

Technology paradigm shifts in agriculture: drivers of sustainability and catch up

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Technology Paradigm Shifts in Agriculture: Drivers of Sustainability and Catch up

by
Ajay Thutupalli

1. Ecology (bio-physical elements) is a non-strategic actor in the agricultural innovation system.
2. The outcomes of technological transitions depend on the strategies of economic and ecological actors who continuously adapt.
3. At the systemic level, controversies can be triggered at any of the stages of a technology transition.
4. In agricultural production ecological outcomes rather than economic outcomes are likely to be stronger focal points of controversies during technology transitions.
5. Large scale adoption of controversial technologies can co-exist with significant differences in beliefs when short run payoffs are high.
6. The greater the complexity of the innovation system in which technology transition is embedded, the higher the likelihood of controversies.
7. Differences in resource endowments and heterogeneity in farmer preferences towards environment influence technology choice and implementation behaviour.
8. A combination of scientific and market uncertainty coupled with incomplete information gives rise to real uncertainty in returns from radically new technologies.
9. The complementarity between global and in-situ knowledge in agricultural sector can be strategically leveraged by firms of emerging countries for catching up with radical technologies.
10. Legitimacy of innovation can be embedded within the localization of innovation via strategic interactions with actors in an emerging country innovation system.