Applying Free Geotechnologies and Offline Maps for Data Collect and Logistical Support to Caeté S/A Sugarcane Mill, in the Municipality of São Miguel Dos Campos – Al

Arthur Costa Falcão Tavares, João Pedro Dos Santos Verçosa, Wellington Tavares dos Santos, Ramón Salgueiro Cruz, Flávio Henrique Dos Santos Silva (Alexandre Guimarães Duarte and Henrique Ravi Rocha De Carvalho Almeida (Brazil)

Key words: Engineering survey; Geoinformation/GI; GNSS/GPS; Land management; Low cost technology; Positioning; Professional practice; Spatial planning; Geoprocessing; GIS; Precision Agriculture

SUMMARY

Applying free geotechnologies to support decision making is becoming increasingly common, especially with the use of mobile devices. The objective of this work was to develop a tool through free geotechnologies and to create offline maps that serve as an aid to decision making in the sugarcane fields. Its main focus was to verify the increase in decision-making power compared to the traditional methods used. The study area for application of the developed tool was Mill Caeté S/A, located in the municipality of São Miguel dos Campos - AL. The methodology was based on the acquisition of data obtained through the smartphones GPS and Google Earth software, to be compared to georeferenced data from rural property limits provided through the electronic tool (SIGEF) developed by the National Institute of Colonization and Agrarian Reform (INCRA). The positional accuracy value was calculated using the set of control and field obtained points to calculate the Standard Error (EP) values, and thus estimate the positioning errors (planimetric and/or altimetric) relating to the data. The results in Table 3 showed that data obtained by these different technologies presented different EP values: 5,34m (SW MAPS); 4,71m (MOBILE T.) and 7,50m (GOOGLE EARTH). However, when verifying the adequacy of these data it was found that they fall as Class A for a scale of 1/50,000 and as Class B for a scale of 1/25,000. The results showed that the use of the tool provided a better performance for official field activities in relation to the traditional methods used and that the techniques do not present high precision. The implementation proved to be an efficient alternative to the proposed goal, making it possible to increase the decision-making power. However, other functionalities need to be better explored, measured and improved, what means these technologies need great evolutions to perform tasks that require high precision for sugarcane field, distance, perimeter and area measurements. Further studies will be necessary to quantify this information, especially when taking into account the diversity of smartphones available in the market today.
