Geographic Information Systems(GIS) and Virtual Reality Models (VRM) to Improve the Analysis of Genetic and Silvicultural Trials

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Poster Abstract

GIS systems have become core tools for mapping needs in forestry. During the last decade software platforms have expanded the basic capabilities of data storage and retrieval in map formats. Complex overlay procedures, terrain analysis, 3D modeling, spatial and geostatistical tools, and remote sensing integration have increased the power of space related information. In addition, new VRM have emerged as improved tools for visualization, simulation and teaching.

Research field trials in forestry are usually established to minimize spatial environmental variation, however exploring this assumption "ex ante" or "ex post" has been always tedious and uncertain and has lacked the power of visualization and analysis. Powerful spatial statistical analyses and interpolation analyses may be integrated to visualize site variability, remove environmental trends or integrate those to conventional statistical analyses. We investigated the "ex post" analysis of a research trial using ARCMAP/GIS and ARCScene VRM tools (ESRI, Inc) in order to explore their utility for trial analysis. Detailed sampling activities investigating specific physiological or ecological process may take full advantage of GIS and VRM tools capabilities to understand site variability and locate highly representative sampling points. That information may be used for modeling based on the same spatial information.

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