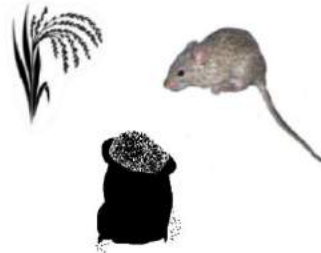


**UFR ES AGRONOMIC SCIENCES, AQUACULTURE AND
FOOD TECHNOLOGY**

PLANT PRODUCTION AND AGRONOMY DEPARTMENT

MASTER IN PREVENTION AND MANAGEMENT OF RISKS RELATED TO SECURITY
FOOD IN AFRICA (PGRSA)

Ecological approaches for the integrated management of rodent populations in rural areas of the Senegal River delta : a step forward in the prevention of agricultural risks.



Ibrahima SOW, Youssou NIANG, Mamadou KANE,
Ousmane KANDE, Ndiaga NIANG, Serigne NIANG,
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Small Mammals Day, March. 2023
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Plan

- Context and Objectives
- Methodologies
- First results

Context and Objectives

Context

Hydro-agricultural facilities



Photo:
MCA



Follow-up 2008-2019:
Increase in rodent
abundance linked
to developments
completed in 2015

Major changes in use and increased abundance of rodents (Niang et al. 2022)

Changing socio-agro-ecosystems

Context and Objectives

Context

• Pullulations and Damage due to Rodents in the north of the Senegal

1974, 1987, 2010, 2017, 2020

• Agricultural intensification combined with years of heavy rainfall increases hotbeds of high rodent densities



Context and Objectives

Following such outbreak events, synthetic rodenticides are massively used reactively against rodents crop pests;

Integrated rodent management approaches that would be more sustainable and more environmentally friendly, such as rodent management based on ecology (EBRM), are still little applied.

Ecologically-Based Rodent Management - EBRM

• Good knowledge of rodents (solutions based on science) •
Development of the environment to make it unsuitable for
rodents • Community involvement



