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RESPONSE TO CONTAINMENT OF TICK RESISTANCE AND TICK-BORNE DISEASES IN UGANDA

July 2020

SDGs:



Countries:

Uganda

Project Code:

TCP/UGA/3702

FAO Contribution

USD 100 000

Duration:

24 December 2018 – 31 March 2020

Contact Info:

FAO Representation in Uganda

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Implementing Partner

Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

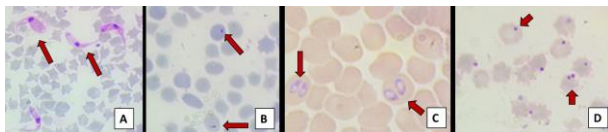
Beneficiaries

The MAAIF; Laboratory personnel, veterinary staff and entomologists; those working in the livestock subsector in Uganda.

Country Programming Framework (CPF) Outputs

Output 1.1 – Availability and equitable access by targeted men, women and youth to production assets, knowledge and services for production increased.

Output 1.3 – Capacity of selected public, civil society and private institutions for quality agricultural services and assets acquisition enhanced.



Slide image: A; Trypanosomes, B; Theileria, C; Babesia, D; Anaplasma

BACKGROUND

Agriculture is an extremely important sector in Uganda, employing 66 percent of the labour force and accounting for 53 percent of the country's exports. Women make up the majority of agriculture workers, at 77 percent. The sector is a key contributor to poverty reduction, and it provides food and nutrition security, as well as raw materials for various industries.

The sector also accounts for more than 24 percent of Uganda's national Gross Domestic Product (GDP), and nine percent of this total is attributed to a single subsector: livestock. Roughly 2.2 million households work in livestock production, on smallholder dairy farms, and in crop-livestock and livestock-dependent systems. The subsector provides crucial employment opportunities and food to the Ugandan population. For these reasons, it was named as one of the priority development areas of the Government of Uganda, as indicated in the 2015 – 2020 Agricultural Sector Strategic Plan (ASSP).

Despite its importance to the economy and food security of the country, the livestock subsector suffers from low rates of productivity, owing in large part to pests and the diseases they carry. Major annual losses of approximately USD 86.3 million are reported, with 70 percent of these losses being caused mainly by ticks and tick-borne diseases (TBDs). The control of ticks and TBDs causes further economic strain, as it makes up more than 60 percent of spending among farms and businesses that raise and keep cattle.

Some of these economic losses come about because of the damage that tick bites can cause to the hides and skins of cattle. If enough ticks prey on an animal by feeding on its blood, that animal can also lose weight and become anemic. The most significant losses, however, are brought about by the transmission of diseases to livestock. Ticks carry protozoan and rickettsial diseases, as well as viruses. It is estimated that they impact about 80 percent of the world's cattle population. These diseases have a detrimental impact on the livelihoods and nutrition of poor farmers and rural people all over the world.

In Uganda, calf mortality rates can reach up to 30 percent before the animals reach six months of age, and deaths of exotic breeds can reach up to 100 percent. The major TBDs affecting cattle in Uganda are East Coast Fever (ECF), caused by *Rhipicephalus appendiculatus*, Babesiosis and Anaplasmosis, caused by *Boophilus decoloratus*, and Heartwater, caused by *Amblyomma variegatum*. Samples from the field indicate that between 20 and 70 percent of deaths are caused by ECF, with Anaplasmosis and Babesiosis also being common, particularly in adult cattle. The climatic conditions of Uganda, including the amount of rainfall and the temperatures, are ideal for these diseases to survive, which contributes to the high rates of TBDs among these animals.

A technical assessment report that was validated at a workshop in Kampala in June 2018 confirmed that the tick and TBD situation in Uganda was very serious. Some districts reported losses of between 20 and 60 heads of cattle per month. These deaths represent economic losses of approximately 48 to 60 million Ugandan shillings (U Sh) per day, or U Sh 18 billion annually per district. Unofficial reports indicated a decline in milk production of 60 percent in areas where cattle deaths caused by ticks and TBDs were especially frequent.

