37TH GENERAL CONFERENCE OF THE INTERNATIONAL SCIENTIFIC COUNCIL FOR TRYPANOSOMIASIS RESEARCH AND CONTROL (ISCTRC)

Theme: "Harnessing One Health Technologies & Innovations towards Eliminating Trypanosomiasis in Africa"

MÖVENPICK HOTEL & RESIDENCES, WESTLANDS, NAIROBI, KENYA,

SEPTEMBER 15 - 19, 2025, NAIROBI, KENYA

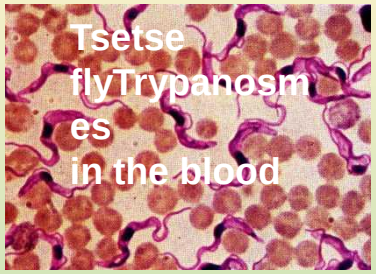
Translating available technologies and innovations for scalable and sustainable tsetse field actions: The Case of Niayes Senegal

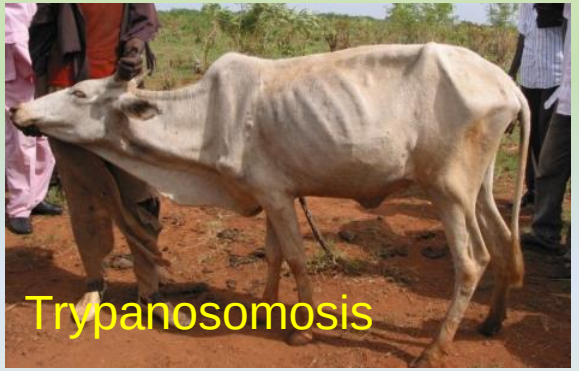
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Why fight against tsetse flies?

- Animal trypanosomosis = major losses for livestock
- Mortality, reduced milk production and growth
- Economic impact: losses of several million USD/year

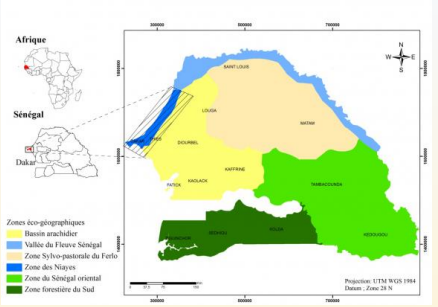








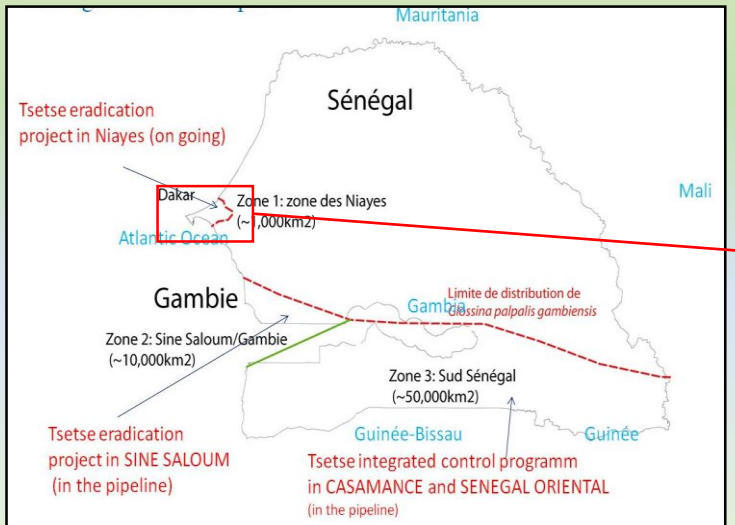
The Niayes area

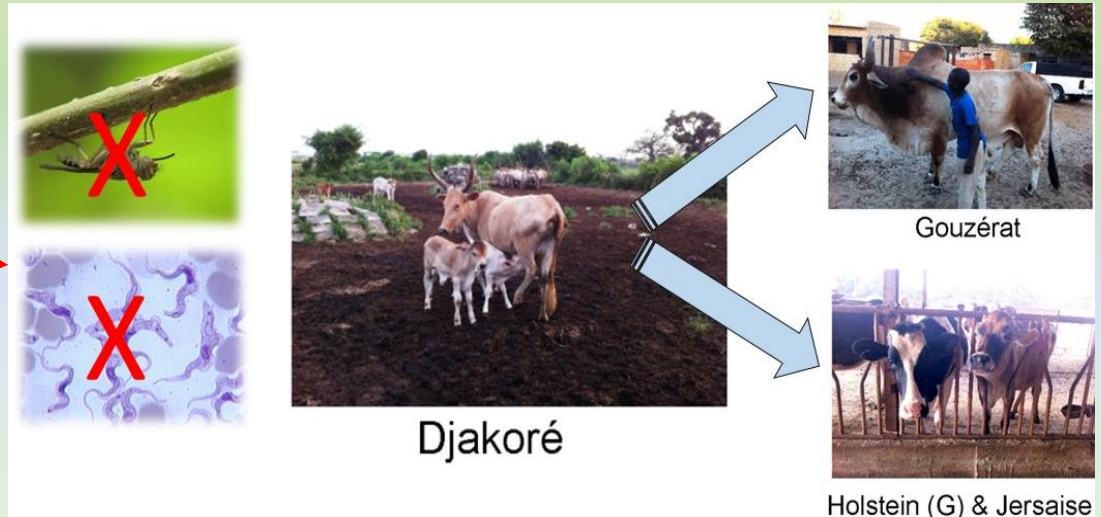


- Strategic zone for dairy production in Senegal
- Direct supply of milk and meat to Dakar
- Agro-ecological area favorable to tsetse flies: Most Western limit of the tsetse distribution

Unfortunately, areas favourable to livestock are infested by tsetse flies and animal trypanosomiasis (AT).

