RODENT DAMAGE ASSESSMENT ON CROPS OF RICE AND MAIZE IN THE KISANGANI REGION(Democratic Republic of the Congo)

Amundala D.[1], Dudu A.[1], Leirs H.[2,3] and Verheyen E [2,4]

(1) Laboratoire d'Ecologie et de Gestion des Ressources Animales (LEGERA), Université de Kisangani B.P. 2012, Kisangani, RDC
(2) Evolutionary Ecology Group, University of Antwerp, Groenenborgerlaan 171, B-2020 Antwerpen, Belgium
(3) Danish Pest Infestation Laboratory, University of Aarhus, Department of Integrated Pest Management, Skovbrynet 14, DK-2800 Kongens Lyngby, Denmark
(4) Royal Belgian Institute of Natural Sciences /Vertebrate Department/Vautierstraat 29, 100- Brussels/Belgium

Université de Kisangani

Universiteit Antwerpen

Introduction

• Kisangani is located in Northeast of RDC. This region was originally forest (Lubini, 1996).

• Agriculture is the basis of livelihood for more than 80% of the rural population and rice and maize are performed (FA0, 2002)

Forest destruction

Slash and burn agriculture

Industrial logging

Habitat cultivated

Problem: Promotes facility rodents pest of savannah region

Manufacturing of charcoal

Collection of firewood

Objectives:

- **To asses damage caused by rodents**

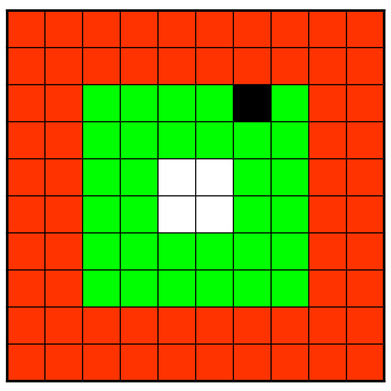
-**To identify periods when crop of corn and rice are attacked**

- To propose strategies to cope with this issue

Methods

A 1 ha field was divided into three sections consisting of resp. 64, 34 and 4 squares of 10x10 m.

Each square 10 x10 m was divided into 1x1m sections where we counted the number of cut rice and corn stems

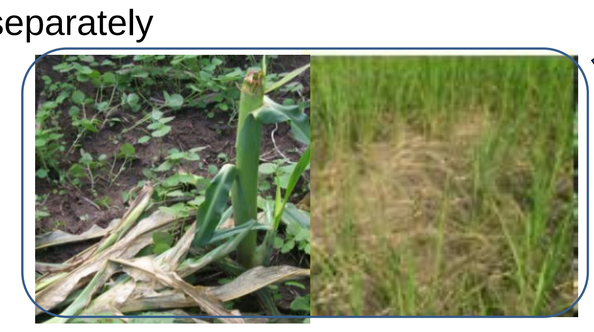


Rice: 4 seeds/ hole, holes sepated by 25 cm

Maize: 3 seeds / hole, holes sepatarated by1 m

• Cut stems were counted during all phenological stages of crops (EPC)

• Damage caused by *Thryonomys swinderianus* (TS) and those of other rodents (OR) were evaluated separately



For rice, in each stratum, damage was evaluated through the formula:

% st = (axb/c) x (100/N)

For maize, damage was evaluated as : % st = n x100 /N)

Legend : a : number of cut stems; b : number of sub-sampling units destroyed (1mx1m); c: total number stems; N: total number of sub-sampling, n :

Final evaluation was done one week before harvest

Results

Rice damage assessment

	2006				2007			
	SC1		SC2		SC1		SC2	
EPC	TS	OR	TS	OR	TS	OR	TS	OR
2&3	12,9	1,1	14,1	0	9,3	0,1	11,1	0,7
Total	12,9	1,2	14,3	1,9	9,4	3,7	11,1	7,9
E.F.	7,4	0,2	13,1	1,9	8,8	2,1	9,4	6,7

Yield loss : 22,6% **Yield loss : 26,9%**

Maize damage assessment

	2006				2007			
	SC1		SC2		SC1		SC2	
EPC	TS	OR	TS	OR	TS	OR	TS	OR
2&3	8	1,7	13,1	0	13,5	0,1	15	0,0
Total	9	6,2	14,4	5,3	13,5	3,6	15,0	4,8
E.F.	7,8	2,1	10,6	4,9	9,8	1,9	13,5	2,8

Yield loss : 25,5% **Yield loss : 27,97%**

Legend : SC1: 1th cultural season; SC2 : 2th cultural season; EPC: Crops phenological stages; 1: sowing 2: growth; 3: fructification; 4: Maturation , TS: *Thryonomys swinderianus*; OR: Other rodent ; EF: Final evaluation

Extrapolation for the city of Kisangani in 2007: cultivated area: corn 5169 ha, production 2587 tons (Eastern Province, Inspection Agriculture, 2010), yield loss of 27.9%
> lost crop: 1001.07 T

Rice 2007: planted area: 6133 ha, producing 4292T (Eastern Province, Inspection Agriculture, 2010), yield loss of 26.9%
> Lost crop: 1579.4 T

Corn 1kg = U.S. $ 0.5, 1kg rice = $ 1;
Loss rice & corn, nearly 2 million U.S. $ in 2007

Acknowledgments

- Support financial by Flemish Inter-University Cooperation – University Development Council VLIR-UOS (Eigen Project with the University of Antwerp)
- We are grateful to our colleagues of LEGERA and all field technicians.

References:

Inspection Provinciale de l'Agriculture (Province Orientale), 2010. Rapport annuel de production agricole en Provinciale Orientale. Bureau Provincial de l'Agriculture, Kisangani.

Discussion & Conclusions

• Damage by rodents is a major cause of the reduced rice and maize production in the Kisangani region.

• In 2007, damage caused by rodents on rice and maize is estimated at approximately $ US 2 millions in Kisangani . Damage appears to become more important in repeatedly used fields.

• Most of the damage was caused by *Thryonomys swinderianus* was observed during the growth and fructification of the crops.

• *Thryonomys swinderianus* is a savanna species, in forested areas, it mainly occurs in fallow land: planting forest trees in and around fields reduces the damage.

• Finally, use of dogs to hunt *Thryonomys swinderianus* during growth and fructification of crops will reduce the damage caused by this rodent.