Precision Agriculture (2019) 20:177–178
https://doi.org/10.1007/s11119-019-09645-x

EDITORIAL

Editorial note for the special issue: ECPA 2017

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Published online: 6 March 2019

The 11th European Conference on Precision Agriculture, ECPA 2017, held in Edinburgh, Scotland in July 2017, returned to the UK 20 years after the first ECPA meeting in Warwick, England in 1997. Over 130 stimulating papers were presented, as well as numerous posters. The presentations illustrated the suite of multi-disciplinary research that is now carried out in the well-established field of precision agriculture (PA). The *Precision Agriculture* journal invited submissions of enhanced papers from the ECPA 2017 meeting with additional results and analyses for this special issue; 15 appear in this special issue. The authors come from 11 countries and 4 continents showing the wide European and international reach of the conference. The papers show PA techniques being applied to a range of crops from more traditional grain or combinable crops (Campos et al., Holland et al., Makdessi et al., Memic et al.) through to precision viticulture (Araya-Alman et al., Pichon et al., Al-Saddik et al., Zovko et al.), which is becoming a well-established sub-field, to peach trees (Uribeetxebarria et al.), sugar (Bramley et al.) and grass silage (Hargreaves et al.). Some papers focus on issues surrounding cost-effective, accurate soil mapping (Castrignanò et al., Milella et al., Wallor et al.); one of the keynote speakers at ECPA 2017, mentioned this as an important un-resolved issue in the discipline of PA.

The articles presented here reflect the state-of-the-art and the range of topics illustrates the breadth of current research within the field. Some papers investigate issues surrounding economics such as quantifying the impact on soil structure, yield and economics of normal compared to controlled traffic in silage systems (Hargreaves et al.) and using a GIS based system that analyses short- and long-term net returns to govern spatial nitrogen management (Memic et al.). Other papers investigate topics relating to the uptake/adoption of PA (Miller et al.) and the ability of practitioners to use PA methods (Pichon et al.) while Bramley et al. present analysis designed to assist in regional level decision support.

The papers on soil mapping (Castrignanò et al., Milellal et al., Wallor et al.), peach yield/quality (Uribeetxebarria et al.), improved sampling for current season yield estimation for grapes (Araya-Alman et al.) and spectral correction of the multi-scattering effects that can be evident in close range hyperspectral imagery (Makdessi et al.) all have a methodological focus. These new or adapted methods could have a wider use in PA than the specific applications presented here. For example, the paper by (Castrignanò et al.) addresses the important issue of combining data from several sources each of which has a different spatial support.

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The aspect that most of the papers have in common is some use of proximal sensors (Castrignanò et al., Holland et al., Uribeetxebarria et al., Wallor et al.), remote sensing (Campos et al., Milella et al., Pichon et al., Uribeetxebarria et al.) or hyper-spectral imagery (Makdessi et al., Al-Saddik et al., Zovko et al.). Wallor et al. investigate the merits of using proximally sensed data such as ECa with process-based models for soil mapping. Several papers derive vegetation indices from remotely sensed and hyper-spectral data or manipulate it in other ways for assessing crop drought (Campos et al., Zovko et al.) and disease status (Al-Saddik et al.) as well as aspects of yield quality (Holland et al., Uribeetxebarria et al.). The paper by Milellal et al. addresses the importance of robotics in automated delivery of dense data from several sensors. The more automated data collection and analysis can become, the more likely it is that it can be adopted and used by non-scientists; however, it is important to scientifically evaluate the validity of such automated data collection and analysis.

While all papers using sensors utilize the spatially dense information available from them, some also look at the insights that can be gained from temporally rich data (Campos et al.), particularly from the very flexible platform of UAVs (Pichon et al.). The heavy use of sensing approaches in the papers of this special issue shows the importance of these key methods for obtaining cost-effective dense spatial and temporal information on crop and soil status in a timely manner for making informed, precise management decisions within the growing season and in general. *Precision Agriculture* is a valuable venue for the scientific testing and validation of such methods as they continue to be developed. It also assesses important practical considerations of farmers on the ground (Miller et al., Pichon et al.). Such considerations should be key in helping farmers adopt some of the new technologies and the approaches presented here sooner, rather than persisting in using the same technology, the dominant behaviour identified by Miller et al.

This special issue was made possible through a collaborative editorial effort between myself and the Editors in Chief, Drs John Stafford and Jess Lowenberg deBoer. We each oversaw the review of several papers and the Editors in Chief finalized content. We are also grateful to Dr James Taylor for organizing ECPA 2017 and for his thorough editorial work and organizing scientific review of the conference papers upon which the enhanced papers in this special issue are based.

This special issue will be valuable for those practicing and researching within PA as it contains some of the latest research in a range of PA sub-fields. It is hoped that the papers in this issue will spawn further insightful and stimulating research within this exciting and constantly evolving field of study and that the approaches developed in them will be swiftly embraced by farmers and agronomists.