In addition to the climatic conditions, there are two issues in Uganda that result in high rates of TBDs: resistance to acaricides (pesticides used to kill ticks) and a reduction in acaricide effectivity. Laboratory tests confirm that the resistance to acaricides had spread to districts in the northern and eastern areas of the country. This may be due to the fact that the acaricide application system in Uganda is weak and not standardized. In addition, a lack of extension services results in those working in the livestock sector not receiving adequate guidance on best practices for animal husbandry. Because of gaps in policy, importing and applying veterinary drugs (including acaricides) are not regulated practices, which leads to farmers seeking alternative treatments for their cattle, potentially causing public health issues.



The issues caused by ticks and TBDs became so serious that the matter was discussed by the Ugandan Parliament. The 2015 – 2020 ASSP addresses challenges in the livestock subsector and names livestock pest and disease control as one of these challenges; however, it was decided that attention needed to be paid to ticks and TBDs specifically. This project was designed to meet this need by providing support for the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) to better manage the tick and TBD situation. This was to be done through (i) the establishment of coordination mechanisms to create linkages and networks among key stakeholders; (ii) the building of national capacities on tick and TBD control and Integrated Pest Management (IPM); and (iii) the review, updating and formulation of policies and legislation on tick and TBD management.

IMPACT

The results of this project are expected to contribute to a reduction in rural poverty by increasing productivity, as well as resilience to threats and crises through the introduction of tick and TBD containment practices and policies.

ACHIEVEMENT OF RESULTS

As stated above, ticks and TBDs are a major threat to the majority of livelihoods in Uganda, owing to the fact that they increase calf mortality and the cost of livestock management, and result in the loss of a significant source of protein for the population. Containing these pests and the diseases they carry directly contributes towards the achievement of SDGs 2 (Zero hunger), 3 (Good health and well-being), 12 (Responsible consumption and production) and 15 (Life on land).

Thanks to this project, a reduction in calf mortality rates was indicated through monthly reports and verbal communication. The exact percentage of reduction was not determined; however, it can be said that the project contributed to improving sustainable production and productivity in the livestock subsector through an improvement in the management of ticks and TBDs.

The first project Output focused on establishing, improving and/or strengthening modalities for coordination, linkages and networking among key stakeholders. Under this Output, FAO supported the development of a National Action Plan (NAP) for the management of ticks and TBDs. The NAP called for the establishment of a coordination framework, including working groups. At the time of this report, the NAP was awaiting ratification, which is expected to be followed by the appointment and inauguration of these groups.

A survey was carried out in order to gather information and establish baseline levels of ticks and TBDs. The data was then to be used to generate and disseminate evidence-based documentation on tick resistance to acaricides. This activity was partially achieved, owing to the fact that the data was limited because of the small size of the area that was covered, and the documentation and dissemination processes were not carried out fully.

The final activity of this Output centred on raising awareness of ticks and TBDs by developing and disseminating information and materials on acaricides, anti-TBD drugs and other tick-control strategies.

The focus of Output 2 was to build national capacities for the control of ticks and TBDs. It was fully achieved. Thanks to the efforts made under this Output, an increase in technical capacities was reported by veterinary staff.

Training sessions on diagnosing tick resistance and TBDs were conducted for veterinary personnel from regional and district laboratories. In addition, 26 veterinary personnel and entomologists from districts with tick-related issues were trained on Integrated Pest Management (IPM) strategies. Laboratory technicians were trained to develop action plans for the diagnosis of TBDs. Support was also provided in the form of diagnostic materials for the laboratory of a Regional Training Centre. A computer for data storage and a printer were also supplied to the national project coordinator at the MAAIF.

The third and final Output, which focused on the review, updating and enforcement of policy, legal, regulatory and institutional frameworks, including standards, guidelines and best practices along the livestock value chain, was a work in progress at the time of this report. The duration of the project proved to be too short to allow for sufficient time for the legislative process to be completed.

The two activities that were planned under this Output were not fully achieved; however, a policy brief that justified the need for the NAP to manage ticks and TBDs was developed.

IMPLEMENTATION OF WORK PLAN

All activities were implemented within the planned budget. Throughout the project's life cycle, one no-cost extension and one budget reallocation were requested and approved.

The no-cost extension was required to accommodate for delays in the implementation of the project. In addition to the extension, these delays were managed by involving central Government officials, which ensured equal responsibility among stakeholders.

