



GENERIC PESTICIDE UNDERSTANDING BY SMALL HOLDER FARMERS IN FOGERA DISTRICT, SOUTH GONDAR ETHIOPIA

GETENEH MITKU^{1*}

¹Ethiopian Institute of Agricultural Research, Fogera National Rice Research and Training Center Bahir Dar, Ethiopia.

AUTHOR'S CONTRIBUTION

The sole author designed, analyzed, interpreted and prepared the manuscript.

Received: 13 September 2021

Accepted: 27 November 2021

Published: 02 December 2021

Original Research Article

ABSTRACT

The preliminary survey was carryout to assess the farmers understanding about the generic pesticide (single active ingredient with different trade name). Total of 45 farmers participated in this study through interviews. Three commonly used pesticides by smallholder in the locality with different active ingredients were presented to the farmers to evaluate their understanding about the similarity and importance of generic pesticide. Open ended questioner was used. Those commonly used pesticides presented to the farmers are 1. Dimethoate (Agro-Thoate 40%EC, Ethiothoate 40%EC, Dimethoate 40 % EC, Dimeto40%EC and Roger) 2. Lambda-cyhalothrin (Karate 2.5% EC, Lamdex 5% EC, Helerat 50EC, Lamdex 5% EC, Farate 3. Profenofose (Ajanta, Profit 720EC, Polytrin315EC, and Selecron 720% EC). In this study from 45 farmers who asked about the generic pesticide, the similarity of Lamdex 5% EC, and Farate, 43 out of 45 farmers did considered these insecticides as different and they used this insecticide for different pest control. Similarly over 96% of the farmers did not understand the similarity among Ajanta, Profit 720EC, Polytrin315EC, and Selecron 720%EC, and 91% did not understand the similarity among Agro-Thoate 40%EC, Ethiothoate 40%EC. This misunderstanding of farmers about similar pesticide with different trade name contributes for ineffective pest control, farmers used single active ingredient (with different trade name) for different pest control due to miss understanding. Hence, the government and non government other concerned body should create enough awareness regarding to similarity of for smallholder farmers. Pesticide manufacturers, should also be responsible for pest for this action.

Keywords: Generic pesticide; pesticide trade name; pesticide active ingredient.

1. INTRODUCTION

Pesticides are important agricultural inputs in crop production processes worldwide. In many countries, the pesticide sector is an important contributor to national income, employment and international trade [1]. Countries are facing increasing national and global concerns about pesticide use and interrelated

risk on the environment and human health. This negatively impacted on agricultural production and reduced agricultural sustainability (Pesticides Action Network (PAN) UK [2] Williamson et al. [3] and World Health Organization [4].

There are challenges to pesticide registration, distribution and use in Ethiopian agriculture.

*Corresponding author: Email: gete205m@gmail.com;

According to PRRP [5] and MoA [6], there are now 302 commercial pesticides registered and imported in the country, representing over 160 active ingredients, and the volume of imports increases from year to year. Among these, the largest proportion falls under class II of the WHO hazard classification system [6]. Ethiopia has no industry to produce active ingredients and only one local pesticide formulating company, Adami Tulu Pesticide Company. This company uses imported active ingredients and solvents to formulate a portion of the pesticides required in Ethiopia. Between 2000 and 2012, the company produced 17,662 metric tons of pesticides for agricultural and public health purposes. Of this production, public health products for vector control accounted for a significant share: 8,858 metric tons [6]. The pesticide market is therefore heavily dependent on imports by local agents representing international manufacturing/formulating companies [6]. These companies import pesticides mainly from Germany, Switzerland, France, Belgium, the USA, Israel, China and India. Some pesticides are imported from other African countries such as Kenya and South Africa [7]. The increase in imports and use of agrochemical inputs has followed the expansion of the crop production area in Ethiopia and contributed to yield increases.