EBRM in urban, peri-urban and rural areas



Inventory of rodents and pathogens



Knowledge, attitude and practice surveys



Establishment of working groups



Information, awareness

Development of locally adapted EBRM strategies

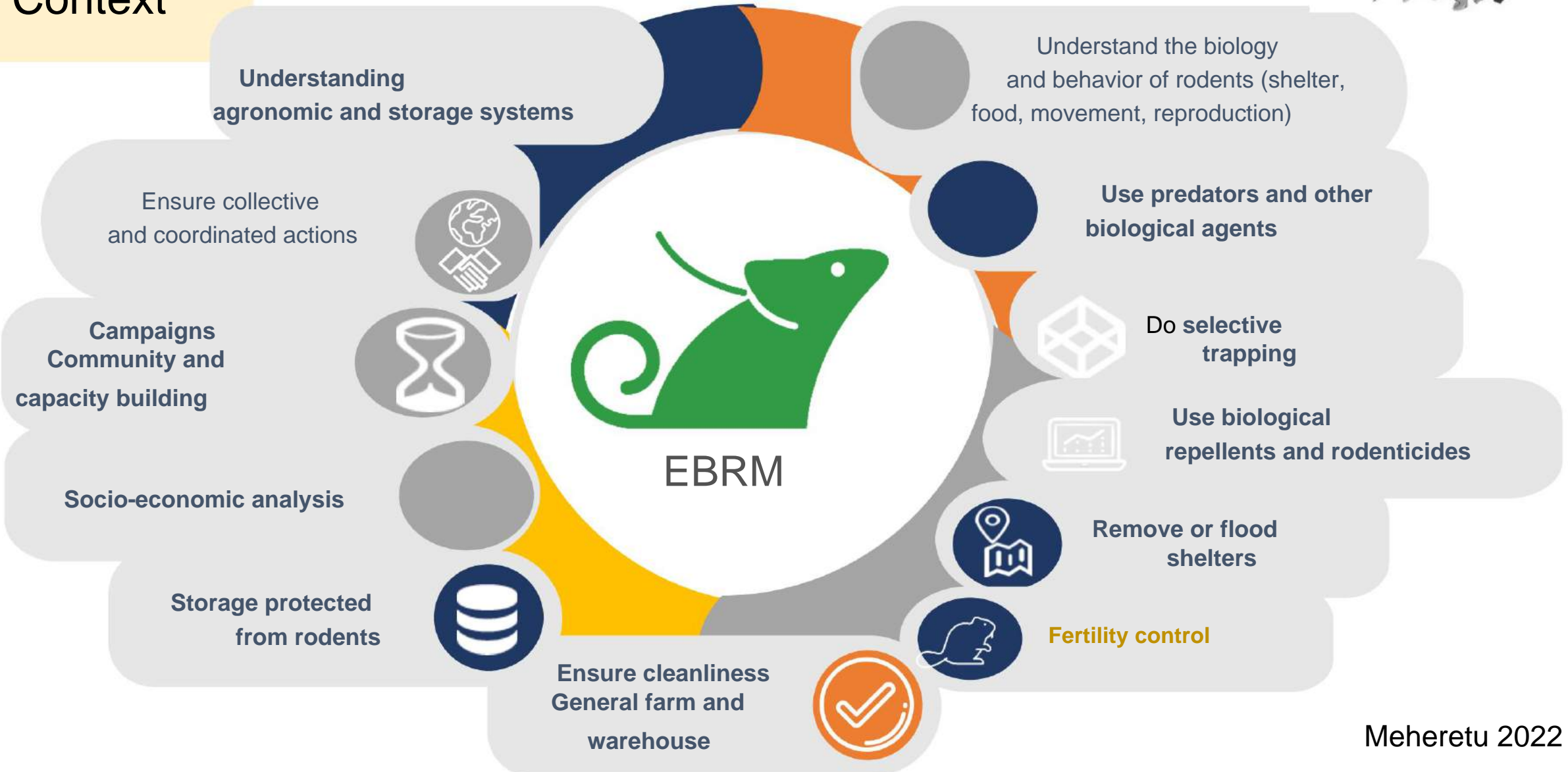
Implementation of biological and sociological indicators (eg appropriation) to assess the effects of EBRM or set its objectives

