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“Filling gaps and removing traps
for sustainable resource management”

Forage Technology Adoption Studies in Bovine Livestock Production Systems: a Field Open to Innovation

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Abstract

Sustainable intensification through improved forages has proven to be one of the most promising strategies for increasing productivity in tropical livestock systems and mitigating environmental impacts. However, reported adoption rates remain low for many developing countries. Different studies have been commissioned to analyze, through various methodological approaches, factors affecting adoption decisions. This research provides a literature review in order to i) identify the variables included in forage adoption studies and their possible impact on the adoption decision, and ii) analyse the different methodologies used, highlighting their strengths and weaknesses. Through an exhaustive search, a total of 27 studies (published between 2000 and 2019 in Scopus and Science Direct databases) were analyzed. Results show that the topic has been approached mainly from a micro perspective (focused on the primary producer) based on the theories of utility maximisation (TUM) and Planned Behaviour (TPB). Among the explanatory variables included most frequently in TMU studies are age, educational level, herd size, resource allocation, technical assistance and membership in an association. The effect of these variables on technology adoption has been inconsistent and ambiguous: while some studies report significant and positive effects, others find the opposite. Studies applying TPB were more consistent, mostly correlating the intentions of the producers with social attitudes and norms and to a lesser extent with the control of perceived behaviour. However, in most of the reviewed studies, focus was put on evaluating the intention to adopt and not on the actual adoption. In parallel, other, still incipient, types of studies emerged, that question the suitability of predicting adoption from a micro perspective, highlighting instead macro approaches from an innovation system perspective. According to the results obtained from this literature research, it is recommended to consider the use of a mixed-methods approach allowing a deeper understanding of adoption and dissemination processes *in situ*. Two aggregation approaches are then proposed in a complex and dynamic system, which include not only the perception of the adopter but also the surrounding social structure, the historical context in which the adopter lives and the process of diffusion of innovations.

Keywords: Cattle production, dairy production, diffusion of innovations, Latin America, mixed-methods approach, sustainable intensification