Two risks to project implementation were identified. The first was an inadequate level of control regarding the application of acaricides; however, this was mitigated through zoning and rotation. The other risk was that some farmers may not have correctly followed tick management practices, such as spraying and dipping. In order to manage this issue, local governments passed by-laws making tick control mandatory for farmers.

As mentioned above, some of the project activities were not fully carried out, which led to the partial achievement of Outputs 1 and 3. Under the first Output, the tick and TBD baseline survey was conducted; however, this activity was only partially achieved, owing to the fact that the area that was surveyed was small and therefore only provided limited data. In addition, the NAP ratification process was postponed due to the COVID-19 pandemic, which meant that the National Committee and working groups could not be formed. The NAP was handed over to the MAAIF for ratification, endorsement, and management.

Output 3 was partially achieved due to a lack of time to review, update and formulate legislation and policies for tick and TBD management. That being said, the review process was started, and it laid a foundation for the work in this area to continue. It is also expected that the Government, through the public health division of the MAAIF, will support the assessment of acaricide residues that was meant to be carried out under this Output.

FOLLOW-UP FOR GOVERNMENT ATTENTION

As stated above, reports indicated a reduction in the calf mortality rate thanks to the capacity development initiatives carried out under the project. Interventions to reduce the rate further are strongly recommended.

The activities of Output 1 would benefit from follow-up actions. The results of the tick and TBD survey should be improved by developing more related documentation and disseminating the findings. It is also recommended that members be appointed to the National Committee and working groups, as included in the NAP. The National Committee and working groups should then be inaugurated. Finally, the dissemination and utilization of the communication and awareness materials developed under Activity 1.3 should be scaled up as a means of maintaining stakeholder engagement.

Regarding Output 2, more training sessions to cover more districts, or possibly the entire country, would be beneficial. It is also recommended that the increase in the capacities of veterinary and laboratory personnel be assessed further. The action plans developed by the regional laboratory experts during the training sessions should also be followed up on by the Government, in order to ensure that they are implemented effectively.

The work that was started under Output 3, which included reviewing and updating policies and legislation for the control of ticks and TBDs, would also benefit from follow-up. An assessment of the status of acaricide residues in meat and milk and the health concerns associated with these residues was also meant to be carried out under this Output, in order to inform the development of the above-mentioned policies and legislation. It is expected that this assessment will be carried out by the public health division of the MAAIF.

SUSTAINABILITY

1. Capacity development

The project facilitated the development of a policy brief justifying the need for the NAP to manage ticks and TBDs. At the time of this report, the NAP had been developed and was awaiting the ratification process and final endorsement. Indirectly, the project facilitated the review of the national veterinary medicines policy.

A national project coordinator from the MAAIF largely coordinated the project from inception to completion. As mentioned above, the MAAIF took over the ratification, endorsement and management of the NAP, which indicated that they would continue to support the activities initiated by this project. In fact, some of the activities proposed under the NAP had already been taken up by the Government and other stakeholders at the time of this report.

Building on the comprehensive analysis undertaken during the first phase of the project, key stakeholders in the sector were identified. The NAP included a proposal for these stakeholders to become members of the National Committee for the management of ticks and TBDs, which presents an opportunity for them to work together to address the problem.

It is intended for the NAP to fit seamlessly into existing Government institutions, namely the MAAIF and the National Drug Authority. The staff both at central and district levels were trained to provide supportive field services, including extension, disease surveillance and diagnosis. Certain activities of the project facilitated the training of technicians and veterinary personnel in tick acaricide resistance and TBD diagnosis, as well as IPM, with clear recommendations and directions provided as a concrete exit strategy.

2. Gender equality

About 40 percent of those who benefited from training under this project were women and youth, who were targeted specifically for the training of laboratory technicians in TBD diagnosis. Gender mainstreaming actions were also incorporated into the NAP.

3. Environmental sustainability

Livestock keepers were encouraged to adopt and make use of resource-conserving technologies, such as IPM, waste recycling, and so on. Stakeholders are expected to establish detailed management measures for sustainable resources, to provide support and mutual help through sharing arrangements and to prescribe penalties and communal decisions against defaulters.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The participation of communities of small-scale livestock keepers in non-discriminatory, transparent and accountable decision-making processes was encouraged throughout the project. Particular emphasis was placed on the needs of vulnerable and marginalized groups, women and youth.