- As part of the management of AT, a National Programme for the Control of Tsetse and Trypanosomiasis in Senegal (PNLTTS) was set up by Decree No. 3139 of 22 May 2006.

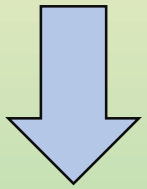




The Niayes area

Previous T&T management/control strategies/methods used

- ✓ **1970, first campaign** (Insecticide (spray);
- ✓ **1980, second campaign** (Insecticide spray + impregned nets);
- ✓ **1980 – 1991 :** No T&T activities ;
- ✓ **1992,** new cases of trypanosomosis;
- ✓ **1997 – 2003 :** 2 surveys confirmed presence of tsetse (locale population or reinvasion from other tsetse infested areas? and trypanosomosis.



New project with a new approach and new tools (AW-IPM)

Area-Wide Integrated Pest Management



PHASED CONDITIONAL APPROACH

- Involment of ministries: livestock, agriculture and environment;
- Field and insectary staff training;
- Planification of baseline data collection;
- Equipment

Data: entomology, parasitology, environment impact, socioeconomy and population genetics

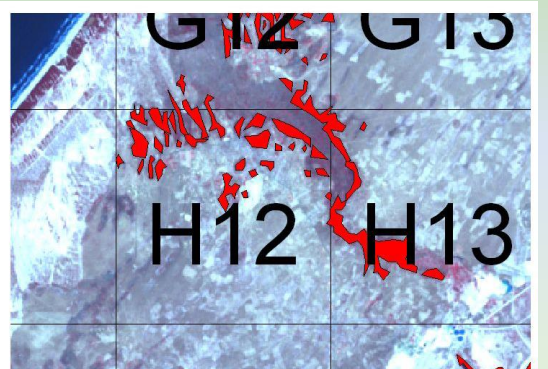
Strategy developed using data from the feasibility study :
-Isolated population – opted for Eradication
-High fly densities – need for suppression (insecticide impregnated traps, pour ons)
-Fragmented nature of the habitat – required the sterile insect technique

Area-Wide Integrated Pest Management



PHASED CONDITIONAL APPROACH

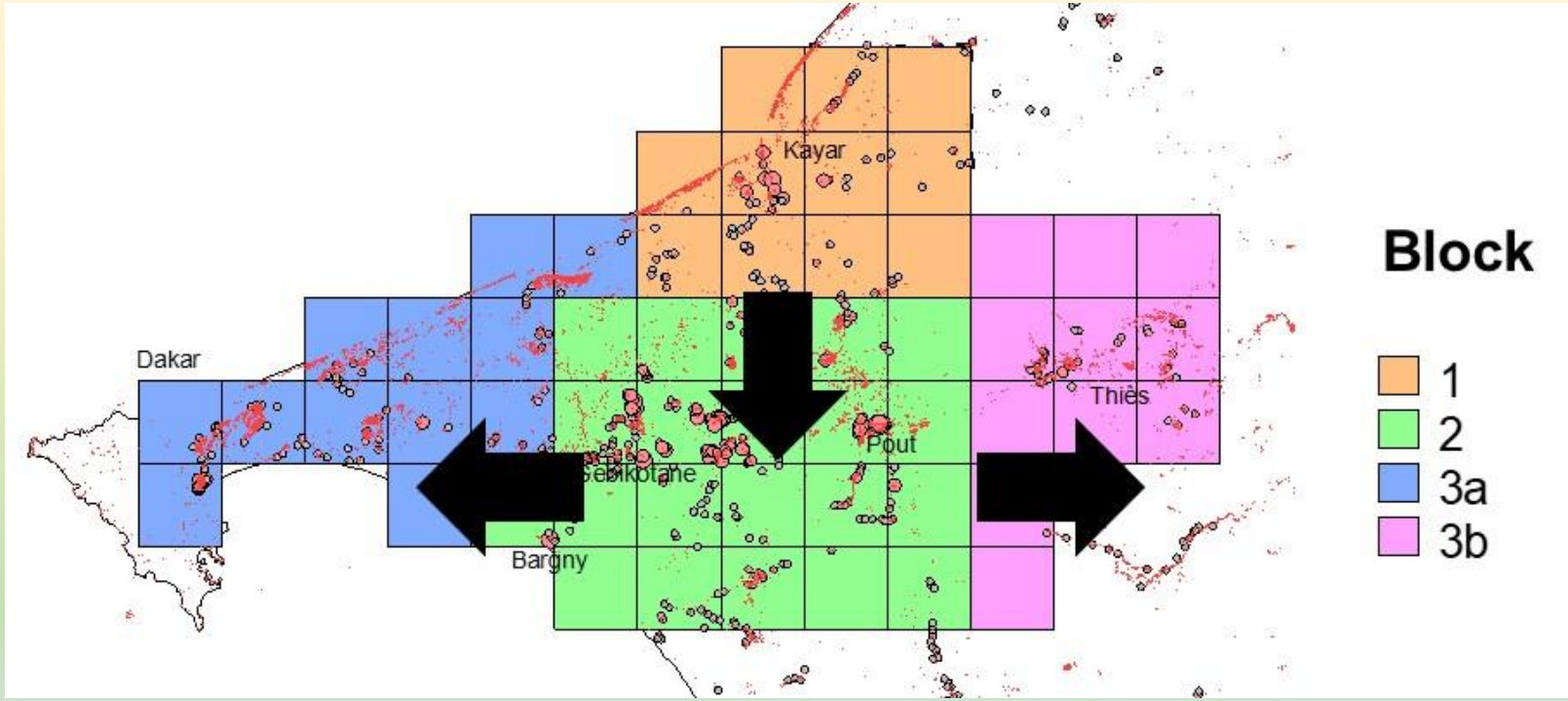
-Establishment of a dispersal centre
-Mating compatibility and competitiveness
-Development of a transport protocol
-Development of a quality control test
-Pilot Release of Sterile Males
-Molecular tools to discriminate sterile and wild flies
-Development of distribution models to inform control



