

Agricultural biotechnology, of which poultry vaccine production is an integral component, is believed to hold great potential for contributing significantly to household food security particularly among the small-holder farmers in developing countries such as Kenya. In view of this, developing countries are adopting agricultural biotechnology and Kenya has so far embraced various aspects of this technology including tissue culture planting materials and use of vaccines against livestock/poultry diseases. This descriptive cross-sectional study therefore sought to investigate the factors influencing adoption of the Newcastle disease vaccine, a product of agricultural biotechnology, in Kathiani and Central Division of Machakos district where the vaccine was introduced by the Kenya Agricultural Research Institute (KARI) in 1998. A sample size of 150 poultry farmers, most of them small-holder farmers, was determined. The two study areas of Kathiani and Central divisions of Machakos District were selected purposively because KARI, the sponsor of this study, needed data from these divisions for future biotechnology programming. Systematic sampling methodology was then used to identify households in each of the five locations of the two divisions from which respondents were selected and interviewed through interviewer-administered questionnaire. The study established that Newcastle disease (NCD) vaccine adoption was poor since the majority (147; 98%) of small-holder farmers interviewed could not afford it each time they wanted to vaccinate their birds. Similarly, due to limited awareness regarding the importance of vaccine use, many (123; 82%) small-holder farmers interviewed did not know of its availability in the study areas. This, in turn, resulted in the vaccine's poor adoption rates by the said farmers. The difference between the levels of awareness and unawareness of the vaccine among respondents was significant (χ^2 df1 = 61.440; $P < 0.001$). Only 3 (2%) of the respondents who knew about the vaccine used it. The difference between these respondents and those who did not use it (147 ; 98%) was also statistically significant (χ^2 df1 = 138.240; $P < 0.001$). The study established that there were no distribution arrangements of the vaccine in the study area to specifically address the needs of the small-holder poultry farmers. This too, contributed to poor adoption of the vaccine by the farmers. In conclusion, unaffordability, low awareness levels as well as lack of distribution strategies for NCD vaccine contributed to its poor adoption levels in the study area. Therefore, the biotechnology intervention (NCD vaccine) may not have contributed to significant increase in household poultry production in the area. There is need to address the reported factors such as low awareness, unaffordability and lack of distribution strategies of NCDV that are constraining NCD vaccine biotechnology adoption by small-holder poultry farmers in order for the technology to contribute to household poultry production in the study area. A rise in poultry production would in turn contribute to household food security through increased consumption of chickens as well as proceeds from the sale of birds, thus increasing family incomes.