Longitudinal survey of tsetse flies and trypanosomosis in the PATTEC intervention area in Burkina Faso

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Localisation of the study area

- 15 million inhabitants
- Economy relies on
  - Rural sector: 85% of Burkinabese live upon agriculture
  - Mining (gold)
  - Handcraft
Livestock

- Livestock contribution to the Gross Domestic Product (GDP): 14% (MEDEV, 2004)
- 8 million cattle, 20 million small ruminants, 2 million pigs, 1 million donkeys and horses, 30 million fowls
- Food availability and diseases hinder the improvement of livestock
- Trypanosomosis the most important
Current situation T&T in Burkina

- **Situation of HAT**
  - HAT under control, but few imported cases
  - Surveillance is still needed (Courtin et al., 2008)

- **Situation of tsetse**: 1/2 of the country infested by tsetse (Courtin et al., 2010)

- 60% of livestock at risk of AAT (Kamuanga et al., 2001)
Tsetse species in Burkina Faso

- 2 riverine species:
  - G. p. gambiensis
  - G. tachinoides

- 1 savannah species:
  - G. m. submorsitans

- 1 forest species:
  - G. medicorum
The most important T&T control programme in Burkina: eradication

- Intervention area:
  - 96,600 km² divided in 5 blocks
  - 40,000 km² current Intervention area (Block I and block II)

<table>
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<tr>
<th>Blocs</th>
<th>Surface</th>
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<tbody>
<tr>
<td>I</td>
<td>30700</td>
</tr>
<tr>
<td>II</td>
<td>20600</td>
</tr>
<tr>
<td>III</td>
<td>14000</td>
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<tr>
<td>IV</td>
<td>21300</td>
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<td>V</td>
<td>10000</td>
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<tr>
<td>Total</td>
<td>96600</td>
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Background

- Objective: to assess the efficacy of the intervention strategies of PATTEC Burkina
- Longitudinal survey
  - Trypanosomosis: sentinel herds
  - Tsetse flies: sentinel traps
Material and methods

T&T control strategies

- Communities’ awareness
- Display of screens
- Barrier (screens and traps)

Communities’ awareness

Localization of the screens

Display of impregnated screens
T&T control strategies

- Aerial insecticide spraying
- Ground spraying

Aerial insecticide spraying

Ground spraying (Swingfog®)

Insecticide containers
Mass treatment

- **Insecticide treated cattle:**
  - Pour on or spraying
  - Cypermethrin

- **Trypanocicide mass treatment:**
  - Protocol of treatment according to the risk
  - DA and ISM
Longitudinal surveys

- Parasitological survey: 11 sentinel herds
  - 50 cattle/ herd (village)
  - DA treatment
  - Bimonthly follow up

- Entomological survey: 400 sentinel traps
  - Monthly monitoring
  - Identification of flies
  - Rate of reduction
Results and discussion

- PATTEC strategy for T&T control is effective
- Low incidence of trypanosomosis (0.31%)
Suppression of tsetse population

- Evolution of the tsetse population
- Tsetse suppression ADT < 0.4 fly/trap/day,
- To date, ADT < 0.1 fly/trap/day

![Graph showing ADP (flies/day/trap) from Jan 2010 to Nov 2011 with data points for various months and corresponding ADP values: 0.38, 0.12, 0.02, 0.03, 0.15, 0.08, 0.041, and 0.21.](image-url)
PATTEC strategy for T&T control is environmental friendly

- Screens and traps on the Mouhoun River hydrographic network: specific for tsetse flies
- Non-residual ultra-low volumes of insecticides for aerial and ground spraying
- Spraying in synchrony with the life cycle of tsetse: specificity!
Next steps of PATTEC intervention

- From the reduction to the elimination:
  - Mass release of sterile males
  - Barriers to prevent reinvansion of cleared zone

- Sustainability of the assets of the programme
  - Involvement of the beneficiary communities
  - Political commitment
Adapted control strategies of PATTEC

- Good knowledge of the intervention area
  - 2 species of tsetse flies
  - Gallery forest
  - Re-invasion source known
- “Rolling carpet” strategy from north to south
Conclusion

- The elimination of tsetse in BF is achievable
  - Political willingness to support PATTEC till the complete elimination of tsetse
  - Sustainability of the assets of PATTEC

- Regional concerted actions
  - Tsetse Without Borders
  - Capacity building
Future prospects

- Control of mechanical vectors
- Rational chemotherapy to avoid or delay multi-drug resistance
- Importance of environmental factors
  - Good management of game reserves and classified forest
  - Conservation of biodiversity
THANK YOU!

A good tsetse is the dead one

Web site: www.pattec.bf