Area-Wide Integrated Pest Management

Operational phase: Sequential eradication

"Rolling carpet" strategy



Entomological survey

Suppression phase

Eradication phase

Sites	Block	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kayar	1														
Pout	2														
Thies_parc Hann	3														

Area-Wide Integrated Pest Management

- The tsetse fly population was suppressed by :
  - Deploying >4,000 deltamethrin-impregnated traps,
  - Bush clearing
  - Treating >4,500 cattle with an insecticide “pour-on” formulation and
  - Applying insecticide ground/drone sprays in selected “hot spot” areas.







- Followed by the release of more than 10 million sterile male flies from the ground and by air between 2011 and 2022:
  - 7 million Arial Releases
  - 3 million Ground Releases



Ground releases using biodegradable cardboard boxes



Aerial release with boxes (1 box every 500 meters)

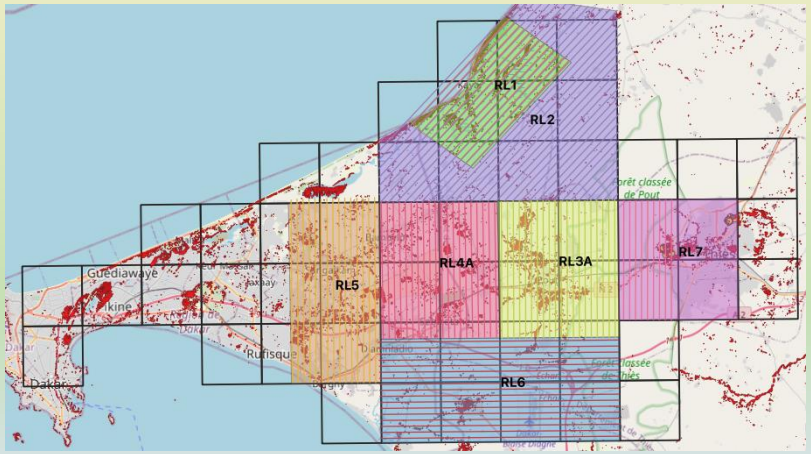


Aerial release with automatic machine

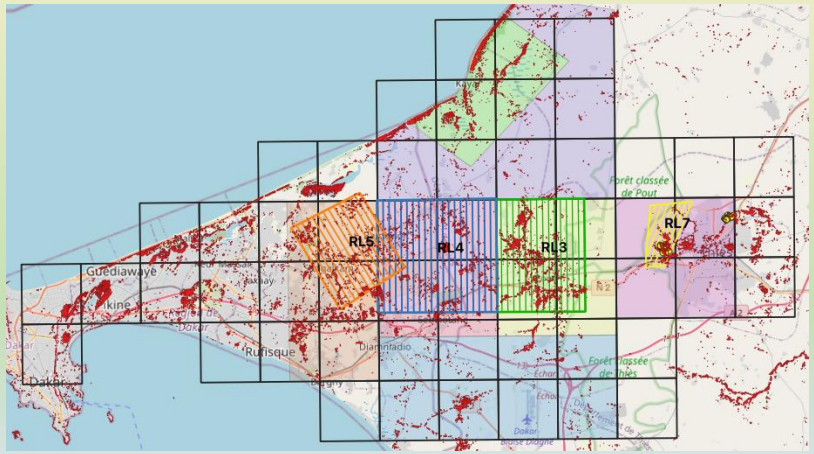
Area-Wide Integrated Pest Management

✓ **Evolution of aerial releases**

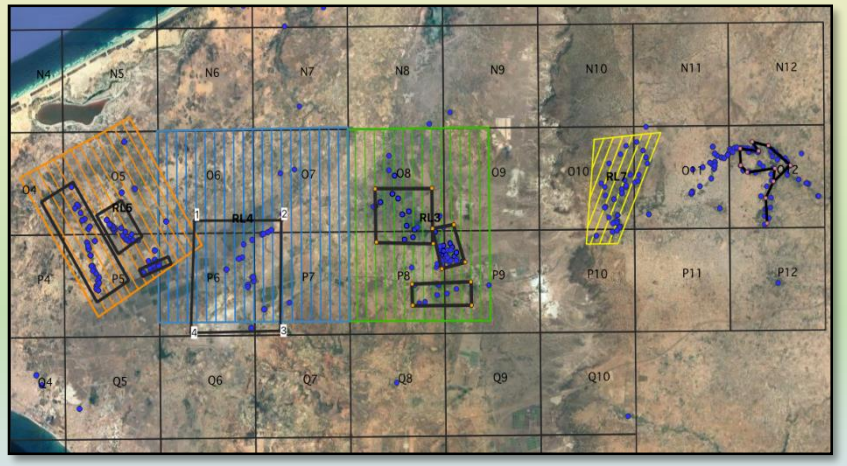
The three blocks were subdivided in seven « Release areas »: 1000km²



