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Perspective

Systems for agricultural technology research and extension

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INTRODUCTION

Any research-extension system must take technology flow into account as a primary consideration. The ability to diagnose research-extension connection issues is aided by understanding how technology flows. The technology flow concept is based on the idea that technology is developed from science and flows from research stations to users, with or without the help of an intermediate such as an extension service. The term "technology" is used loosely in agriculture to refer to better crop varieties and animals, as well as chemical inputs, agricultural tools, and farming techniques.

Flow processes in technology

Along the science-practice continuum, technology flow entails a series of procedures. Science, technology development, testing, technology adaption research, technology integration, dissemination, diffusion, and adoption are some of them. The most frequent paradigm is the transfer of technology, in which researchers' achievements are transferred to extension for distribution to consumers. This is a one-way, linear procedure, akin to a progressive farmer's strategy. Many social scientists have disputed this idea of a linear, sequential transfer of technology because it overlooks farmers' real contributions and potential as technology generators. Policy-driven, market-driven, and farmer-driven innovation is also overlooked by the approach.

Several different models have been devised to represent technology flow, including the technology innovation process, the research-extension process, the technology generation and delivery process, and the agricultural technology development system. The research-extension interface model has been used to construct these models. Basic research, strategic research, technology generation, technology testing, technology integration, technology production, technology dissemination, and technology adoption are the components of this paradigm. Basic research, in this concept, refers to research in the basic sciences. The line between science and technology is drawn by strategic research, which primarily focuses on directly relevant basic knowledge.

The technology development process includes the creation, testing, integration, manufacturing, diffusion, and acceptance of new technologies. The information acquired through fundamental scientific research is structured, evaluated, reformulated, and turned into technology in the same way that applied research does. Technology testing is the process of confirming the results of new technology in the field in order to get early feedback. On-Farm experiments and agricultural Systems Research (FSR) are both involved in this. Participation of the extension service has become increasingly requested for testing purposes, since its extensive networks aid in reaching out to farmers, particularly in less well-equipped areas.

Agricultural research organisations often focus on strategic research and technological development. There are also some attempts done in the area of technology testing. Technology integration and manufacturing operations, on the other hand, are frequently overlooked. Most extension agencies, on the other hand, focus their efforts on technology development and distribution, with little attention paid to technology integration and testing. As a result, critical linking issues occur at the technology integration stage, followed by technology testing and production. In the absence of explicit instructions, research or extension employees focus their efforts on the activities that are most essential to them. The history, experience, and training of these individuals have a significant impact on their judgement. Typically, their education and training have not placed a strong emphasis on connection activities. Linkage is frequently given a low priority by institutions themselves, especially when research and extension operations are managed by distinct entities. As a result, research institutions and personnel see strategic research and technology creation as their "primary

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activities", whereas extension institutions and personnel regard technology production and distribution as their "major activity." Linkage actions are either ignored or viewed as incidental during this process by both parties. Linkage actions, on the other hand, can't be done in isolation; they need to be coordinated. Individuals from both the research and extension sectors, necessitating extra work from both. Because most background and training do not highlight linking tasks, more work is required to develop skill in these areas. When these tasks are considered 'main' for both research and extension employees, the additional effort required for coordinating and growing competence becomes a substantial limitation. When research and extension activities are handled by distinct public entities, the connection problem is exacerbated.