Context and Objectives



Context

EBRM



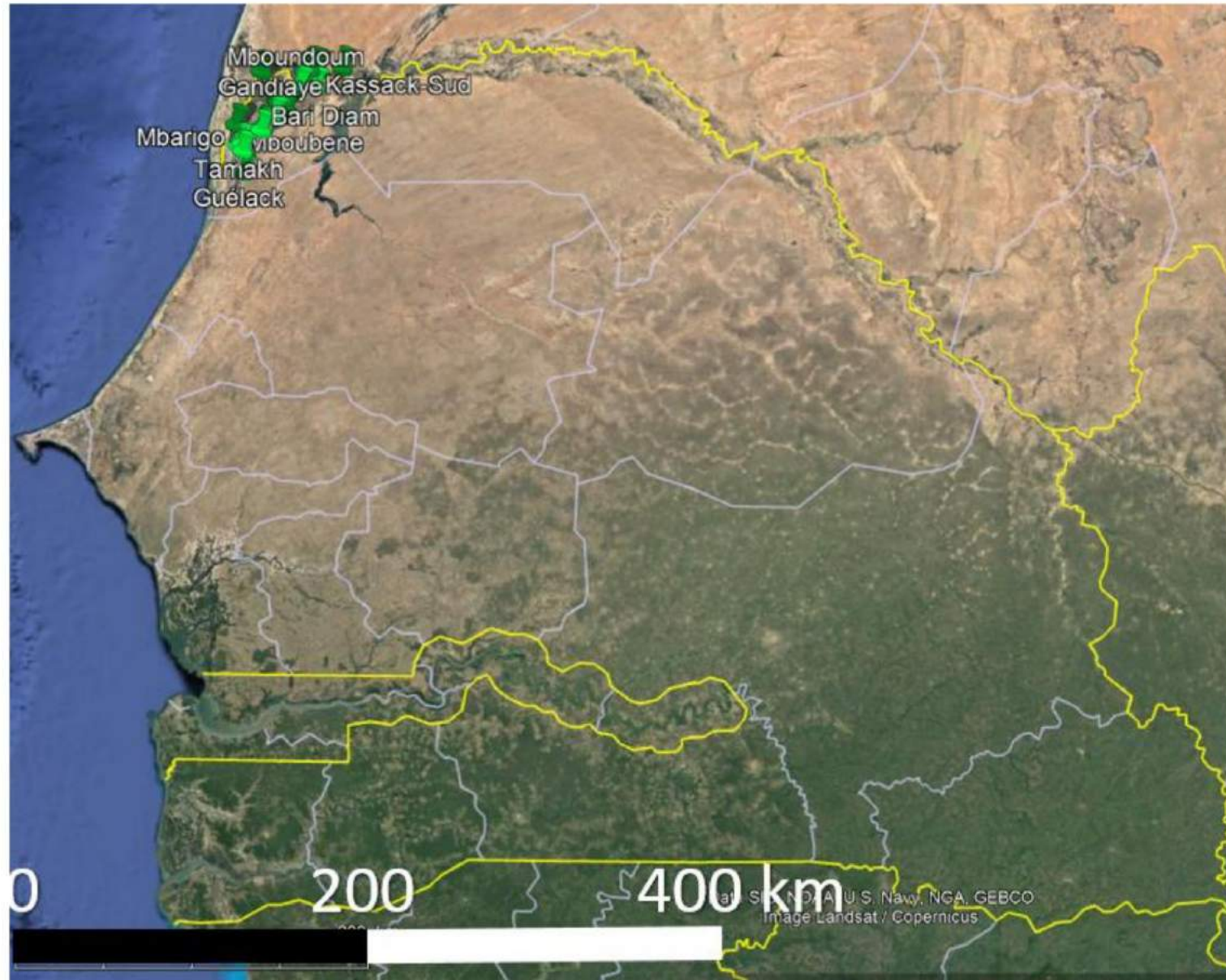
Context and Objectives

Goals

- Set up sustainable Integrated Management Actions within the framework of the EBRM which are locally adapted to the conditions and production practices in West Africa and particularly in the Senegal River delta.
 - o Take stock of the knowledge, attitudes and practices of Farmers in connection with rodents;
 - o Conduct an experiment to assess the effectiveness of EBRM management measures