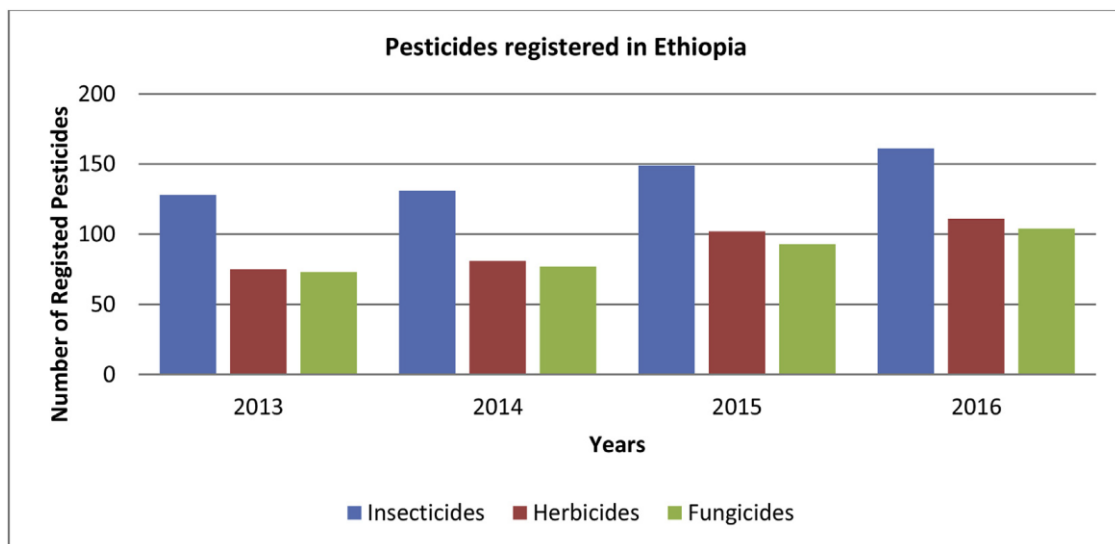
The Environmental Protection Authority (EPA) of the Ethiopian government reported that the country started to import pesticides in large quantities in the 1960s for the use on government owned agricultural farms and for malaria vector control (about 3800 tonnes per Ethiopia) [8]. Twenty organizations were involved in the import of the pesticides within the country, whereas only one local factory was

formulating different groups of pesticides. This factory formulated 1500 tonnes of powder as well as different liquid formulations of both malathion and endosulfan, and imported the active ingredients and solvents from foreign countries mainly from Italy and Israel [8]. The Ministry of Agriculture of Ethiopia documented a trend in the number of pesticides (individual formulations) registered from 2013 to 2016. According to this document, the number of pesticides (insecticides, herbicides, and fungicides) registered increased from 276 to 376 during that period.

In the recent past, the misuse of pesticides was a common problem mainly because farmers lacked appropriate knowledge about pesticides and there was no effective administrative measure governing their use [9].

A generic pesticide is manufactured and sold by a company other than the original manufacturer, but contains the same Active Ingredient(s). Generic pesticides are typically “off-patent”, meaning their original patent has expired. Thousands of farmers use generic products on hundreds of crops. Recently, increasing numbers of generic pesticides have become available for use on crops. It is important to note that generics may have a lower or different concentration of active ingredients, which should be factored into the cost of use [10].

Generic products are not always identical, so it’s critical that farmers read their product labels to understand the differences. Understanding the conversion rates is the key to effectively using generics without losing out on performance.



Pic. 1. Pesticides registered in Ethiopia from 2013 to 2016 (Ministry of Agriculture, 2016)

The cost of development, registration and commercialization of new products has increased so much in recent years; companies may collaborate on some projects. So, when the product is finally released into the market, each company has the new technology available for sale.

Because generic manufacturers did not pay the cost of developing the pesticide, they are able to sell the generic products cheaper than the brand name alternative. Regardless, of what company makes the herbicide, the core issue is whether generic herbicides are as good as brand-name ones. Thus, generic and brand name herbicides should have the same performance. However, generic and brand name herbicides are not required to have the same inactive ingredients.

These additives can make a difference in the performance of the product you are buying and are usually lumped in the labels as inert ingredients with no additional information revealed to the buyer. Nevertheless, products are extensively tested before release, and differences should be minimal unless one of the inactive ingredients is missing altogether.

Another difference between generic and brand name herbicides could be the physical form of the active ingredient. Although they have the same chemical formula the elements of the molecules are arranged slightly differently; they are "isomers" of each other. The concept of isomers is easy to be understood if we think in a pair of gloves. Generic products tend to perform as good as their brand-names counterparts, provided that they have the same inactive ingredients and isomer structure. When evaluating whether generic products fit your farm, you should compare their cost, safety and relative performance.

