Remote sensing is a very important data source in the improvement of the present systems of acquiring and generating agricultural statistics. In fact, the remote sensing constitutes a valuable source of information in many phases of the survey process. This paper will analyze the influence of remote sensing technologies on the different phases of sampling spatial statistical units. It is possible to define an ex-ante use (i.e. at design level) and/or an ex-post use (i.e. at estimation level) of remote sensing information. The remote sensed data can be considered as a covariate that can be used in the definition of the different design and estimation methods. In particular we will focus on extensions of the classical regression estimator by considering more complex models and on the use of small area estimation techniques, since this class of methods is more flexible both in the introduction of statistical models and in allowing to use the covariates at aggregated level and not at unit level (in this case the remote sensing can be viewed as a tool for the areal disaggregation of the estimates). The use of predictive approach to finite population inference (pure model-based approach) is finally investigated.

**Keywords:** Spatial surveys; Spatially balanced samples; auxiliary information; Calibration methods; Small area estimation.