

**GIS APPLICATIONS IN AGRICULTURE
ENVIRONMENTAL AND LAND INFORMATION SYSTEM
(E.L.I.S.)**

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Abstract: Since 1990 the Autonomous Province of Trento has been equipped with a GIS technology-based Environmental and Land Information System (E.L.I.S.). This system consists of operating units stationed by the structures which use territorial data, one of which is at the Agricultural Department. The poster illustrates the most significant information levels: of more general interest (country road system, irrigation networks, limits of the land improvement associations, meteorology, delimitation of disadvantaged areas, etc.) or of more specific interest (plant disease monitoring, agricultural land use, surveys and mapping for the technical and administrative controls of various improvement systems, etc.).

Keywords: GIS, LIS, agriculture, GPS, mapping, remote sensing, land use.

1 Introduction.

Since 1990 the Autonomous Province of Trento has been equipped with an Environmental and Land Information System (E.L.I.S.) technology-based (Arc-Info) consisting of operating units distributed by the structures using and managing land data. One of these operating units has been stationed for a few years now at the Agricultural Department. The use of GIS technologies in this agricultural context has highlighted, from very beginning, the need for a systemic approach to collection, management and processing activities for the following main reasons:

- the enormous amount of data to be stored, which imposes co-operative work models;
- the opportunity to share and exchange these data with the greatest number possible of users/suppliers according to documented quality standards;
- the need for the public administration to guarantee citizens the actual availability of useful information.

This policy is a direct consequence of the provincial administrations objectives.

Their achievement foresees the operational involvement of the sector's structures which supply services and which deal with the management, control and planning activities

1.1 Organizational Model.

The E.L.I.S. operating unit for the agricultural sector directly depends from the foremost structure (Agricultural Department) so as to ensure support to all subordinate operating structures.

It comprises technicians specialized in the use of GIS technologies through:

- Risc workstation as graphic server on a local network
- differential GPS system
- GIS Arc-Info server and Arc-View client software
- Oracle DBMS server.

1.2 Activities.

The planning and execution of activities is performed in close contact and co-operation with the managers and technicians of the agricultural sector's operating structures. This guarantees the involvement of the interested operators and meets the information requirements according to co-ordinated quality standards.

The information levels created and being created are of general interest, such as:

- country road system
- irrigation networks
- limits of the land improvement associations
- meteorology
- delimitation of disadvantaged areas

or of more specific interest, such as:

- plant disease monitoring
- agricultural land use
- surveys and mapping for the technical and administrative controls of various improvement systems.

2 Conclusion

The information levels illustrated in the poster are just a few examples of the possibilities of qualitative and quantitative improvement of information related to rural areas and to agriculture in particular.

These data allow to reduce vagueness and uncertainty in decision-making processes, especially where the territorial layout is extremely heterogeneous and fragmented, as in the case of the Trentino province.

When geographical reference is represented by greatly detailed scale maps describing soil properties, it is possible to use the GIS also for land management and control.

Finally, it is important to consider that land information systems are inherently open to exchanges in data and, in general, to co-operation with all of those who increment and/or use land data bases. The Agricultural Information System of the Autonomous Province of Trento works according I to this logic too. Its intent is to develop a network of relations and information flows to/from the various components internal and external to the administration.