

A Market Survey of Fraudulent Pesticides on Sale in Mali

Steven Haggblade, Naman Keita, Abdramane Traoré, Pierre Traoré,
Amadou Diarra and Veronique Thériault

Objectives

Pesticide markets have grown rapidly in West Africa over the past decade and a half, increasing over sevenfold since the year 2000 (Haggblade et al. 2019). Because regulatory monitoring and enforcement capacity has not kept pace with this rapid market growth, sales of fraudulent pesticides have increased as well (Mir Plus 2012). As a result, Malian farmers complain regularly about low and variable pesticide quality (Assima et al. 2017).

This policy brief reports the results of a recent survey designed to quantify the market share of fraudulent pesticides among total pesticide sold in Mali. Fraudulent pesticides include both unregistered generic products as well as counterfeits.

Methods

In June 2019, at the beginning of the 2019/20 cropping season, the research team conducted a survey of agro-dealers in 10 different markets across Mali. The markets selected included five permanent markets as well as five weekly markets. This selection aimed to capture a range of locations and cropping systems representative of the major agricultural production zones in Mali (Table 1).

| Permanent markets | Weekly markets |
|-------------------|-------------------|
| Bamako | Kouri (Burkina be |
| Kati | Massigui |
| Koutiala | Ouelessebouyou |
| Niono | Yanfolila (Guinea |

Source : Haggblade et al. 2019b.

Key Findings <Garamond point 11 or 12 Bold>

- All pesticide products, before they can be legally sold in Mali, must be tested, reviewed and registered by the Sahel-wide regulatory body, the Comité Sahélien des Pesticides (CSP).
- A survey of agricultural input retailers conducted in June 2019 in 10 markets across Mali finds that 26% of all pesticides sold are unregistered by the CSP and therefore illegal.
- Among informal retailers, levels of fraud rise to 31% of total pesticide volumes.
- The high level of unauthorized pesticides on sale in Mali means that farmers frequently use pesticides that the CSP considers harmful to human health an/or the environment.
- In order to protect farmers, Malian stakeholders will need to improve post-registration enforcement through expanded monitoring of markets and pesticide products on sale.

On arrival in each market, the survey team conducted a listing of all retailers selling farm inputs that day, both formal and informal. From this listing, they selected a maximum of 10 formal retailers and 5 informal retailers at random for interviews. No permanent retailers operated in three of the markets. As a result, the team interviewed 122 retail establishments, 72 formal and 50 informal.

A team of two enumerators from Mali’s Observatoire du Marché Agricole (OMA) then visited each of the selected retailers to administer a two-page survey questionnaire. The survey protocol called for the retailer to first display a sample of each herbicide product on sale that day and to place the bottles (or dry granule packages) along the display counter in order of sales volume. While one enumerator noted down the name, price and sales percentage of each product, the

other enumerator photographed the front label of each product in turn (Figure 1). The survey team then repeated this procedure with all insecticide products and, finally, with all fungicides and other pesticide treatments.

Figure 1. Possible counterfeit pesticide products on sale in Mali



Following completion of the field interviews by OMA’s enumerators, the MSU research team worked to identify the active ingredients and registration status of each product sold. To make these assignments, our team reviewed photographs, survey results and the CSP listing of authorized pesticide products in order to determine the active ingredients in each product as well as the registration status of each item on sale.

Fraudulent pesticides include both unregistered generic products as well as counterfeits. Counterfeiters strive to pass off their products as originals by using packaging virtually identical to well-established registered brands (Figure 1). In contrast, suppliers of unregistered pesticides produce low-cost generic brands with a variety of inventive names and with packaging that imitates that used by registered products containing the same active ingredient (Figure 2). Suppliers of the unregistered pesticides short-circuit regulatory controls in order to avoid the significant financial costs associated with testing and registration requirements.

Identification of unregistered products is relatively straightforward. In contrast, counterfeits are very difficult to identify with certainty, even by the authorized distributors, particularly without laboratory testing. Given the prohibitive cost of laboratory testing, and the limited resources available for this study, our team has focused solely on quantifying unregistered pesticides, which we can measure with some confidence. By omitting the additional unknown level of counterfeits, these results provide a lower bound on fraudulent pesticide volumes in Mali.

Results

Herbicides account for the vast majority of pesticide volumes products sold in Mali, accounting for about 75% of total volumes, while insecticides make up another 20% of sale volume, and fungicides and other pesticides (nematicides, rodenticides, etc.) account for the remaining 5% of sales. Among informal retailers, the dominance of herbicide sales jumps to 85% of total sales (Table 2).

| | Pesticide products | | | Total volume |
|-----------------|--------------------|--------------|-------|--------------|
| | herbicides | insecticides | other | |
| Total sample | 75% | 20% | 5% | 100% |
| Retailer status | | | | |
| formal | 68% | 25% | 7% | 100% |
| informal | 85% | 12% | 3% | 100% |

Source: Haggblade et al. (2019b).

Unauthorized pesticides – that is, products not registered by the CSP – account for 26% of total pesticide volumes sold (Table 3). This level of unregistered pesticide volumes in Mali aligns closely with averages across West Africa. A study commissioned by the CSP in 2012 measured wide variation in the levels of fraudulent pesticides across countries with the 8 largest pesticide markets in the region. Their results, when weighted by market size, suggest that fraudulent pesticides account for roughly 34% of total pesticide sales in West Africa, 27% of them unregistered products plus another 7% counterfeits (MirPlus 2012; Haggblade et al. 2019). The 26% figure for unregistered pesticides in Mali corresponds closely to the 27% average estimated for all of West Africa. By omitting the additional unknown level of counterfeits on sale in Mali, these results provide a **lower bound** on fraudulent pesticide volumes currently circulating in Mali.

| Pesticide category | CSP registration status | |
|-----------------------|-------------------------|-----|
| | yes | no |
| Herbicides | 76% | 24% |
| Insecticides | 63% | 37% |
| Fungicides and others | 81% | 19% |
| Total pesticides | 74% | 26% |

Source: Haggblade et al. 2019b.

