Precision agriculture: adoption and main obstacles

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Abstract

The concepts of precision agriculture have been well disseminated among farmers in Portugal. However, the adoption of its technologies is still rare or even non-existent for some agricultural applications. This article reviews some of the key concepts of precision agriculture and it provides empirical statistics on the adoption rates of its main technologies and applications for Portugal. Also, a brief analysis of the major obstacles to its wider adoption is presented. Presently, there are about 10 combine harvesters equipped with yield monitors operating in Portugal. Conversely, no variable-rate technologies have been adopted by farmers so far. Segmented grape harvest through NDVI mapping has been one of the most adopted technologies, used in a total of about 20 farms over the last 10 years. Soil electrical conductivity mapping was also adopted by some of these farmers, specifically when planting new vineyards. By far, the most adopted precision agriculture technology has been the GPS assisted tractor guidance system, with over 300 units sold.

The results of the obstacle analysis suggest that key factors necessary for wider adoption of precision agriculture technologies by Portuguese farmers include the development of specific computer knowledge, the undertaking of complex risk-benefit analysis, the existence of user-friendly equipment and the availability of technical support and field assistance offered by equipment dealers and/or independent service providers.