2. MATERIALS AND METHODS

2.1 Description of the Study Area

Fogera is one of the Woredas in Amhara region of North West Ethiopia. Fogera is part of the south Gonder Zone. The district is bordered on the south by Dera, on the west by Lake Tana, on the north by the Reb which separates it from Kemekem, on the northeast by Ebenat, and on the east by Farta. Wereta city is the administrative center for this Woreda. The altitude of this woreda ranges from 1774 to 2415 meters above sea level. Rivers in Fogera include the Gumara and the Reb. A survey of the land in Fogera shows that 44.2% is arable or cultivable and another 20% is irrigated, 22.9% is used for pasture, 1.8% has forest or shrubland, 3.7% is covered with water, and the remaining 7.4% is considered degraded or other.

Fogera has 55 kilometers of dry-weather road and 67 kilometers of all-weather road, for an average of road density of 111 kilometers per 1000 square kilometers.

2.2 Sampling Procedure

Total of 45 farmers participated in this study through interviews. Three commonly used by smallholder area in the locality with different active ingredients were presented to the farmers to understand their understanding about the similarity and importance of generic pesticide. Open ended questioner was used. Those commonly used pesticides are 1. Dimethoate (Agro-Thoate 40%EC, Ethiothoate 40%EC, Dimethoate 40 % EC, Dimeto40%EC and Roger) 2. Lambda-cyhalothrin (Karate 2.5%EC, Lamdex 5%EC, Helerat 50EC, Lamdex 5% EC, Farate 3. Profenofose (Ajanta, Profit 720EC, Polytrin315EC, and Selecron720%EC).

3. RESULTS AND DISCUSSION

3.1 Generic Pesticide

In this study from 45 farmers who asked about the generic pesticide, the similarity of Lamdex 5% EC, and Farate, 43 out of 45 farmers (95.55) did considered these insecticides as similar and they used this insecticide for different pest control (Table 1). Similarly over 96% of the farmers did not understand the similarity among Ajanta, Profit 720EC, Polytrin315EC, and Selecron 720%EC, and 91% did not understand the similarity among Agro-Thoate 40%EC, Ethiothoate 40%EC. Furthermore, Mancozeb 80% WP is available on the market under different trade names, like Unizeb, Fungozeb, and Indom. From the current preliminary study we understood, the presence of double/triple registration of pesticides with the same active ingredient under different commercial or brand names, generic pesticides. Farmers did consider those insecticides as different and they used this insecticide for different pest control.

This presence of generic pesticide is being cause of confusion in pesticide utilization by small holder farmers. Generic pesticide (cheaper than the name brand products) with different trade names availability in the market considered as advantage for farmers. In contrast, generic pesticide, in the study area has negative impact on small holder farmers' pesticide utilization and it may be cause for pesticide ineffectiveness. Generic pesticide advantage is the lower prices and different alternative of pesticides might be seen as positive for users. But, the illiterate farmers confusion for differentiation of pesticide and they considered as different pesticide, as a result they

used one active ingredient for different pests. These results implied and suggest that generic pesticide is one of the causes for pesticide in confusion for

developing country smallholder farmers. Hence, generic pesticide manufacturer should give awareness creation for smallholder farmers.