Figure 2. Registered vs. unregistered pesticides



Out of the 26% of pesticides unregistered by the CSP, 5% come from Ghana and 2% from Côte d'Ivoire, from where traders smuggle them across the border into Mali. The remaining 19% of fraudulent pesticides circulating in Mali's markets are unregistered anywhere.

Among formal retailers, the share of unregistered pesticides falls to 23% of total volumes, while among informal retailers the share of unregistered pesticides accounts for 31% of total volumes sold. This suggests weak enforcement and regulatory compliance, particularly among informal, itinerant pesticide retailers.

Policy Implications

The CSP authorizes pesticides for sale based on their efficacy and safety. The high level of unauthorized pesticides on sale in Mali means that farmers frequently use pesticides that the CSP considers harmful to human health and/or the environment. Moreover, recent laboratory analyses indicate that unregistered products tend to be under-dosed, containing 8-10% less active ingredient than pesticides duly registered by the CSP (Haggblade et al. 2019).

In order to protect farmers, Mali's responsible enforcement agency will need to step up enforcement efforts. Although the CSP registers pesticides for sale in Mali and 8 other Sahelian countries, in a single one-stop-shop, post-registration enforcement remains the responsibility of national authorities. In Mali, the Direction Nationale de l'Agriculture (DNA) holds responsibility for monitoring pesticide markets, ensuring product quality and compliance with regulatory decisions. Given its acute resource constraints, DNA will likely need support from other stakeholders with a vested interest in combatting fraudulent pesticides. These potential allies include farmer groups, researchers and Mali's many honest traders who supply only registered products and who suffer significant commercial losses at the hands of illegal, fraudulent products smuggled in from outside of Mali.

Many of the fraudulent pesticides on sale in Mali are smuggled in from neighboring countries, primarily Ghana and Côte d'Ivoire. This suggests that controlling fraudulent

pesticides in Mali will require regional collaboration and outreach with neighbors across the region.

References

- Assima, Amidou; Keita, Naman; and Kergna, Alpha Oumar. 2017. Rapport de restitution des résultats de recherche aux producteurs au Mali. Research Report 39, FTF Innovation Lab for Food Security Policy. East Lansing, MI: Michigan State University.
- Haggblade, S., Diarra, A., Jiang, W., Assima, A., Keita, N., Traoré, A. and Traoré, M. 2019a. Fraudulent pesticides in West Africa : a quality assessment of glyphosate products in Mali. *International Journal of Pest Management*. <https://doi.org/10.1080/09670874.2019.1668076>.
- Haggblade, S., Keita, N., Traoré, A., Traoré, P., Diarra, A. and Thériault, V. 2019b. A market survey of fraudulent pesticides sold in Mali. Research Report xx, FTF Innovation Lab for Food Security Policy. East Lansing, MI: Michigan State University.
- MIR Plus. 2012. Evaluation de la qualité des pesticides commercialisés dans huit pays de l'espace CEDEAO. Abuja and Abidjan : ECOWAS and UEMOA.

About the Authors

Steven Haggblade blade@msu.edu, Professor Emeritus, Department of Agricultural, Food and Resource Economics, Michigan State University, East Lansing, MI, USA..

Naman Keita namankeita2@yahoo.fr, is Research Coordinator for the Projet de Recherche sur les Politiques de Sécurité Alimentaire au Mali (PRPoSAM) based in Bamako, Mali.

Abdramane Traoré traoreabdramane01@gmail.com, Senior Advisor to the Projet de Recherche sur les Politiques de Sécurité Alimentaire au Mali (PRPoSAM) of MSU, based in Bamako, Mali.

Pierre Traoré pirtraore@yahoo.fr ou pirtraore@gmail.com, National Coordinator of the Observatoire du Marché Agricole (OMA), based in Bamako, Mali.

Amadou Diarra diarraamadou947@gmail.com is an agronomist and consultant to MSU. He is the former permanent secretary for the Comité Sahélien des Pesticides (CSP).

Veronique Thériault theria13@anr.msu.edu is Assistant Professor of international development in the Department of Agriculture, Food and Resource Economics, Michigan State University, East Lansing, MI, USA.

The authors wish to thank Pierre Traore and his survey staff at the Observatoire du Marché Agricole (OMA) who administered this survey instrument and fastidiously photographed every product formulation on sale at each of 120 agro-dealers across Mali. Without their careful documentation and their long relationship with the retailers, this study would not have been possible. Pierre Traoré and Naman Keita conducted enumerator training and monitored the fieldwork in real time. We are grateful for their efforts to ensure quality control of these data. Financial support for this study came from USAID/Mali under the Projet de recherche sur la politique de sécurité alimentaire au Mali (PRPoSAM) financed through Cooperative Agreement no. AID-688-A-16-00001 under the Innovation Lab for Food Security.

This research is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the Feed the Future initiative. The contents are the responsibility of study authors and do not necessarily reflect the views of USAID or the United States Government

Copyright © 2019, Michigan State University. All rights reserved. This material may be reproduced for personal and not-for-profit use without permission from but with acknowledgement to MSU.

Published by the Department of Agricultural, Food, and Resource Economics, Michigan State University, Justin S. Morrill Hall of Agriculture, 446 West Circle Dr., Room 202, East Lansing, Michigan 48824