The three blocks were subdivided in four « Release areas »: 225km²



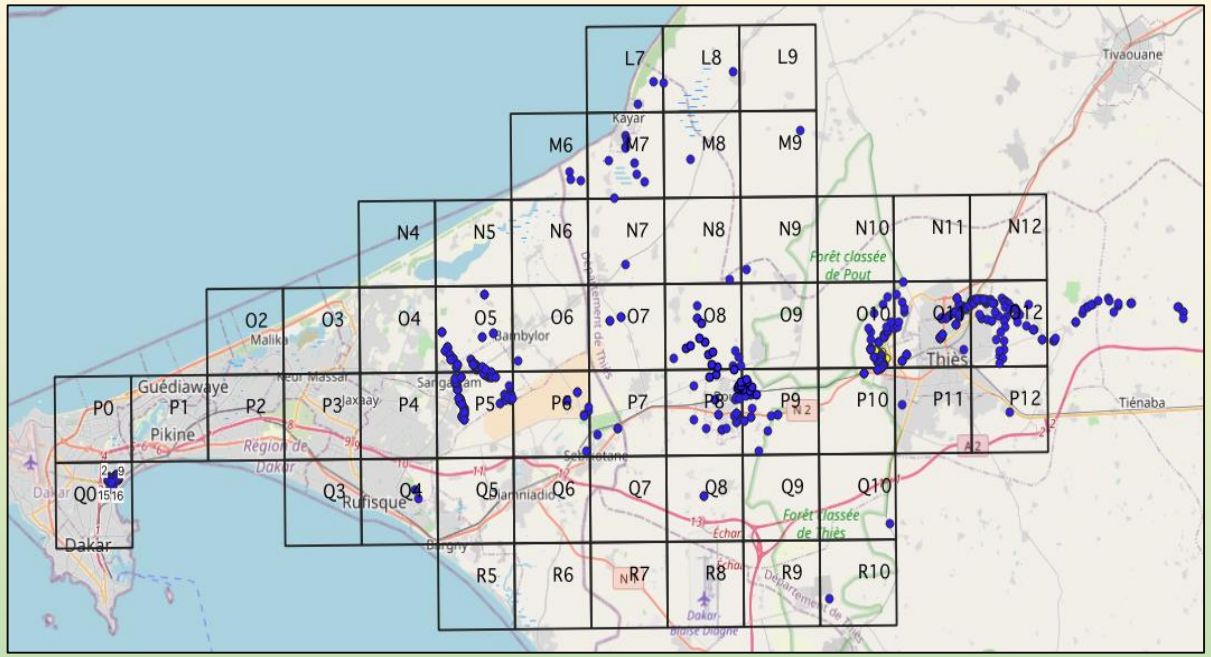
The four « Release areas » were reduced to 50km²



✓ Aerial releases stopped since the end of 2022
✓ Ground releases stopped since November 2024

Area-Wide Integrated Pest Management

✓ Monitoring system: 332 traps



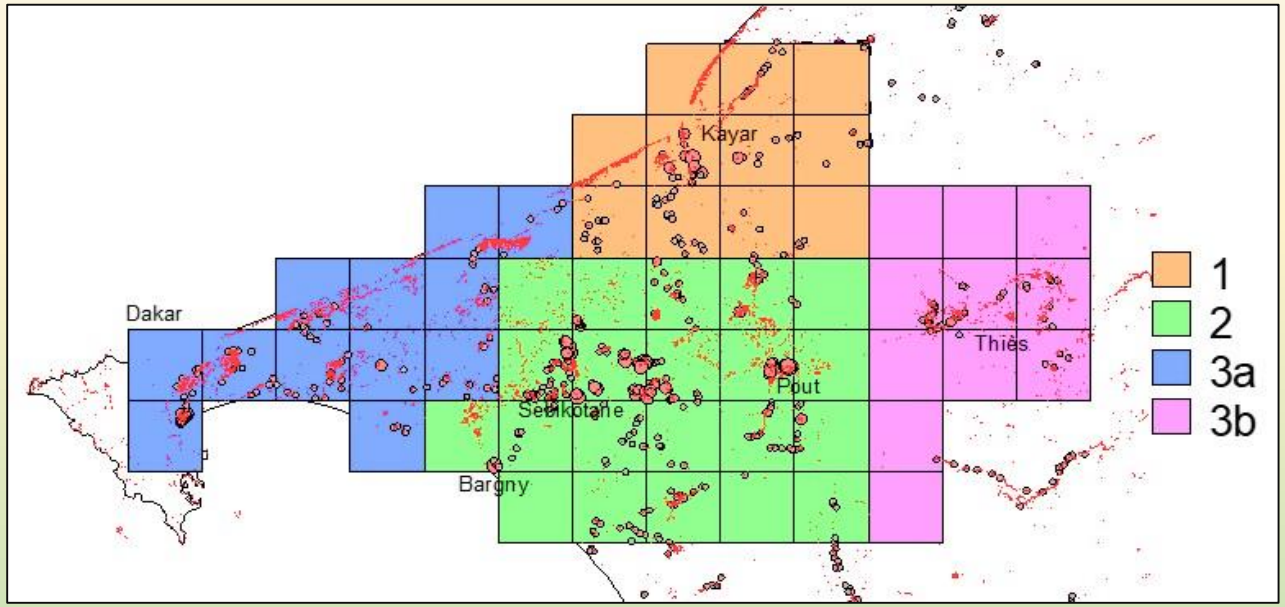
Block 1: 21 monitoring traps (once a month)/ stopped since April 2023

