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Combating Agricultural Misinformation: The Role of Extension Professionals in the Digital Age

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INTRODUCTION

The digital revolution has changed agriculture by providing farmers with more information than at any other time in history. From crop production, pest management and fertilizer application to weather, market prices and government schemes, farmers are now getting tips via smartphones, social media, mobile apps, online videos and digital advisory services. They have greatly increased the availability of agricultural information and have facilitated farmers to making prompt decisions as well as to adopting new farming technologies. But this opportunity has been matched by a major challenge-agricultural misinformation. Incorrect, biased or unscientific information tends to spread quickly on the digital platforms, often arriving in farmers' hands before experts have had the chance to debunk or correct it. Misguided advice on pesticide use, fertilizer application, crop variety, disease management, or government policy can result in financial loss, environmental harm, health problems, and diminished public trust in scientific organizations. In that regard, extension agents are crucial to delivering timely, accurate, evidence-based and locally relevant agricultural information to farmers.

Understanding Agricultural Misinformation

Agricultural misinformation is false or misleading information or information whose accuracy cannot be previously or immediately, with respect to farming practices, crop production, livestock management, agricultural inputs, food safety, or agricultural policies. Whereas disinformation is a consciously fabricated version of the truth, misinformation is often the result of well-meaning individuals unknowingly spreading falsehoods. But its effects can

be just as devastating, as it guides farmers' decisions on how to manage their crops, which pesticides, fertilizers, and irrigation systems to use, how to market their crops.



Examples of misinformation in agriculture are overblown claims about miracle fertilizers or pesticides, unconfirmed recipes for homemade pest solutions, inaccurate weather predictions, false advice on seed types, rumors about government subsidy schemes, and social media posts that go viral encouraging farming practices unsupported by science. This kind of information often goes viral as it is simple, cheap or offers amazing results.

Why Does Agricultural Misinformation Spread Rapidly

The popularisation of smartphones and cheap internet plans transformed the manner of communication in agriculture. Information can be delivered to thousands of farmers in minutes using social media, messaging platforms and video sharing sites. However, these platforms also allow unsubstantiated material to be circulated with speed. Many people are involved and farmers depend on information from their friends, family, local influencer or online groups and they do not factcheck it. Sensational messages announcing

“double the yield” or “100% pest control” or “miracle solution for free of chemicals” attract immediate attention and get widely circulated. Low digital literacy, poor scientific knowledge, and lack of robust fact-checking systems also add to misinformation propagation in rural areas.

Impact of Agricultural Misinformation

The impact of agricultural misinformation is not confined to farm level impact but also affects entire agriculture industry. Wrong advice on fertilisers, pesticides, irrigation or crop management could lead to lower yields, higher production costs or even huge financial losses. In addition, a misuse of pesticides may cause development of resistance in pests, pollution of the environment, elimination of friendly in-sects and contamination of the soil and the water sources. Disinformation can also threaten human and animal health, when agricultural chemicals are applied unsafely. Repeated lies and distorted facts also undercut farmers’ faith in agricultural scientists, extension agencies, and government advisory systems. In the end, misinformation weakens sustainable agricultural development by supplanting evidence-based decision-making with unproven methods.

Extension Professionals: The First Line of Defense

Extension agents are the vital bridge between agricultural research institutions and the farm community. Their function has changed quite a bit in the digital era. Along with delivering technologies and technical advice, extension workers have also taken on the role of combating misinformation, confirming scientific evidence, enhancing digital literacy and trustworthiness in information related to agriculture. By using concise and relatable language to

deliver research-based advice, extension agents serve to help farmers separate scientific facts from misinformation. Their continual engagement with rural communities also means they are well positioned to detect new strains of misinformation and to offer timely corrections before false claims go viral.



