

MULTIFUNCTIONAL AGROCENOSSES BIODIVERSITY, SUSTAINABILITY AND FUNCTIONALITY IN SHORT VEGETATION CONDITIONS



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The aim of the study was to investigate the high productivity multicropped (multifunctional) agrocenoses for the impact on environment, soil, pests and weeds, productivity and energy potential stability in short vegetation conditions.

Materials and methods

One of the way to increase crops biomass production from growing area is to increase crop functionality, when in to the basic crop are seeding others species plants, which can fast develop.

A stationary field experiment carrying out at the Experimental Station of Vytautas Magnus University in 2020-2022.

Maize (*Zea mays* L.), cannabis (*Cannabis sativa* L.) and faba bean (*Vicia faba* L.) as mono, binary and trinomial crops cultivations are investigated. The experiment has 7 combinations (treatments), 3 replications and 21 experimental plots.

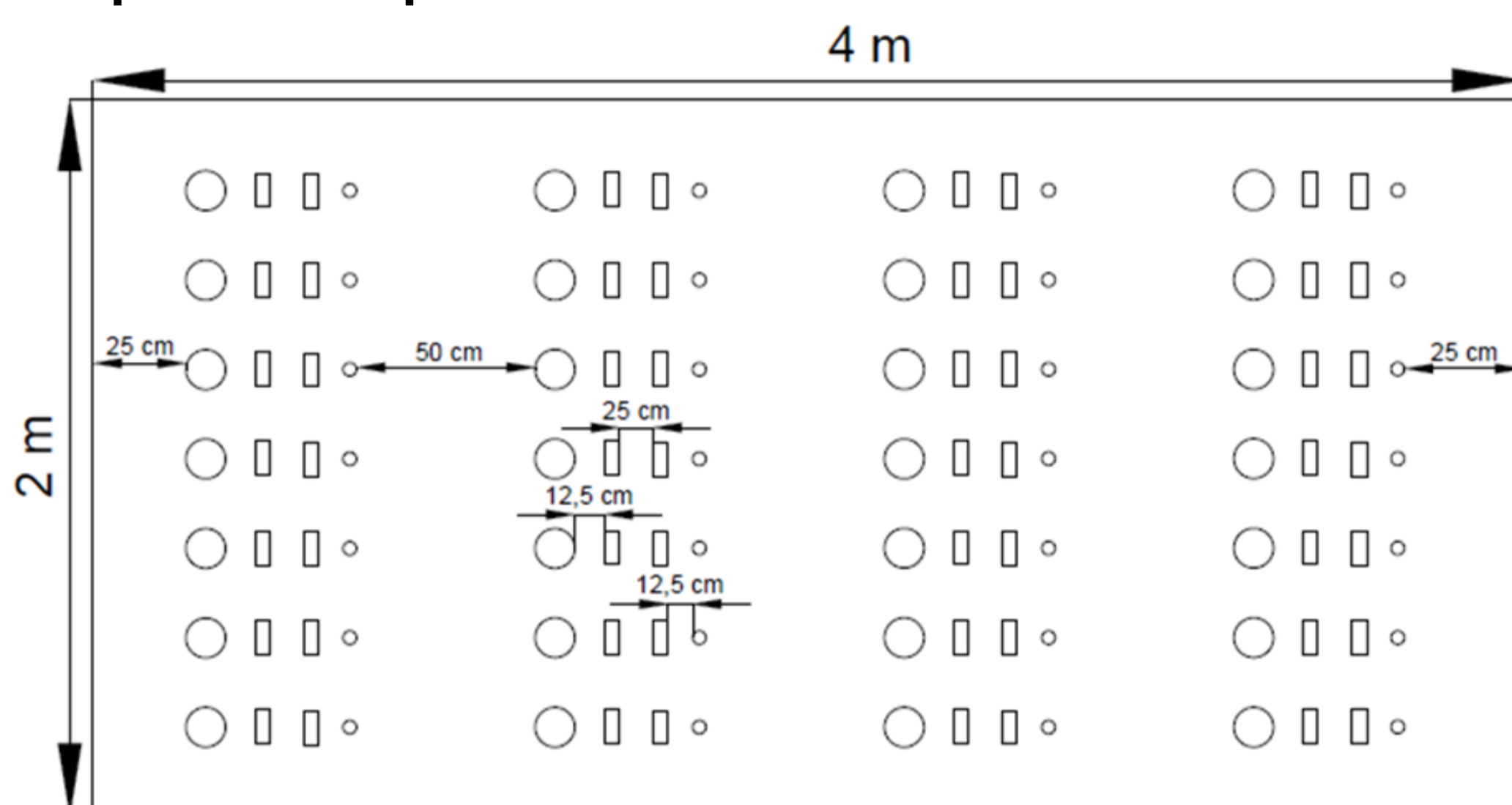


Figure 2. Trinomial sowing scheme

To reach the aim of experiment were determined following tasks:

1. Analyse the situation about agricultural plants with highest energetic potential technology and possibilities to make more biomass;
2. To make and investigate multifunctional agrocenoses with highest energetic potential in short vegetation conditions, which will be effective in energetic and environmental protection;
3. Estimate multifunctional agrocenoses biomass recycling technical and technological parameters for energetic needs;
4. Estimate economic, energetic and environmental potential of new multifunctional agrocenoses.



Figure 1. Experiment plots

These experiment treatments of multifunctional crops were investigated:

1. Maize;
2. Cannabis;
3. Faba bean;
4. Maize + Cannabis;
5. Maize + Faba bean;
6. Cannabis + Faba bean;
7. Maize + Cannabis + Faba bean.



Figure 3. FAR measurement

Conclusions

During experimental research, we investigating soil penetration resistance, gas flows, soil water stability and nutritional composition. Also indices of crop development, photosynthesis, productivity and quality.

First year experiment results showed, that the highest biomass grew maize and cannabis, which were grown as mono crop. Nevertheless, the most biomass of faba bean had treatments with trinomial crops cultivations. At the end of experiment, the biomass of multicrop cultivation will be evaluated for energy purposes too.