Block 2: 168 monitoring traps (twice a month)

Block 3: 143 monitoring traps (twice a month)

Temporary monitoring traps

✓ Entomological monitoring results

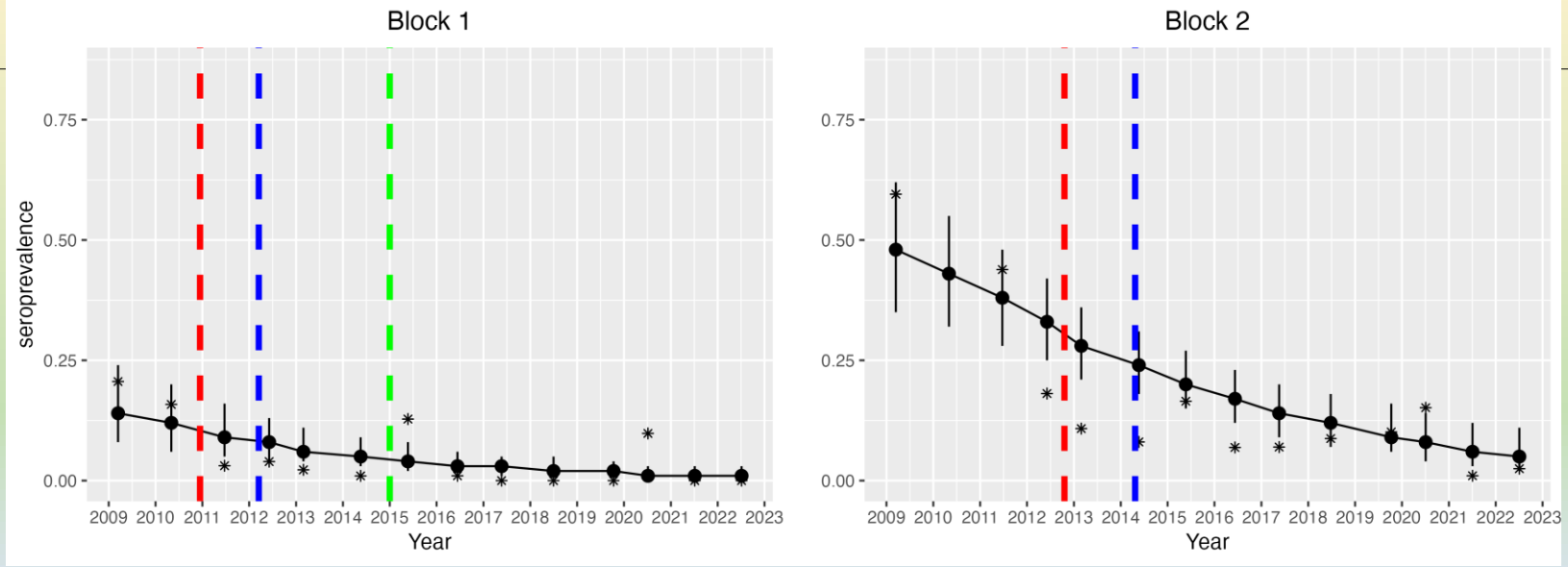


- To date, no wild or sterile tsetse have been caught in the northern project area (Block 1, Kayar) since 2012.
- Block 2, which includes the areas of Pout (since Jan. 2022), Sebikotane and Bargny (June 2017), Ndiakhirate area in June 2023.
- Block 3, no wild flies have been caught since March 2024 in Parc Hann (Block 3a). Last wild flies were caught at the Polytechnic School of Thies in August 2021 (block 3b) and at Sangalkam in March 2021.

Area-Wide Integrated Pest Management

✓ **Zootechnical impact: Improved growth and animal health**

- Block 1, Trypanosomiasis constraint has decreased from 19% in 2009 to 0% in 2017-2022; 4% in 2024
- In Block 2, it has decreased from 93% in 2010 to 0% in 2024
- Thiénaba: 0%