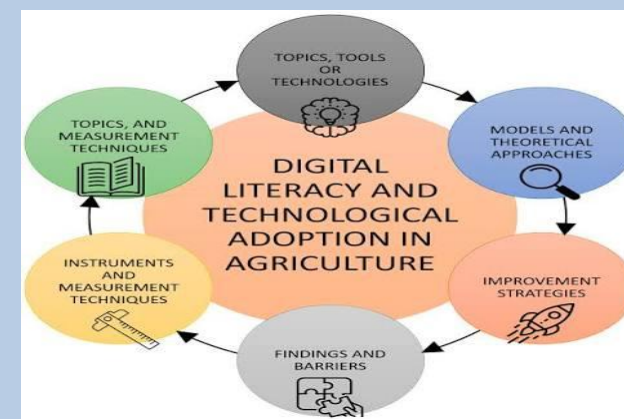
Promoting Evidence-Based Agricultural Communication

The impact of agricultural extension was stronger when the information came from a reliable source. Extension officials should release recommendations that are the result of scientific investigation, field trials, and proven technology developed by the land grant colleges, state and federal research agencies and/or similar credible institutions. Each advisory should be relevant to local agro-climatic conditions and targeted to the specific demands of the farming community, not simply an Internet-pasted generalized claims. To extension workers, fact-checking has become a crucial duty. In advance of issuing a recommendation, they are to confirm the source, verify the scientific validity of the information, check the date of the publication, assess the geographic applicability, and ensure that it is in line with the

practices officially recommended. When explanations offered to farmers are truly evidence-based, it builds trustful relations in scientific agriculture and motivates farmers to make decisions based on sound science.

Building Digital Literacy Among Farmers

Digital literacy is among the best antidotes to weed out misinformation in agriculture. Farmers, they said, should learn to question the information they receive via the internet, before taking it at face value or passing it on. “They need to know how to identify reliable sources of information, they need to be able to spot false information, they need to compare information from multiple credible institutions, and they should be able to check recommendations with extension agents or other ag professionals.” Training, digital literacy campaigns, cluster meetings and farmer field schools could go a long way towards equipping farmers to access and use digital responsibly. Extension workers need to provide hands on tools for farmers to verify the veracity of agricultural information, and to build farmer reliance on credible advisory systems instead of un-vetted social media messages.



Responsible Use of Digital Platforms

Extension professionals now have the ability to reach large numbers of farmers quickly and efficiently through ever-expanding digital communication platforms. Social media, mobile apps, online forums, video tutorials, SMS advisory services, and virtual training courses can adequately deliver agricultural recommendations that are relevant in a timely manner. Nevertheless, one should use these platforms responsibly. Information disseminated via digital media should be scientifically sound, easy to comprehend and should be in local languages, if possible. Periodic alerts on weather patterns, pest outbreaks, disease management, market prices and government support programmes aid in cutting farmers' reliance on volatile information available on social media.

Helping Farmers Identify Reliable Information

Farmers are being asked to critically appraise agricultural information before they accept it or pass it on, based on the source of the information, whether it is from a reputable agricultural organisation, whether it is backed by science and whether it is relevant to their agro-climatic conditions. Had that been the case, the recommendations that lead to unrealistic results or are not scientifically supported should be treated with caution. The practice of cross-checking information helps farmers to take wise decisions, curbs misinformation and makes them responsible users of digital agriculture information, as opposed to passive receivers of unverified claims.

Strategies for Combating Agricultural Misinformation

A constructive approach to combating agricultural misinformation will involve collaboration between

extension educators, researchers, government agencies, media outlets, and the agricultural community. Timely countering of rumors, periodical release of fact-checked advisories, production of education videos and infographics, setting up of digital helpdesks, and conducting community awareness drives are some of the key constituents of an ideal communication plan. Training progressive farmers as local information ambassadors could further add value to community-based verification systems. The farmers are also able to help extension agents to identify misinformation and provide scientific recommendations, and responsible sharing of information within their villages.

Future Perspectives

With the digitalisation of agriculture, extension services need to adapt further to new modes of communication. New technologies including artificial intelligence and remote sensing, mobile advisory applications, satellite-based weather forecasts and digital-based decision support systems, present an incredible potential to enhance the delivery of agriculture extension services. However, progress in technology must always be supported by science validation, ethical communication, and farmer education. Future extension programs need to emphasize digital literacy, multilingual communication, rapid fact-checking, and greater collaboration between research institutions and the farming community. Developing resilient information infrastructure will be key to shielding farmers from misinformation and enabling sustainable agriculture growth.

CONCLUSION

Agriculture-based misinformation has become a challenge to the industry in the information age and has made the delivery of accurate and fact-based information more vital than ever. Extension agents are critical in connecting scientific research with farming communities to deliver reliable advisories, improve digital literacy, and combat misinformation. The extension services enable farmers to access information, distinguish among competing claims of fact, adopt scientifically validated best practices and make informed decisions for the benefit of agricultural productivity, environmental sustainability, food security and long-term resilience of the farming system.