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Dissertation Title: A Spatial Decision Support System To Address Precision Agriculture Adoption Challenges

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Abstract:

Agriculture is the primary indigenous industry in Ireland and is playing an important role in the nation's economic recovery. Precision Agriculture presents opportunities for Irish agriculture to gain competitive advantage and expand production to meet national targets. The adoption of Precision Agriculture has been low until now due to cost and complexity barriers. This study presents a spatial decision support system that seeks to address challenges facing the adoption of Precision Agriculture. The research question is 'would an intuitive decision support system incorporating remote sensing data, mapping interfaces, crowdsourced data and external data sources address challenges facing the adoption of Precision Agriculture?'.

A mixed methods research methodology was employed for the purposes of this study. A survey was circulated to Precision Agriculture stakeholders in Ireland. Survey participants were asked to evaluate features of the developed spatial decision support system and to indicate if the system would be useful for addressing challenges regarding the adoption of Precision Agriculture. Interviews were held with a number of key stakeholders to gain further insight on the barriers to adoption, the technologies driving Precision Agriculture, the drivers for adoption, methods of increasing adoption and the outlook for Precision Agriculture going forward.

The findings of the research are that the spatial decision support system would be useful for addressing challenges facing the adoption of Precision Agriculture. The system features rated highly by survey respondents included the crowdsourcing feature and the application's responsive design. Key drivers for the greater adoption of Precision Agriculture identified were increased profitability, knowledge transfer groups, financing and mobile applications. Key technologies driving Precision Agriculture were found to be high precision positioning systems, broadband, remote sensing and sensors. The outlook for the adoption of Precision Agriculture was found to be positive once barriers to adoption are addressed.