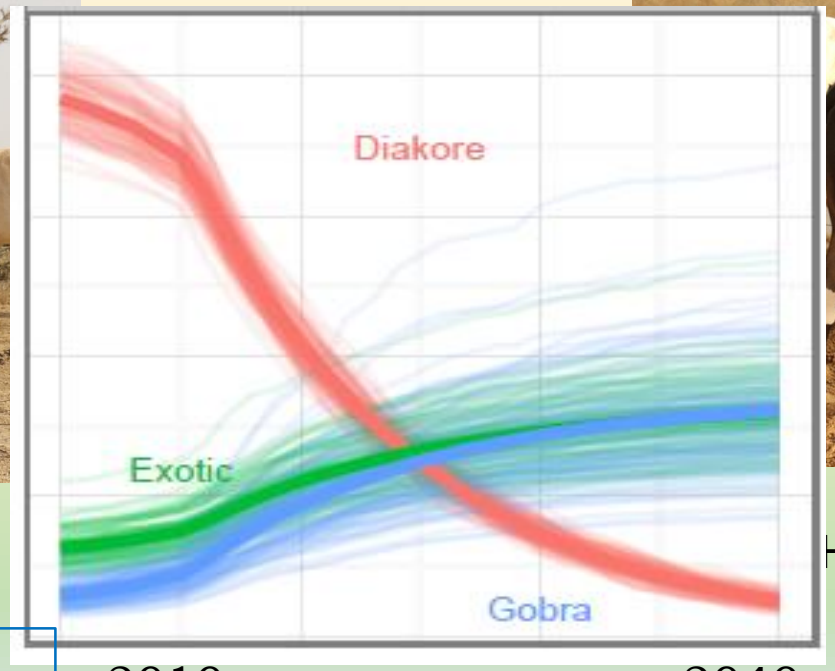
- The last positive buffy coat : 2 in block 1 (2024), 1 in block 2 (2019)
- PCR: 2 positive animals in 2024
- Decrease of fees related to trypanosomosis treatment by 64% in the Niayes

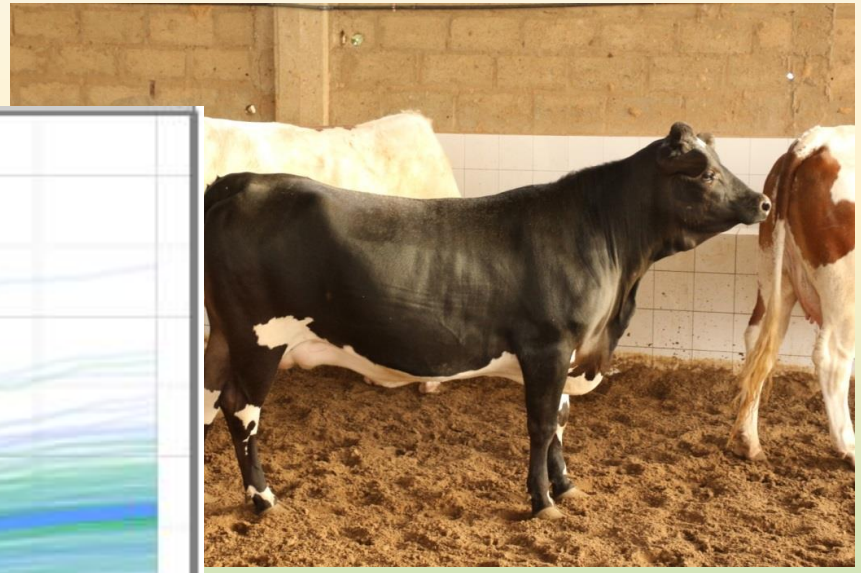
Area-Wide Integrated Pest Management

❑**Zootechnical impact: Progressive replacement of trypanotolerant breeds by improved breeds**



Djakoré cross-bred with Holstein





Holstein and Montbéliard

Exotic breeds introduced in the Niayes:
2017 – 2024 : 5,965 dairy cows

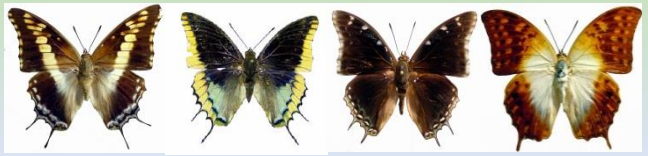
- From 2018 to 2024, the milk production of exotic cows increased from 4.3 to 62.5 million liters.
- In parallel, the number of beneficiaries also grew between 2017 and 2024, from 64 to 432 intensive farmers and farms (vs 13 intensive farmers and farms in 2007).

Area-Wide Integrated Pest Management

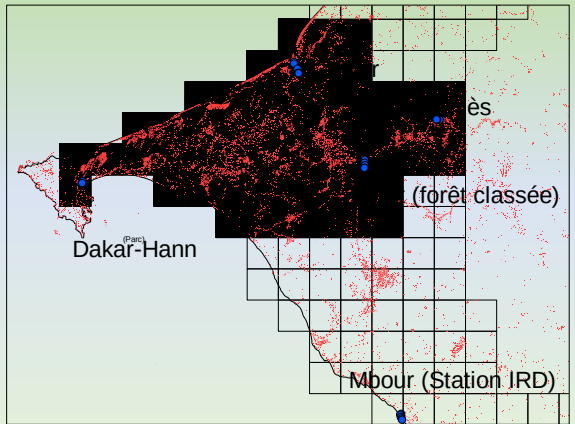
❑Environmental monitoring (bio-indicators)

- Only 2 out of 10 non-target species (Cetoniina species) monitored experienced temporary decreases in density compared to the baseline situation: *Pachnoda interrupta* in Kayar (block1) and *P. marginata* in Pout (block 2).
- The negative impact of project activities on non-target species therefore appears to be minimal: both species reached the reference situation (2009) after 2 years.
- NB: Existence of an environmental clearance since the beginning of the Project.