Methodologies

KAP survey

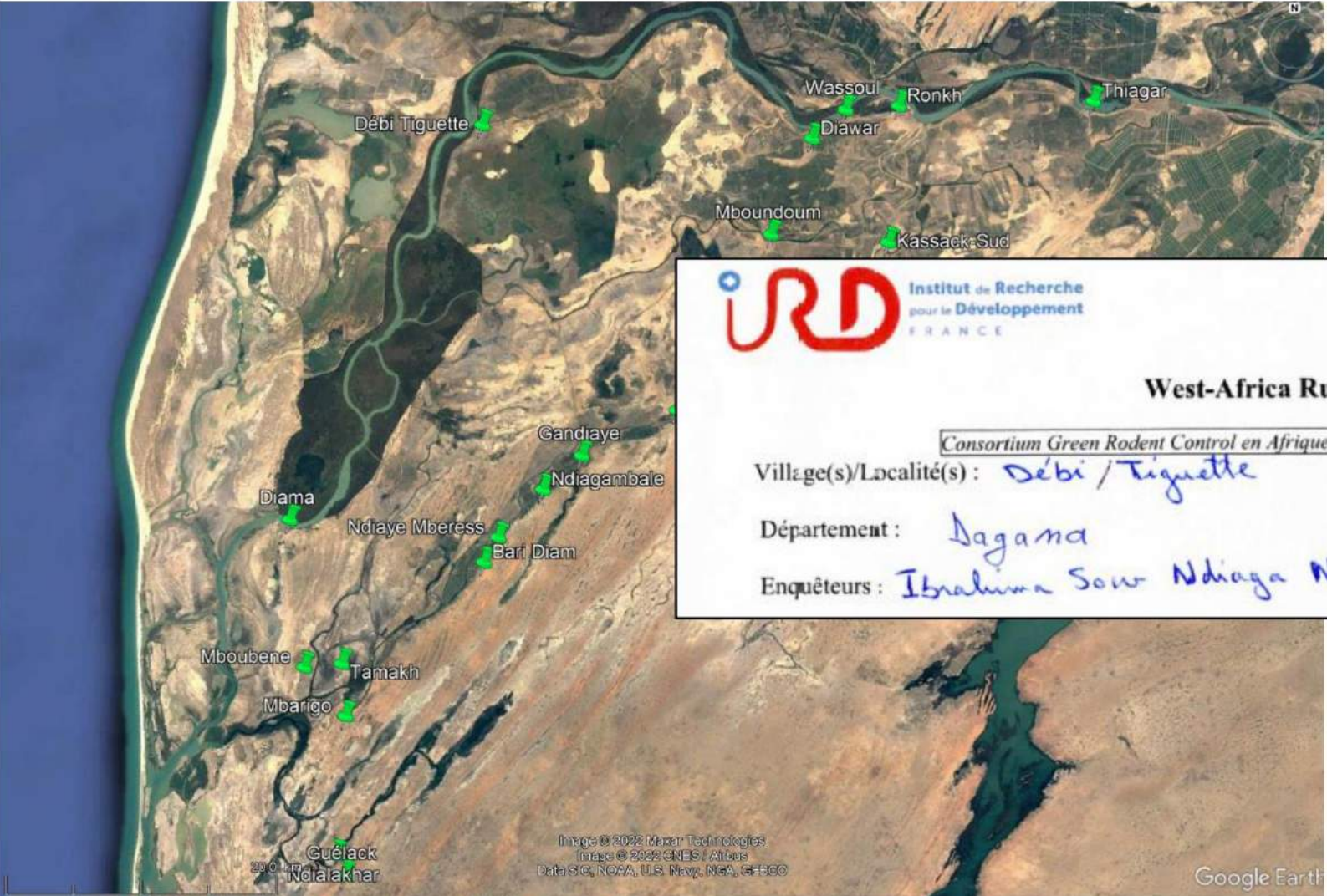


Methodologies

KAP survey

Nov.-Dec. 2021
 Focus Group
 Discussions

18 villages
 x 10 pers. (5-14 pers.)



IRD Institut de Recherche pour le Développement FRANCE

West-Africa Rural EBRM Questionnaire

Consortium Green Rodent Control en Afrique sub-saharienne (IRD, UGB, MetaMeta, Univ. Mekelle, etc.)

