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Factors Influencing Breeding Decisions by Smallholder Dairy Farmers Across Four Countries in Sub-Saharan Africa

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Abstract

The reported study aimed at determining and characterising factors that influence smallholder dairy farmers to choose between bull service and artificial insemination (AI) for cow breeding. Further, the relationships between the breeding choices and the bio-physical elements of dairy farming, mainly, farmer characteristics, farm management practices, institutional support structure and household income, were investigated. Data were collected in a large-scale survey through face to face interviews, from a total of 16,308 small scale dairy farmers in Ethiopia (n = 4679), Kenya (n = 5278), Tanzania (n = 3500), and Uganda (n = 2851). Chi-Square test and t-test were used to summarise the data while logistic regression and factor analysis were used to identify the determinants. Across the countries, results show a significant difference in animal husbandry practices between farmers who use AI and those who use traditional bull mating. Majority of farmers that used AI kept records, purchased more animal feeds, used more labour by hiring workers whose average wages were higher than those of bull service farmers. Farmers who used AI paid more for animal husbandry services such as water access and breeding compared to farmers who used bulls. The proportion of AI to bull service users was almost equal in Ethiopia and Kenya, while Uganda and Tanzania had more farmers who preferred bull service to AI. Within each investigated country, factors such as farmer's experience in dairy farming, influence of the neighbour, the farmer's ability to keep records, management practices such as water provision and availability of purchased feeds all had a significant association ($p < 0.0001$) with AI adoption. However, a large herd size and large land size negatively influenced AI adoption. Institutional settings including cost of AI service and the distance that the service provider covered to the farm negatively affected ($p < 0.0001$) the choice of AI as a breeding option. Also observed is that, there is a high likelihood of continued use of a specific breeding method with previous conception success. In conclusion, institutional support has a vital place in farmer breeding decisions. In future, universities have a role to play in providing relevant decision support tools.

Keywords: Artificial insemination, breeding decisions, small-scale farmers