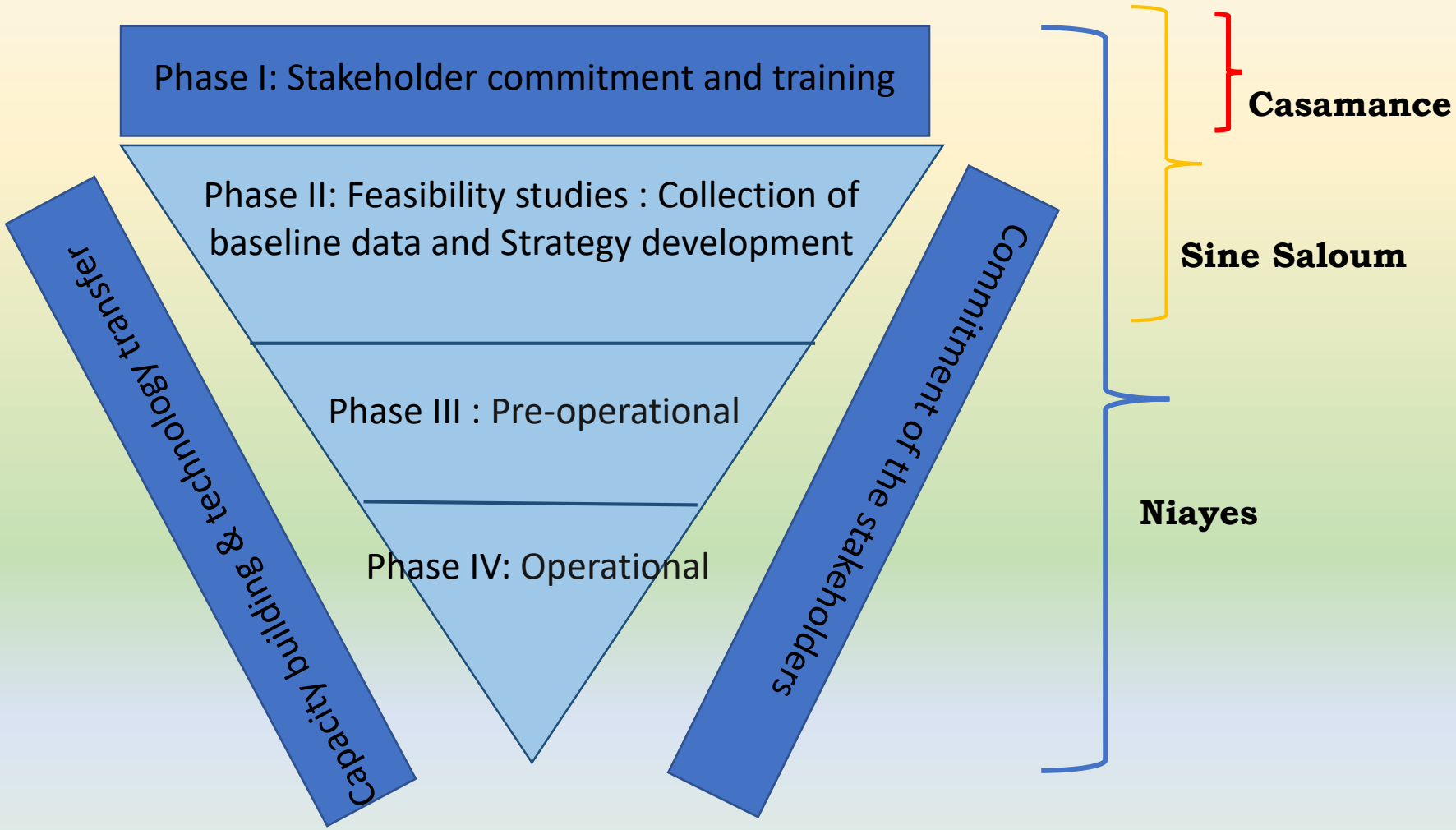



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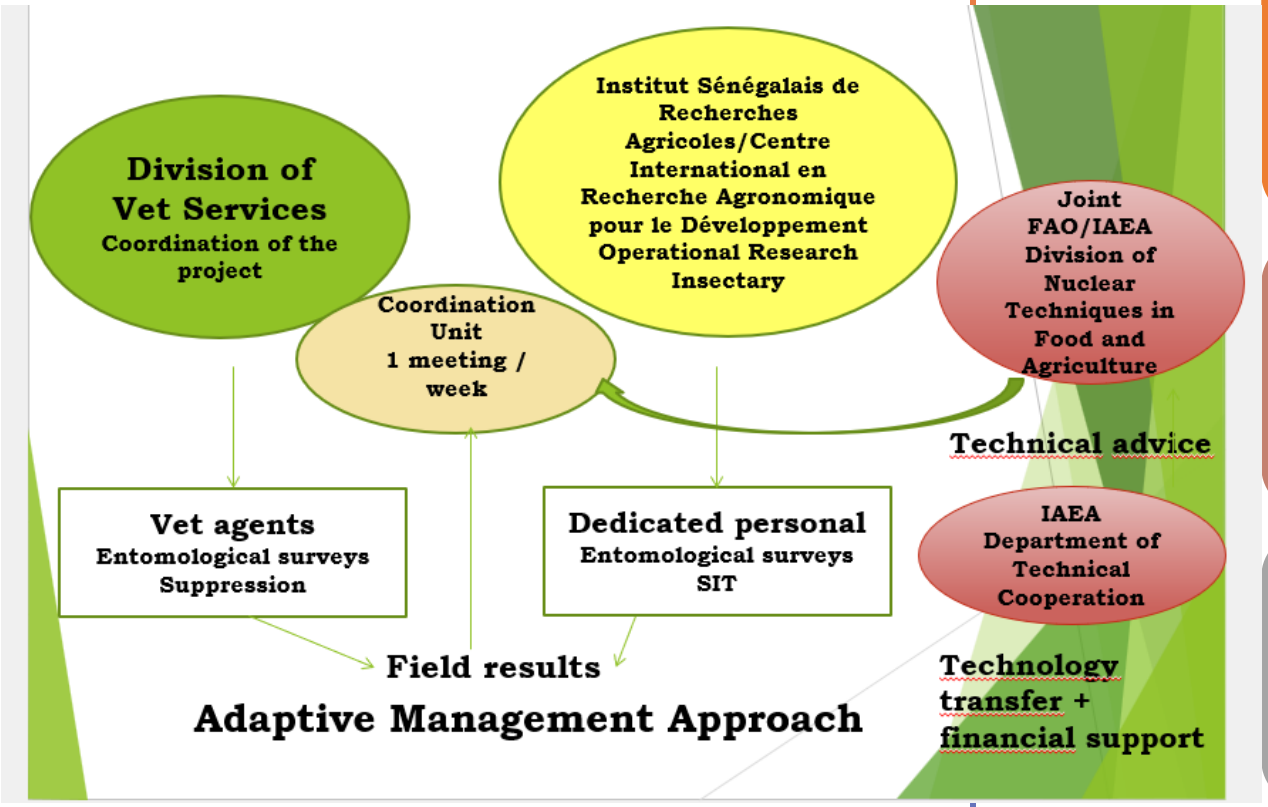
ATTESTATION