Village(s)/Localité(s) : Débi / Tiguette 30/12/2021

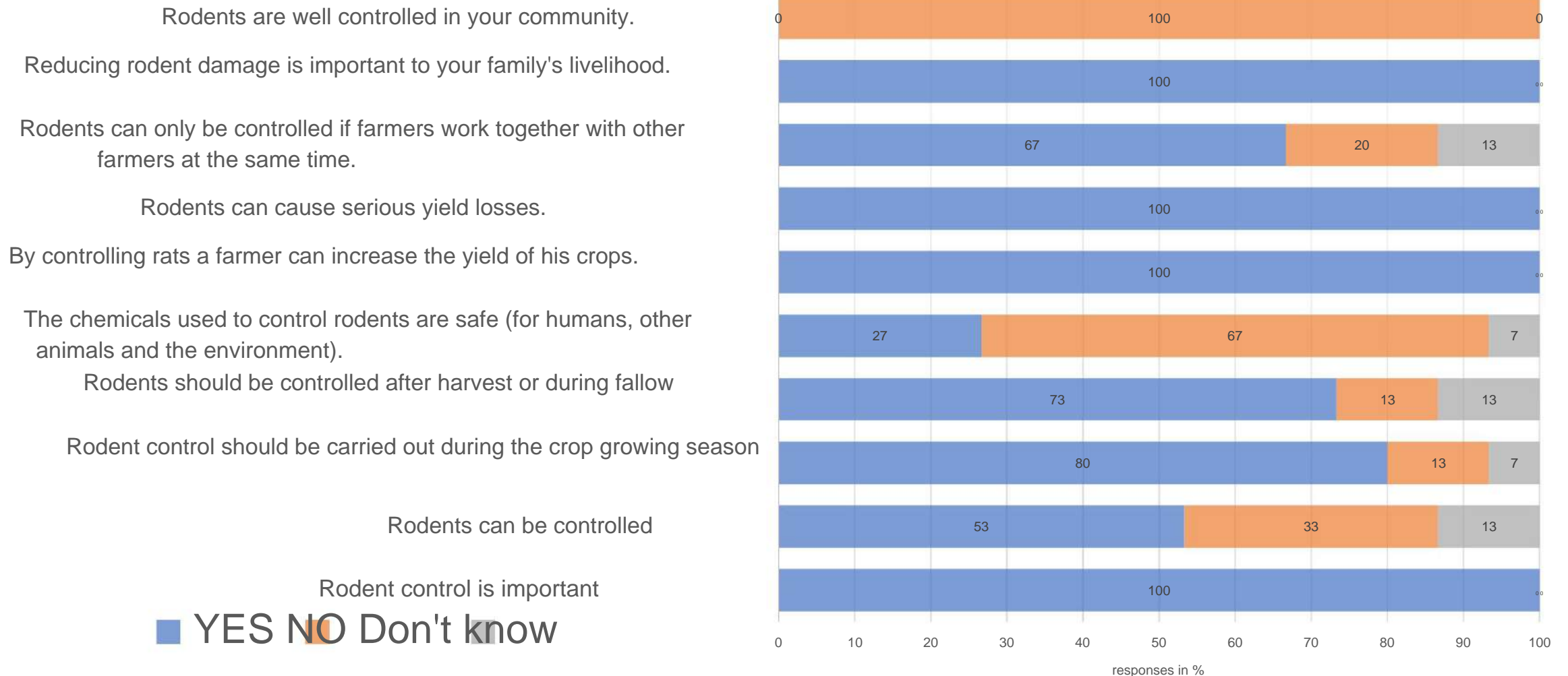
Département : Dagana

Enquêteurs : Ibrahima Sow Ndiaga Niang Seigne Niang

Results

CAP

Knowledge and Attitudes of Farmers in the Senegal River Valley on Rodent Management.



