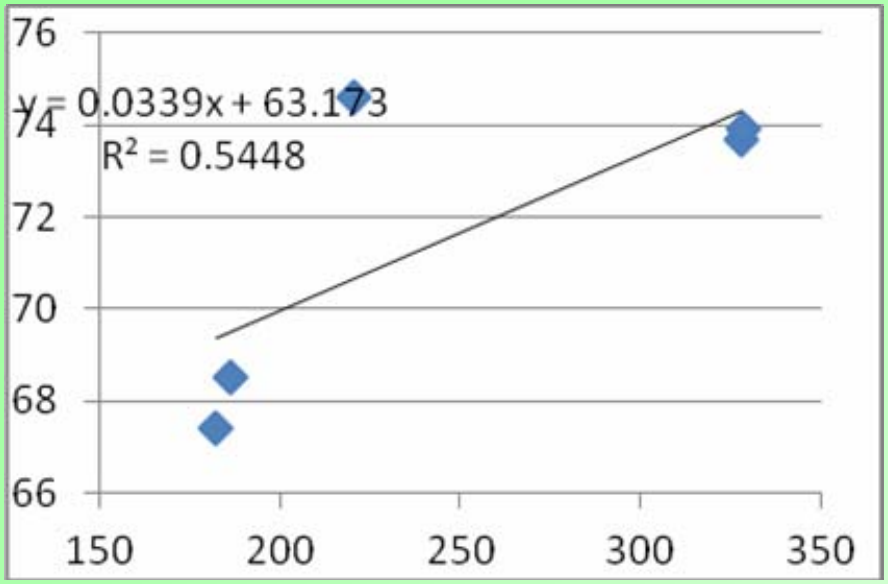

Figure 3a. Plant height growth depending on precipitations – Mănăştur

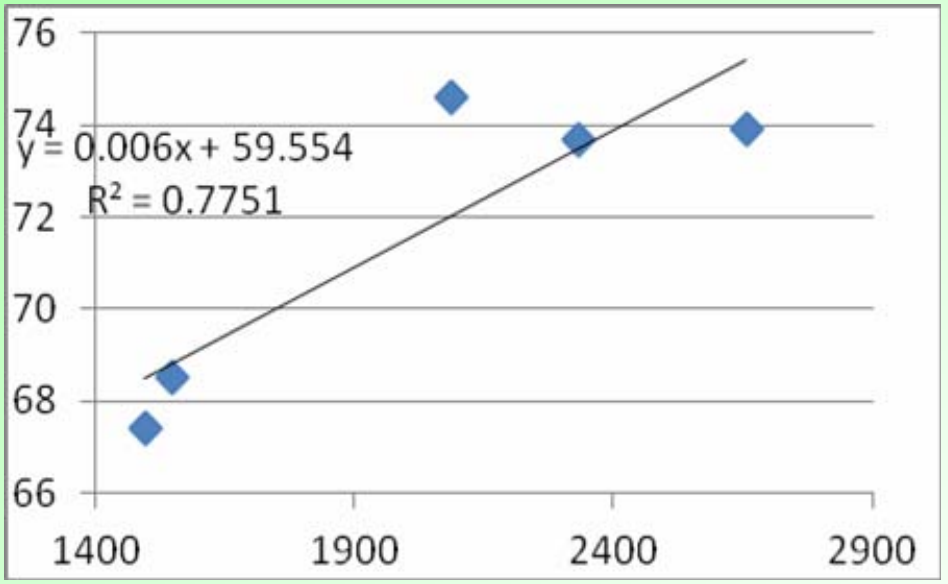

Figure 3b. Plant height growth depending on temperature – Mănăştur

The dynamics of the feature studied, different in different cumulative values of temperature and precipitations, can be explained by the location of the crops on soils with different productivity. We can say that, of the two types of soil, alfalfa has a growth rate superior in the moderately acid soil of the vertic cambic chernozem type in Timişoara.

Acknowledgements

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