Perspectives

- Extension to Sine-Saloum and Casamance;
- Replication of the Niayes model



Sustainability/Good practices



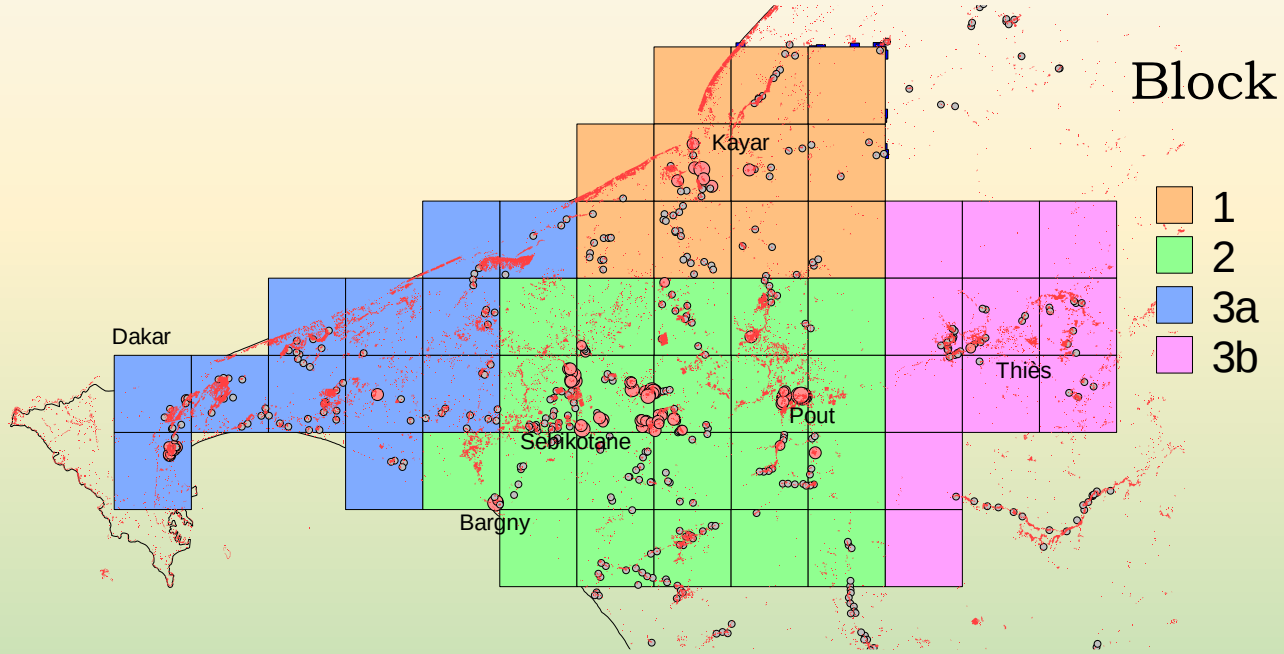
Transparency: access to the database by all institutions represented, timely sharing of results.

Consensual decision-making, based on scientific evidence after analysis of field data (entomological, parasitological and environmental).

External project review.

Sustainability/Good practices

- Each block has a dedicated team responsible for entomological monitoring.
- These teams have also been stable, working on the project from the beginning.
- The coordination team makes regular visits to the field.
- Modest motivation is allocated to the members of the various teams.



Lessons learned

- Permanent awareness-raising among farmers and the general public about the importance of the project, to avoid the destruction of traps in the field (*Community engagement = key to success*)
- Need for minimum fly production capacity to avoid total shortages, as was the case during the Covid-19 pandemic.
- Need to provide sufficient national financial resources to support field activities that are not covered by the PTFs.
- Carry out an exhaustive feasibility study with a view to proposing an appropriate control strategy
- Strong and sustainable partnerships
- It is crutial to carry out socio-economic surveys to demonstrate the impact of the project, in order to facilitate fund raising (3 surveys: 2010, 2014 and 2023).



“From innovation to impact: The Niayes experience shows that sustainable tsetse control is achievable.”

Thank you!