Results

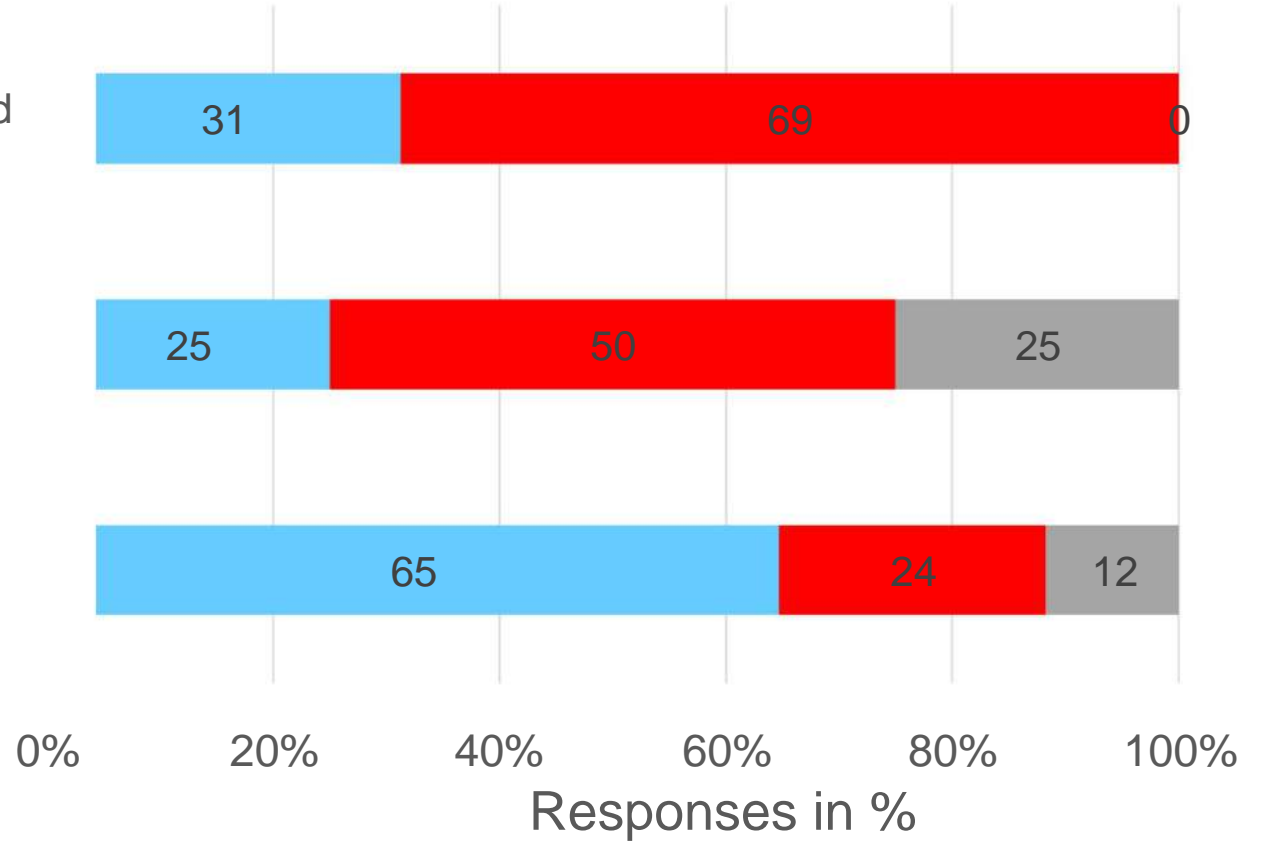
CAP

Perception of farmers in the Senegal River Valley on the chemical management of rodents in percentage

Chemicals (poisons) found on the market are an effective and safe means to use. **(1) Chemicals and safe way to use.**

Rodents can be successfully controlled. **(2) Rodents can be successfully controlled.**

The use of rodenticidal poisons reduces the severity of observed damage. **(3) The use of rodenticidal poisons reduces the severity of observed damage.**

