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TOPOGRAPHIC TECHNIQUES APPLIED TO THE OUTLINE OF EXPERIMENTAL FIELDS WITH FORAGE PLANTS INCLUDED IN FIELD ASSOCIATIONS

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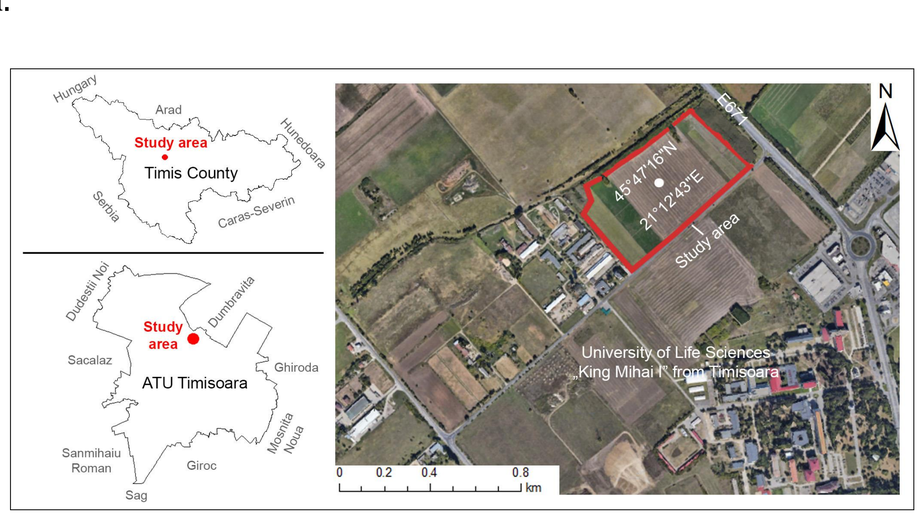
Abstract. The topographic survey (detailed topographic survey) presents the real situation on the ground, measured in national coordinates, in the case of Romania in the Stereographic 1970 system. Practically speaking, we are talking about measurements or a set of works necessary to document the real situation on the ground. Or, even more concisely, the determination of level elevations relative to the level of the Black Sea. Plotting represents the topographical operation through which certain points in a project are materialized in the field by staking out

• Introduction

The Didactic and Experimental Station is a self-financed unit, specialized in the production of seed from the upper links and animal biological material. Currently, it has an area of 2507 ha of agricultural land, of which: 2333 ha of arable land, 78 ha of pastures, 64 ha of meadows, 24 ha of vineyards and 8 ha of orchards.

• Material and method

The tracing was performed with GNSS technology, the marking accuracy being ± 2.3 cm. In the case study presented below, a current orthophoto plan of the studied area was made using the eBee AG drone, after which a topographic survey was made using the South Galaxy S7 GNSS equipment. On the basis of the orthophoto plane and the data obtained from the topographic survey, the plan was drawn up for the plotting of the experimental fields, which was carried out with the help of the Leica Viva GS07 GNSS equipment. In this way, precise and reproducible results can be obtained in agricultural experiments, being a more expeditious method than the classical method.



The work methodology applied in the research involves going through several stages, presented synthetically in the figure below:

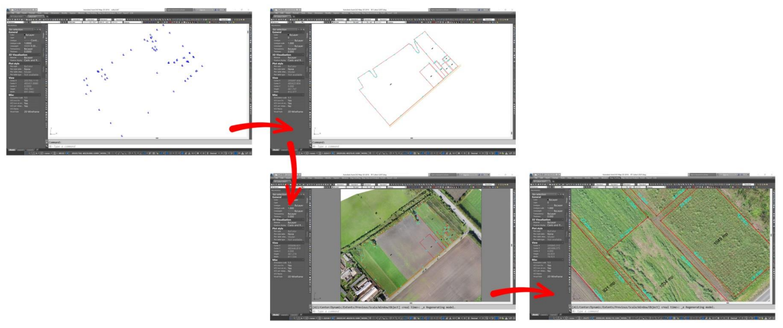
• Results and discussions

To carry out the topographic survey in order to stakeout the experimental fields, we used a senseFly eBee Ag drone to create the orthophotoplane, a South Galaxy G7 GNSS equipment for carrying out the topographic survey and a Leica Viva GS07 GNSS equipment for stakeout the experimental fields.

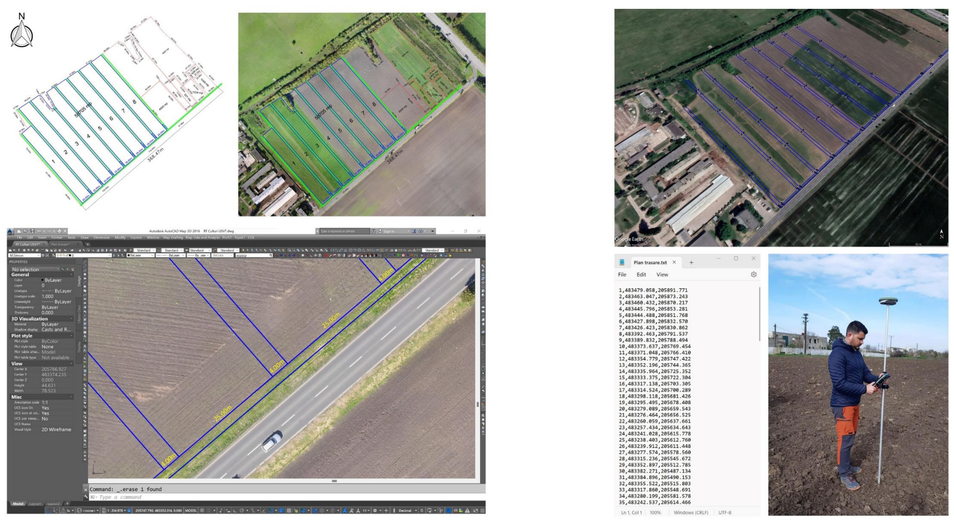
Downloading the raw data from the device and drafting the topographical plan are two important steps in the process of carrying out a topographical survey. Here's how these steps can be accomplished:

1. Download raw data from the device:

2. Drawing the topographical plan:



After completing the drawing of the plan with the topographic survey, we made the stakeout plan and the actual stakeout in the field:



The planting of crops in the experimental fields is done after the stakeout has been completed and a planting plan has been made. If the mapping was done with the help of GNSS technology, it can provide the exact coordinates of the planting points, thus allowing a precise and uniform planting of the crops.

• Conclusions

In general, GNSS technology can be more efficient and accurate in the stakeout of the experimental fields than classical methods, thus reducing the risks and costs associated with this activity.