5. Technological sustainability

Under the NAP, the use of sustainable technologies and practices is emphasized, including IPM practices regarding biosecurity, proper feeding, rotational grazing, perimeter fencing, infection and treatment, as well as the use of vaccines for livestock diseases.

The training of veterinary professionals in IPM revealed that no single method can be used to manage ticks and tick-related issues, but rather a multitude of actions and strategies with the involvement of all stakeholders should be employed in the containment of the problem. The MAAIF committed to developing and implementing pest management guidelines with the help of the directorate of extension services.

The capacity built during the multiple trainings that took place under the project led to the implementation of good practices that were already being observed at the time of this report. This indicated that many stakeholders, especially the district technical staff at laboratories, were able to continue project activities without further technical assistance.

6. Economic sustainability

With limited resources, the project was able to produce a five-year action plan for the management of ticks and TBDs in Uganda. This document has been prioritized as one of the planning documents for the next financial year. The project results and Outputs required stakeholder commitment, coordination, continued engagement and incorporation into their sectoral budget. With the capacity of stakeholders built through training, they are expected to continue project activities without further technical assistance or additional funding.

DOCUMENTS AND OUTREACH PRODUCTS

- ❑ Launch of the response to containment of ticks, tick acaricide resistance and tick-borne diseases in Uganda Report. A. Praise, M. Komugisha, K. Mugabi, G. Nizeyimana & S. Lyantonde. July 2019. 14 pp.
- ❑ New Technical Cooperation Project to support the government of Uganda address ticks and tick-related challenges launched (Press release). A. Ayebazibwe. Kampala, August 2019. 1 p.
- ❑ Policy Brief for the National Action Plan to Manage Ticks resistance to Acaricides and the use of integrated methods to reduce the spread for Ticks and Tick-Borne Diseases in Uganda. S. Okuthe, G. Nizeyimana, C. Ayebazibwe, K. Mugabi & G. Matete. Kampala, November 2019. 2 pp.
- ❑ Terms of Reference for the National Committee for the Management of Ticks and Tick-Borne Diseases (NC-TTBD). S. Okuthe, G. Nizeyimana, C. Ayebazibwe, K. Mugabi & G. Matete. Kampala, December 2019. 2 pp.
- ❑ Training report for veterinary laboratory staff on diagnosis of tick-borne diseases and tick acaricide resistance. P. Vudriko, K. Mugabi & C. Ayebazibwe. Kampala, December 2019. 35 pp.
- ❑ Training report on integrated pest management. G. Nizeyimana & C. Ayebazibwe. Mbarara, January 2020. 20 pp.
- ❑ National Action Plan for the management of ticks and tick-borne diseases (NAPM-T&TBDs). G. Matete, K. Mugabi, O. Mukhani, G. Nizeyimana, C. Ayebazibwe, S. Okuthe & R. Ademun. Kampala, February 2020. 48 pp.



ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

Expected Impact	Contribute to reduction of rural poverty through increasing the resilience of livelihoods to threats and crises caused by ticks and tick-borne diseases and productivity increase		
Outcome	Containment of ticks and tick-borne diseases		
	Indicator	Percentage reduction in calf mortality annually	
	Baseline	30 percent.	
	End Target	15 percent.	
	Comments and follow-up action to be taken	It was not possible to determine the end value; therefore, the project Outcome was only partially achieved. That being said, national monthly reports and verbal confirmations indicated a reduction in calf mortality on farms. Action is required to reduce calf mortality further.	
Output 1	Modalities for coordination, linkages and networking amongst key stakeholders established, improved or strengthened		
	Indicators	Target	Achieved
	Number of functional tick and TBD working groups at regional and national level established.	5	Partially
Baseline	0		
Comments	FAO supported the development of the NAP for the management of ticks and TBDS, which includes the creation of the National Committee for the control of ticks and TBDS, as well as four other coordination/working groups. This brings the total of working groups to five.		
Activity 1.1	Conduct a comprehensive tick and tick-borne disease baseline survey and develop the national tick distribution and tick resistance maps to support generation, documentation and dissemination of evidence-based knowledge on tick resistance to acaricides		
	Achieved	Partially	
	Comments	Data limitation due to the size of the area visited. Further documentation and subsequent dissemination of findings is needed.	
Activity 1.2	Establish a working group and coordination framework for the control of ticks and tick-borne diseases		
	Achieved	Partially	
	Comments	The ratification and endorsement of the NAP, which provides for the establishment of the working groups, terms of reference, and composition of the same was yet to be finalized at the time of this report. The appointment and inauguration of the committee and technical working groups is required.	
Activity 1.3	Promote advocacy and awareness programs on ticks and tick-borne diseases by developing, reviewing, printing and dissemination of information, and ICT materials on acaricides, anti-TBD drugs and other tick-control strategies to the different stakeholders, i.e. guidelines, protocols, best practices and test kits to monitor resistance development through various media and formats		
	Achieved	Yes	
	Comments	It is recommended that the dissemination and utilization of communication and awareness materials be scaled up as a means of sustaining the engagement of stakeholders.	

