

New vaccine to help smallholder farmers strengthen food security

Research shows that 40% of all livestock in South Africa is owned by rural communities. Primary animal health care is crucial for animal husbandry and it ensures the health of animals which consequently leads to improved livelihoods for smallholder farmers. *Mbongeni Maziya, Alexis Habiyaremye, Petronella Chaminuka, and Zimbini Mdlulwa*, reflect on a new vaccine which can assist smallholder farmers because of its cost effectiveness and its ability to prevent multiple diseases.

Animal husbandry is one of the most important farming activities in South Africa as it constitutes the primary source of livelihood for a sizeable number of rural farmers across the country. As such, it plays a crucial role in contributing to food security and rural employment. There's a general consensus in development economies literature as well as in research in African economies and livelihoods, that smallholder livestock farming provides pathways out of poverty, towards food security and sustainable livelihoods. Livestock rearing provides a source of income, and cattle specifically serve as a measure and a store of wealth. For many smallholder rural farmers, livestock is used as a 'bank', whereby cattle can be sold to pay for emergency needs (e.g school fees, funerals, etc). Livestock serves diverse functions for rural communities and is central to their livelihoods.

According to data from the Department of Agriculture, Forestry and Fisheries (DAFF), approximately 40% of all livestock in South Africa is owned by rural communities. Considering the large number of livestock owned by smallholder farmers, it is therefore not a coincidence that the Integrated Sustainable Rural Development Strategy of 2004 identified livestock farming as one of the strategies to

alleviate poverty and improve food security in rural South Africa. This also places communal livestock farmers at the core of livestock value chains. Smallholder farmers are often misunderstood regarding the main reason why they keep livestock but most government interventions (i.e Agriparks and Agrivillages) have focused on the commercial part.

Diseases are a threat to the livelihood of smallholder livestock farmers

The livestock sector is highly vulnerable to disease outbreaks and this has a direct effect on livestock owners. The livelihoods of small scale livestock farmers are intermittently threatened by disease outbreaks, which put an enormous strain on their livelihoods. Diseases cause a reduction in the productive capacity of livestock and the subsequent reduction in meat and other animal products. Lumpy skin disease, rift valley fever, black quarter and heart water are some of the most prevalent diseases in South Africa.

To adequately face the challenges posed by epidemic outbreaks, farmers are called to develop sufficient knowledge of the diseases, adopt appropriate attitudes for preventing the diseases, and direct

their perceptions towards practices that optimize their livestock production while minimizing the risk of disease outbreaks and other causes of livestock loss. Given their central role in maintaining healthier cattle and preventing animal loss due to diseases, cattle vaccination and animal healthcare contribute to food security in South Africa.

Smallholder Livestock farmers Spending on Primary Animal Health Care (PAHC)

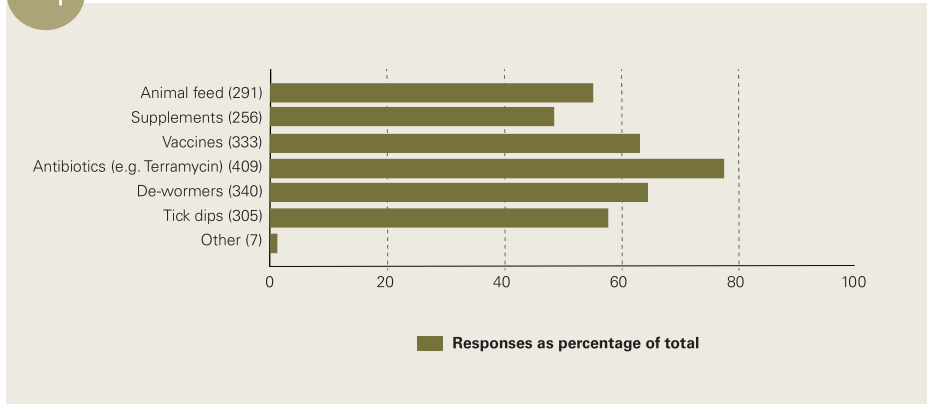
In 2016 the Human and Social Development unit of the HSRC in collaboration with the Economic Analysis unit of the ARC conducted a study which looked at smallholder livestock farmer's knowledge, attitudes, and practices towards vaccinations. The project aims at developing a new vaccine targeting diseases that affect cattle, goats and sheep. The HSRC was invited to join the project to provide insights into the human and social dimensions of animal health among farming communities across disease prevalent places in South Africa. The involvement of the HSRC is part of the notion that cattle rearing cannot be separated from the broader issues of social and human development.