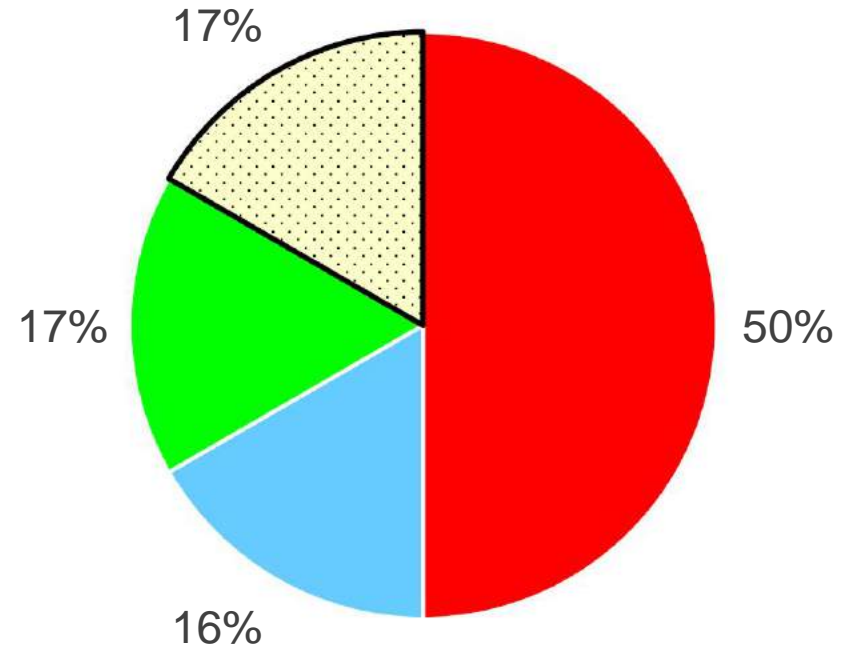
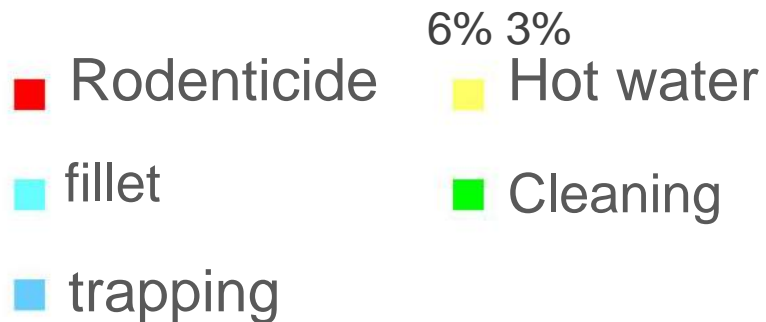
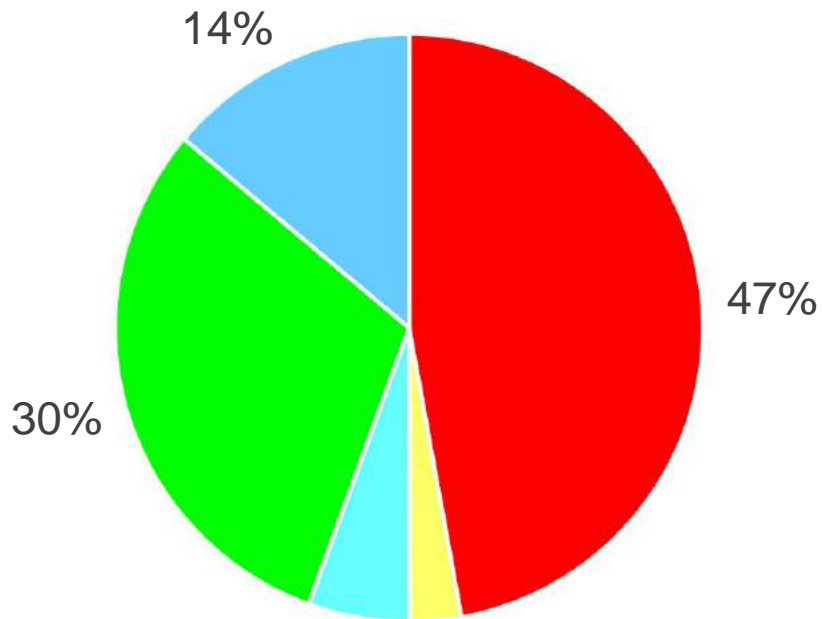


■ Yes ■ No ■ Maybe

Results

CAP

Management methods reported by farmers



Farmer Experimentation

Methodologies

An experimental device consisting of (04) four treatments will be installed to test integrated management approaches in the farming environment:

- o (T1) Rodent beats / burrow flooding using mosquito nets at the start of the campaign
- o (T2) Rodent beats rodents / flooding of burrows with mosquito nets every month during the campaign
- o (T3) L-TBS (Linear Barrier System with Multiple Capture Traps)
- o (T4) Controls.

T1 and T2 mosquito nets



T3 L-TBS



T4 Witness



Methodologies

Farmer Experimentation

Map of candidate sites surveyed on March 10, 2023 in the pilot area



Methodologies

Farmer Experimentation

Assess the abundance of Rodents by Capture-Marking
Recapture to choose dikes based on abundance;

March 20-27, 2023: 8 lines of 20-50 traps; 1 trap every 10 m; 1-8 consecutive nights
1110 Trap Nights; 188 catch events; 80 RE-capture events **Lincoln-Petersen
index estimate / 100m from 3-4 nights of tagging?**



Methodologies

Farmer Experimentation

- Evaluate the abundance of Rodents by Capture-Marking-Recapture to choose the dams according to the abundance;
- Assign one of the treatments to each dike;
- Follow the hot off-season campaign until the mid-June harvest ('Tiller count method' and yield squares)

**MERCI DE VOTRE AIMABLE
ATTENTION**