Contribution ID: **23** Type: **not specified**

Ups and Downs with AI and Old Data

Farming is vital business. Agricultural experiments have long been carried out on crops including sugar, wheat, potatoes and grass. The second oldest grassland experiment in the UK has been in continuous action at Newcastle University's Cockle Park farm in Northumberland since 1897.
Over the years data on grass (hay) yield, fertiliser treatments, soil structure, grass composition and the weather have been meticulously recorded in handwritten notes, spreadsheets and pdf files. Data was analysed in 1952 by Bushnell and in 1980 by Coleman. Further analysis has been piecemeal and hampered by the disparate sources of data.
Using Artificial Intelligence (AI) to convert a photo of handwritten data or a pdf file into a comprehensive spreadsheet has been transformative. It has motivated work on collating this valuable data into a definitive resource available for analysis by soil scientists, climatologists and statisticians. The analytical results for hay yields are presented in this paper and clearly show relationships between the 14 experimental plots and dramatic changes over time. This is the upside of AI.
The downside of AI is that it does not solve the challenges in collating disparate data into a sound resource. Administrative decisions have to be made and recorded. AI is instrumental but still needs significant input from personnel with considerable domain knowledge. When all these things come together, AI unleashes the opportunity to improve quality and efficiency in this agricultural business. We discuss these issues in the paper.

Special/ Invited session

Classification

Both methodology and application

Keywords

agricultural business, time series, treatment effects

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Track Classification: Trustworthy and Explainable AI