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Seminar - I

CROWDSOURCING IN AGRICULTURE: AN OVERVIEW

Synopsis

To meet the rising demands of a growing population, agriculture must sustainably produce healthy, high-quality, and safe food. Transitioning diversified systems through agricultural biodiversity is essential to protect productivity, restore ecosystem services, and enhance ecosystem connectivity. For this purpose, the key strategies include community seed banks, high-yielding varieties, participatory plant breeding, which can collectively support farmers in adapting to evolving conditions. Thus, Crowdsourcing (CS) is such a means that presents an opportunity to harness the collective intelligence of farmers, scientists and agricultural enthusiast, leading to innovative farming techniques, better resource management and increased food security.

The term “crowdsourcing” was progressively consigned to many scientific and operational initiatives aimed at collecting contributions from a large group of people. In scientific research, outstanding initiatives based on crowdsourcing accomplished to yield significant scientific outputs. Although not always denominated as crowdsourcing, there is a long tradition of participatory approaches in research and development projects in agriculture, enabling the farmers-researchers’ interactions or to simply collect and aggregate agricultural information from farmers. Crowdsourcing of farmers’ data is an alternative way of getting field observations to conduct yield gap analysis, alongside with remote sensing and sensor networks. Crowdsourcing in agriculture provides inputs that meet the agricultural researchers’ needs and helps closing the knowledge dissemination loop between researchers and practitioners that foster farmer-to-farmer interactions. Therefore, there are huge opportunities for scientists and practitioners in developing crowdsourcing methodologies in agriculture. With this brief background, the present seminar is conceptualized into following objectives:

1. To understand the concept of crowdsourcing
2. To know the applications, benefits and limitations of crowdsourcing in agriculture
3. To review the related research studies of crowdsourcing in agriculture

Concept of Crowdsourcing

The term "crowdsourcing" was coined in 2006 by Jeff Howe and Mark Robinson, editors at Wired. The word itself is a blend of "crowd" and "outsourcing." Crowdsourcing is the practice of obtaining needed services, ideas, or content by soliciting contributions from a large group of people. Crowdsourcing promotes faster, more creative outcomes and helps build community-driven progress, making it a powerful tool for collective problem-solving and decision-making.

Crowdsourcing has four pillars namely crowd, crowdsourcer, crowdsourcing task and crowdsourcing platform. Crowdsourcing can be classified based on mode of interaction (online, offline and hybrid platforms), type of task performed (crowd casting, crowd collaboration, crowd

content, crowd funding, crowd opinion) and level of expertise required (collaboration, competition, micro task, macro task, skill labour, funding, curation and creativity).

Crowdsourcing in agriculture

Crowdsourcing in agriculture is a modern approach that leverages collective knowledge, skills, and resources from a large group of people to solve agricultural challenges. It allows farmers, researchers and policymakers to gather real-time data, access expert advice and share best practices. This collaborative model helps improve decision-making, increase efficiency and promote innovation in the agricultural sector. Crowdsourcing in agriculture helps in farm management, knowledge sharing, problem solving, pest and disease detection, mapping, funding and research, etc.

Benefits and Limitations

The benefits of crowdsourcing in agriculture includes diverse perspectives, cost-effectiveness, increased innovation, faster turnaround, enhanced engagement and community building, access to a global talent pool and rapid scaling of resources. Quality concerns, lack of control, intellectual property issues, cultural & ethical challenges, security and privacy risks, overwhelming volume of contributions and potential for exploitation are few limitations of crowdsourcing.

Research studies

Miguel *et al.* (2018) conducted experiment of crowdteaching and crowdlearning to Polytechnic University students. In this experiment, out of 183 students who registered for the Production Management and Logistics (PML) subject, 119 participated in the experiment. Further, 107 of these 119 participants considered that the experiment helped them better learn the subject, implying that applying crowdsourcing to university teaching is able to improve marks, students' involvement and sense of belongingness.

Thomas and Babu (2020) showed that the results on attitude of farmers towards crowdsourcing revealed that more than fifty per cent (54.16 %) and nearly thirty percent (27.08 %) of the farmers had favourable and most favourable attitude respectively towards crowdsourcing approach. This unequivocally establishes the fact that crowdsourcing of knowledge with more responsibilities and accountability attached to farmers can favorably influence the attitude of farmers.

Conclusion

Crowdsourcing is a budding approach that has a capacity to overcome the problems faced by farmers at grass root level. Crowdsourcing in agriculture is about collective knowledge, innovation and data-sharing as it augments farmers for transforming themselves to farmer scientists with improved scientific knowledge, accountability, responsibility and pride. Crowdsourcing knowledge of farmers can be a potential extension tool as it helps to disseminate the knowledge across a wider area as farmers receive consistent information.

References

- MIGUEL, S.E., SOROLLA, G.R., GATO, M.P. AND GUILLEM, J.M.A., 2018, Crowdsourcing with university students: Exam questions. In SIMON, F.J., PECHUAN, I.G. AND MIGUEL, S.E., (Eds.) *Advances in Crowdsourcing*, Springer, 97-104.
- THOMAS, A. AND BABU, M.N., 2020, Crowdsourcing knowledge: An extension approach for remunerative and sustainable home garden farming systems in Kerala. *J. Ext. Edu.*, **32**(1): 6429-6440.