AgroWoW: Towards a Cloud Based Open Agro-Informatics Platform

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Although the concept of precision farming has been around for few decades, its penetration to a wider community is inhibited by many pragmatic issues - the main being the absence of affordable and matching technologies to meet the requirement to satisfy users’ operation environments. In this paper, we present a novel system AgroWoW that places various stakeholders on a collaborative platform through a fair business interaction to overcome the technology deployment issues. AgroWoW essentially makes use of the component services facilitated by WoW crowd-service platform developed by the authors in Ritsumeikan Academy in Japan. WoW in general, harmonizes collective efforts of machine intelligence and human intelligence scattered geographically with different capabilities, skills, preferences, and availability to achieve common objectives at high accuracy, low cost and reduced production time. It drops the approach of forcible efforts to educate IT illiterate communities to learn IT - rather it places the community on a collaborative platform through a fair business interaction to overcome the technology deployment issues.

In this paper, the authors share their experience in customizing AgroWoW Informatics platform and its deployment to establish experimental precision agriculture environment at Finlays Tea Estates. Agro-climatic filed stations are installed at strategic locations and the measured parameters augmented with manual records are made available for collective decision by agronomy experts on the cloud. Digital pen input and crowd-based validation process is used to avoid unnecessary technological complications at the filed in structured data entering. Secure data warehousing with efficient data query interface is built-in to the system to explore seamless possibilities in big data mining as the size of the data storage grows.

The pilot project enables integrated field data archiving to understand various agro-climatic behavioral patterns in relation to the growth of tea plants and production volume and quality. Field data analysis provides evidence to derive a set of proven bio-climatic indices specific to tea and rubber cultivation. The platform to share field information with various tea growing communities and experts will expose open problems to a global audience. It is expected that the outcome of the experiments will provide valuable information for Finlays Tea Estates to develop sustainable and climatic change resilient programs for tea and rubber cultivation.

Keywords: AgroWoW, Agro-climatic monitoring, crowd sourcing, digital pens