

Development of Alert Systems on Sanitary and Environmental Risks Related to Pesticides of the Niayes Area in Senegal

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INTRODUCTION

This study of the level of contamination of soils by pesticides in the market gardening perimeters of the main horticultural zone of Senegal, commonly known as the NIAYES zone, is a decision-making tool and serves the safety of food and Environmental Chemical Safety and sanitary security.

OBJECTIVES

Research has been carried out on pesticides, most of which are banned by regional legislation, namely the Sahelian Committee for Pesticides: Bifenthrin, Chlorpyrifos, Cypermethrin, Deltamethrin, Dicofol, Esfenvalerate, Fenvalerate, Heptachlor, Lambda-Cyhalothrin and Malathion (these pesticides are more used in the horticultural zone) and the search for persistent organic pollutants (Aldrin, DDT, Dieldrin and Endrin). Thus a baseline situation by Geographic Information System (GIS) of environmental chemical risk and sanitary quality related to chemical soil synthetic pesticides, in the area was established for 2016 and 2017. The study was conducted in 2016 and 2017 and involved 90 soil samples.



Fig. 1: 2016

analyzed by standard extraction methods and using gas chromatography with mass detector for the identification and quantification using standard solutions of pesticides. The ISO 10382 method for extracting and purifying soil samples was used. The results obtained are geo-referenced on the map to indicate or inform about the contaminated localities.

MAIN RESULTS

The search for about twenty pesticides in the soil gave the following results.

The results are recorded as follows:

- For the reference situation (2016) at the production site level: 67% of the soil samples are contaminated;
- For the second year (2017), the same research was conducted and gave the following results: 58% of the soil samples are contaminated.

In view of the results, we note:

- A situation of soil contamination, which does not improve from 2016 to 2017. the presence of pesticides not authorized by the Sahelian Committee of Pesticides (CSP), in soil samples.
- These results represented on GIS give a map of the environmental

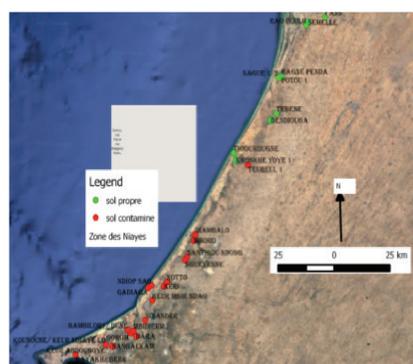


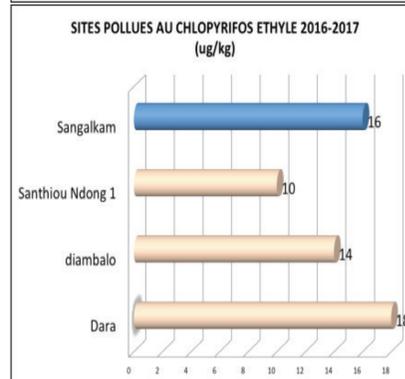
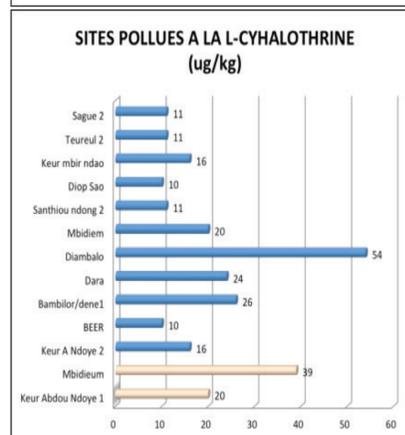
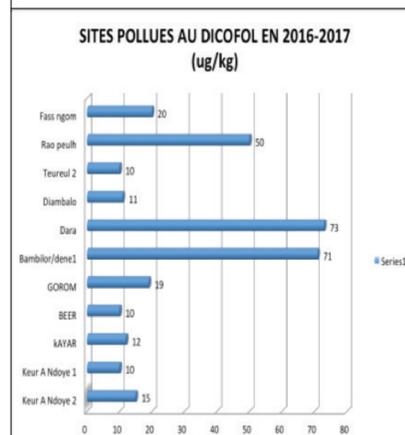
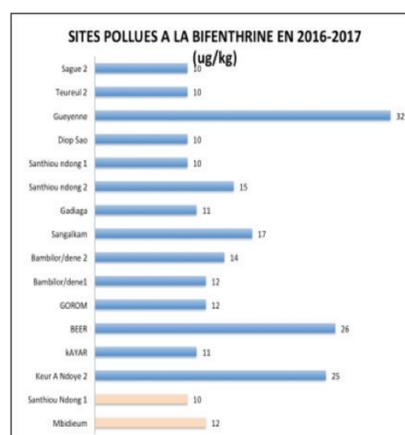
Fig. 2: 2017

METHODOLOGY

Thus for 2016 we have 45 soil samples and 45 samples for 2017. Field missions are deployed at the level of the cultivation plots for the collection of soil samples.

These samples transported to the CERES-Locustox laboratory are

pollution of the Niayes area. The red color shows the areas where the soil has a high pesticide content, the green shows the areas where the soil does not have a high content.



CONCLUSION

The establishment of the reference situation on the environmental chemical risk (soil) in the Niayes area allowed us to arrive at the following observations: the presence of pesticides in the soil samples.

PERSPECTIVES

- Make available the assistance of agricultural technicians to support producers in identifying crop pest and disease problems and assisting their management with the approved and most appropriate commercial specialties;
- Set up a surveillance and repression brigade to put an end to the circulation of pesticides not authorized by the Sahelian Committee of Pesticides, which are heavily regulated in the country. International level by the Stockholm and Rotterdam Conventions;
- Strengthen awareness-raising, information and even training activities on the rational use of pesticides. It is with all this that the challenges will be met. In addition, and mainly for this reason, in order to have global food and health security, facilitate the adaptation of the most vulnerable rural populations to climate change, and have a good functioning of the ecosystem services that ensure the supply of clean water, prevention of biodiversity and long-term storage in soils, it is necessary to set up tools to fight against the degradation of production bases (Earth, Water, Energy and Biodiversity).

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2 - 4 MAY 2018 | FAO - ROME, ITALY

