

## Uncontrolled rodent population outbreaks drive food insecurity and disease epidemics



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## Policy Discussion Paper

### Statement of the proposition

Chronic rodent pest infestations and epidemic rodent outbreaks in sub-Saharan Africa create serious economic risks and health hazards due to pre- and post-harvest crop losses and epidemics of zoonotic diseases. Crop losses of 15-40% and high rates of illness in communities are common during rodent population outbreaks. Sustainable technological interventions that are locally developed are needed to mitigate the severe impact of rodent irruptions on communities.

### Policy Statements

- Rodent pest surveillance should be strengthened to mitigate the impacts of rodent outbreaks on communities
- Governments in sub-Saharan Africa should collaborate on a regional basis with international organizations and other institutions dealing with rodent research to combat outbreaks.
- Both national and regional measures should be undertaken to prevent the spread of rodent-borne diseases, particularly those which are communicable, e.g. Lassa fever, bubonic plague.
- African governments should prioritise research on rodents due to the multiple impacts of rodents on crops and public health

### Evidence

Crop production is severely affected by rodent pest infestations. Furthermore rodents transmit more than 60 diseases to domestic animals and humans, particularly during rodent outbreaks.<sup>1</sup> Rodents are often cited as the pest over which farmers are least equipped with sustainable technologies to control them,<sup>2</sup> and farmers often depend on toxic chemicals for rodent pest management that are a health hazard, contaminate the environment and kill non-target animals.<sup>3</sup> The development of resistance to the chemicals, their high costs and often unavailability when needed, make chemical control unsustainable for small holder farmers in Africa. Currently, most countries in sub-Saharan Africa lack the infrastructure and trained personnel to conduct state of the art research on rodent pest management. The need for collaboration among researchers, capacity building through training and public-private sector partnerships to address rodent pest problems needs to be strengthened.

Reported outbreaks of rodents in the last 80 years are widespread across the African continent causing serious crop losses.<sup>4</sup> To show the scale of losses, it has been estimated that Tanzania experiences an annual loss of cereals due to rodent outbreaks amounting to 400,000 tonnes with a value of USD 42,000,000.<sup>5</sup> Other studies indicated a 15% loss of cereals in a “normal” year without serious outbreaks.<sup>6</sup>

### References

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# Rodent population outbreaks, food security and disease

## Assumptions and their implications

- Rodent pest outbreaks trends will occur at much higher scale in future due to climate change that will favour certain rodent pest species.
- African countries will see the need to invest more on research to manage rodent outbreaks, particularly because the conventional rodent control strategies are failing.
- Governments should prioritise sustainable technologies for rodent pest management through measures aimed at strengthening agricultural extension services.
- Governments should support the establishment of functional rodent research institutions and capacity building in rodent research, thus ensuring basic and applied research on rodents is conducted on a sustainable basis.

## Counterviews and their implications

- There are many other pest and disease problems and each need to be considered on clear information about socio-economic impact
- Rodenticides can be effective against rodent pests, with a strong advocacy for their use by multi-national agro-chemical companies. Furthermore, governments often provide subsidies for their purchase or distribute them free of charge to farmers.
- The lack of basic data on rodent damage levels makes it difficult for policy makers and others to “believe” that rodents are important pests as advocated by experts.

## Food security consequences

- Cereal crops are prone to rodent attack where rodent outbreaks increase the risks of starvation in the community.
- High post-harvest losses due to direct consumption by rodents, contamination with faeces and the risk of disease transmission reduces food security and increases morbidity and mortality in the community.

## Project design considerations

- Rodent research should focus on innovative technologies to overcome the burden of rodents on poor communities in Africa.
- Researchers should work with the communities which experience rodent associated problems to ensure that the technologies being developed are “home-grown” for easy adoption.

## Knowledge gaps and research opportunities

- Little is known in many African countries about the ecology of the rodent species that are prone to outbreak, thus the need to expand research on rodent ecology.
- There is a lack of new technologies for rodent pest management to replace the use of conventional strategies like rodenticides. There are opportunities to invest in affordable rodent management technologies.
- We need to establish the biological and environmental processes leading to outbreaks of certain species to allow us to put in place forecasting models that will allow farmers to prepare for management of outbreaks.
- Rodent-borne disease ecology and transmission pathways are not understood in most African countries, with a need to intensify research on this area

StopRats is a project funded by the European Union through the African, Caribbean and Pacific Science and Technology Programme. The project is about rodent pests and the damage they cause in crop production, the loss and contamination of stored food after harvest and the many health problems inflicted on people and domestic animals through the transmission of rodent-borne diseases. StopRats is officially led and managed by Professor Steven Belmain from the Natural Resources Institute of the University of Greenwich, United Kingdom and involves the following partner organisations: Sokoine University of Agriculture, Tanzania; University of Swaziland; University of Namibia; University of Venda, South Africa; Agricultural Research Council – Plant Protection Research Institute, South Africa; the Vahatra Association, Madagascar and Concern Worldwide, Sierra Leone. More about the project can be obtained by contacting the project leader, Prof Steven Belmain via Email: [s.r.belmain@gre.ac.uk](mailto:s.r.belmain@gre.ac.uk) and through the project website <http://projects.nri.org/stoprats> More about the ACP S&T programme can be found at <http://www.acp-hestr.eu>



Sustainable Technologies to Overcome Pest Rodents in Africa through Science



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