The study was conducted across five provinces in South Africa: Eastern

Cape, the Free State, KwaZulu-Natal, Mpumalanga and North-West and was aimed at providing a picture of livestock farmer's spending and preferences with regards to animal vaccines and medicines and this will in turn be used in informing the production process of the new vaccine. Moreover, a total of 593 livestock farmers were interviewed across the five provinces.

According to our findings, farmers generally spend a sizable amount (R2 272.44 on average) of money per annum on animal healthcare and prevention products (i.e. medicines, vaccines, de-wormers, dipping, antibiotics and food supplements) (Figure 1). We found that close to 80% of smallholder livestock farmers purchase antibodies to boost the immune system of their animals and that approximately 62% of the surveyed farmers purchase animal vaccines. Approximately 55% of the surveyed farmers purchase animal feed. However, when it comes to spending on animal feed and supplements, we found that less than half of the farmers purchased these products, 49% of the farmers do purchase animal feed while 43% reported to have purchased supplements in the past 12 months. We also found that factors such as education level, total household income and number of cattle owned significantly influenced farmers' spending on animal healthcare. Despite the spending on animal healthcare, farmers view vaccines as too expensive. In addition, most rural livestock farmers prefer a vaccine which can be used in cattle, sheep and goats and a vaccine which can be used to prevent multiple diseases. Although most farmers were able to differentiate between vaccines and medicines, it emerged that they did not know much about vaccines and this is attributed to the lack of training on primary animal healthcare.

Fig 1 Farmers spending on PAHC



New vaccine to target smallholder livestock farmers

The Canadian International Development Research Centre (IDRC) funded The Agricultural Research Council-Onderstepoort Veterinary Institute (OVI) to develop a 2-in-1 vaccine for the prevention of lumpy skin disease and rift valley fever. The 2-in-1 vaccine will be a single dose, meaning, farmers will buy one vaccine which will protect their cattle from both diseases. This is expected to be cheaper as farmers will only be buying one vaccine instead of buying two. The new vaccine will be a low cost, easy to administer, stable and will provide long term protection for livestock. It is also worth noting that most vaccines require refrigeration in order to maintain the vaccine's cold chain but the new vaccine will not require any refrigeration. This will benefit marginalized smallholder rural farmers who do not own refrigerators.

Both rift valley fever and lumpy skin diseases are classified as notifiable diseases, which means that every suspected case of either disease must be reported to the nearest state veterinarian. This notification procedure has been put in place because both diseases can result in dire economic consequences if an outbreak is not prevented. Therefore, the use of the 2-in-1 vaccine will go a long way in

preventing both diseases and the expected outcome will be improved food security for livestock farmers. In addition, the study found that an overwhelming majority of farmers are willing to purchase a 2-in-1 vaccine for prevention of Rift Valley fever and Lumpy Skin disease.

Concluding remarks

Primary animal health care is crucial for animal husbandry and it ensures the health of animals which consequently leads to improved livelihoods for smallholder farmers. The new vaccine presents a real opportunity for smallholder farmers because of its cost effectiveness and its ability to prevent multiple diseases. To better prepare future users for an optimal deployment of this new vaccine when it eventually hits the market, state interventions in the form of training and policy change will be needed in order to ensure that smallholder farmers develop adequate knowledge to use these preventative methods effectively for more food security.

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