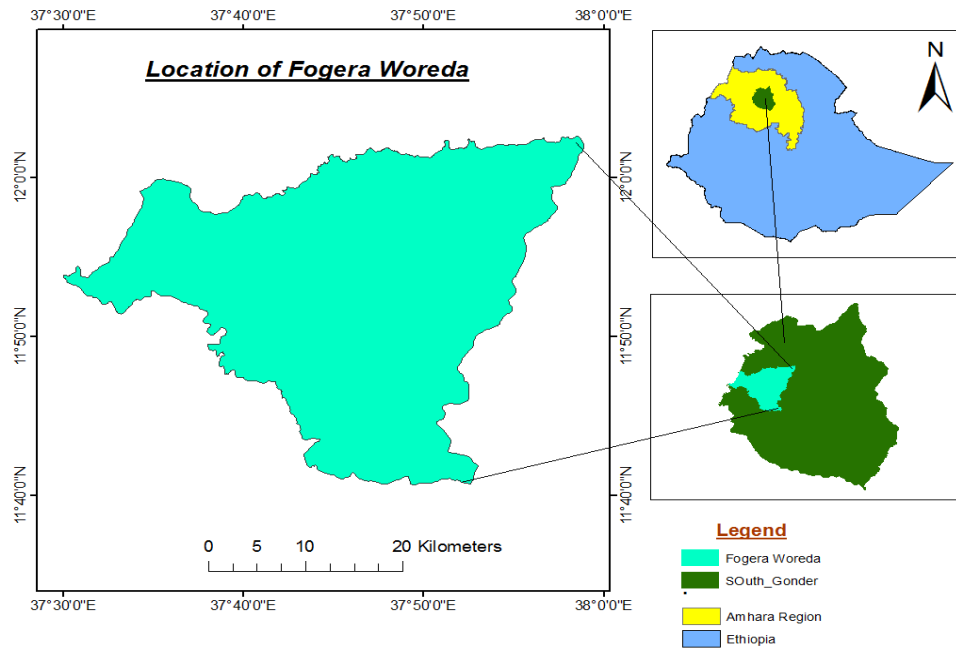


Fig. 1. Location map of the Fogera District

Table 1. Understanding of farmers on generic pesticides

Trade name	Active ingredient	WHO Toxicity classification	Classification by Main Group	Respondents N=45 (%)
Insecticide				
Agro-Thoate 40%EC	Dimethoate	II	Organophosphate	93.33
Ethiothoate 40%EC	Dimethoate			
Dimethoate 40 % EC	Dimethoate			
Dimeto40%EC	Dimethoate			
Roger	Dimethoate			
Karate 2.5% EC	Lambda-cyhalothrin	II	Pyrethroid	95.55
Lamdex 5% EC	Lambda-cyhalothrin			
Helerat 50EC	Lambda-cyhalothrin			
Lamdex 5% EC	Lambda-cyhalothrin			
Farate	Lambda-cyhalothrin			
Best	Lambda-cyhalothrin			
AJanta	Profenofos	II	Organophosphate	97.77
Profit 720EC	Profenofos			
Polytrin315EC	Profenofos			
Selecron 720%EC	Profenofos			
Comex	Profenofos			

The World Health Organisation (WHO) classification is most commonly used, Ia “Extremely Hazardous”, Class Ib “Highly Hazardous”, Class II “Moderately Hazardous”, Class III “Slightly Hazardous”, [no class] “Unlikely to Present Acute Hazard in Normal Use.

4. CONCLUSION

From the current assessment result, increasing of the generic pesticides availability in Ethiopia has advantages and disadvantage for smallholder illiterate farmers. Farmers did consider generic pesticides (single active ingredient with different trade name) insecticides as different and they used this insecticide for different pest control. Generic pesticide presences or availability in the study area gives alternative option for farmers, or the lower prices of generic pesticides might be seen as positive for smallholder farmers. But, availability generic pesticides are causing confusion in pesticide use for smallholder farmers. Hence, the government and non government organization and other concerned body should create enough awareness regarding to similarity of different pesticide with active ingredients (generic pesticide) smallholder farmers. Pesticide manufacturers should also be responsible for this action.

ACKNOWLEDGEMENT

This paper is part of farmers’ Perception and Practices on Management of vegetable pests and Pesticide use practice in 2020, south Gondar Ethiopia which is funded by EIAR.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCE

1. Hoi PV, Mol APJ, Oosterveer P. State governance of pesticides use and trade in

- Vietnam, NJAS – Wageningen Journal of Life Sciences. 2013;67:19-26.
2. PAN-UK. Living with poisons, problems of endosulfan in West African cotton growing systems. Pesticide News 74. London: PAN UK; 2006.
 3. Williamson S, Ball A, Pretty J. Trends in pesticide use and drivers for safer pest management in four African countries. Crop Protection. 2008;27:1327-1334.
 4. World Health Organization (WHO) Guidelines on public health pesticide management policy for WHO African region; 2011. Available: whqlibdoc.who.int/publications/2011/9789241501231_eng.pdf.
 5. PRRP. Workshop on post registration and sustainability of pesticide management: APHRD of MoA PRRP- Ethiopia, held on June 21, 2012, EIAR, Hiruy Hall, Addis Ababa; 2012.
 6. MoA. National pesticide management strategies in Ethiopia. APHRD of MoA. Unpublished official report; 2013.
 7. MoA. Pesticide imported for flower production. PHRD of MoA, Unpublished official reports; 2014.
 8. Environmental protection authority (EPA)/US. Pesticide registration; 2016. Available: <https://www.epa.gov/pesticide-registration/about-pesticide-registration>. Last accessed 24-5-2016.
 9. Montana State University in Bozeman. Generic vs. Brand Name Products, Are All Herbicides Equal?; 2021. Available: <https://www.montana.edu/news/2392/generic-vs-brand-name-products-are-all-herbicides-equal>
 10. Pretty J, Toulmin C, Williams S. Sustainable intensification in African agriculture. International Journal of Agricultural Sustainability. 2011;9 (1):5-24.