Output 2	National capacities to control ticks and tick-borne diseases enhanced (sustainable capacity for compliance amongst key regulators and stakeholders established by ensuring technical quality, knowledge and services)		
	Indicators	Target	Achieved
	Percentage change in institutional capacity (human, financial, logistical, technical and organizational/management) of the public, Civil Society Organizations (CSO) and private service providers.	Improved by 10 percent.	Yes
Baseline			
Comments	The baseline was not calculated; however, the trainings undertaken for veterinary staff in the diagnosis of tick resistance, TBDs and IPM are thought to have improved technical capacity. More training sessions to cover other districts are required, as is further assessment/quantification of the change.		
Activity 2.1	Provide trainings that build capacity (technical quality, knowledge and services) for compliance with regular surveillance and use of appropriate control measures amongst key regulators and stakeholders		
	Achieved	Yes	
	Comments	Veterinary laboratory personnel from eight regional laboratories and four staff members from district satellite laboratories were trained to diagnose tick resistance and TBDs, and 26 veterinary staff and entomologists from hot spot districts were trained in IPM. It is recommended that the MAAIF scale up the training to cover the entire country.	
Activity 2.2	Provide support to the diagnosis of tick resistance to acaricide at regional laboratory centers i.e. reagents and staff costs for diagnosis of tick-borne diseases, testing for acaricide strength and tick resistance		
	Achieved	Yes	
	Comments	Diagnostic materials were provided for the laboratory at the Regional Training Centre. The materials were used during the training of technicians. In addition, a data storage computer and printer were given to the national project coordinator at the MAAIF. Technicians were trained to develop their laboratory action plans, with emphasis placed on diagnosing TBDs. The Government is expected to follow-up on the implementation of the action plans developed by the regional laboratory experts during the training sessions.	
Output 3	The policy, legal, regulatory and institutional framework, including standards, guidelines and best practices along the livestock value chain reviewed, updated and enforced		
	Indicators	Target	Achieved
	Number of regulatory instruments adopted, i.e. policy, act work plans or guidelines reviewed, and adopted.	2	Partially
Baseline	0		
Comments	The duration of the project was too short to allow for the lengthy policy/legislative processes to be concluded; however, the evidence provided created a basis for the work to begin. A policy brief justifying the need for an action plan to manage ticks and TBDs in Uganda was developed.		
Activity 3.1	Review, update and disseminate to strengthen relevant legislation and policies for the control of ticks and tick-borne diseases at national and local government levels		
	Achieved	No	
	Comments	As stated above, time did not allow for the policy/legislative process to be concluded. That being said, the results of the project included: (i) a review of the national veterinary medicines policy; and (ii) support to the development of a national veterinary medicines and devices policy, which, among other things, seeks to regulate the use of acaricides, as they have been implicated in the surge of ticks and TBDs. This work is expected to support the eventual adoption of regulatory instruments. Furthermore, the national action plan outlined a set of actionable recommendations for various stakeholders, which was a crucial part of the tick policy development process.	
Activity 3.2	Assess the status of acaricide residues in meat and milk and the associated public health concerns in the hot spot districts, with a view to aggregate these constraints and concerns for consideration in policy and legislation formulation		
	Achieved	No	
	Comments	The time to implement this assessment across the country was limited. Most of the components are incorporated under the NAP and are expected to be addressed by the public health division of the MAAIF.	

Partnerships and Outreach

For more information, please contact: Reporting@fao.org

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