

IITA

Transforming African Agriculture



CGIAR

SAVE THE NIGERIAN FARMER AND ENVIRONMENT FROM PARAQUAT TOXICITY

A MESSAGE FOR THE DEREGISTRATION OF
PARAQUAT IN NIGERIA BY MEMBERS OF
COALITION AGAINST PARAQUAT (CAP)

*"Never doubt that a small group of thoughtful,
committed citizens can change the world.
Indeed, it is the only thing that ever has".
– Margaret Mead*



© IITA 2020

All rights reserved.

International Mailing Address:

**IITA Ltd, 7th Floor
Grosvenor House
125 High Street
Croydon CR0 9XP
UK**

Correct Citation:

***Mohammed Kuta Yahaya¹, Udensi Udensi², Johnson Ekpere³, Simon Irtwange⁴, M.G.M. Kolo⁵, Ademola Ladele⁶, Lateef Sanni⁷, Grace Yusuf⁸, Friday Ekeleme⁹, Godwin Atser¹⁰, Ezinne Ibe¹¹ and Alfred Dixon¹².
Save the Nigerian Farmer and Environment from Paraquat Toxicity .***

¹Professor of Agricultural Extension & Development Communication, Consultant/ Expert in Strategic Communication & Citizens Engagement, Department of Agricultural Extension & Rural Development, University of Ibadan

²Weed Scientist/Agronomist, University of Port Harcourt, Rivers State.

³Former Executive Secretary, Scientific, Technical and Research Commission of the Organization of African Unity (OAU/STRC), now African Union.

⁴Chairman, Technical Committee on Nigeria Yam Export Programme, Federal Ministry of Agriculture and Rural Development (FMARD), Abuja.

⁵President, Weed Science Society of Nigeria. A professor at the Federal University of Technology, Minna, Niger State.

⁶Professor of Agricultural Extension, University of Ibadan with experience in Advocacy and Policy, Extension Models and Group Dynamics.

⁷President, International Society for Tropical Root Crops (ISTRC)

⁸Deputy Editor-In-Chief in charge of the Agriculture and Environment Desk of the News Agency of Nigeria (NAN).

⁹Principal Investigator on Weed Science, International Institute of Tropical Agriculture

¹⁰Digital Extension & Rural Advisory Services Specialist, International Institute of Tropical Agriculture

¹¹Project Administrator, Cassava Projects, IITA

¹²Director for Development & Delivery, International Institute of Tropical Agriculture

The Coalition Against Paraquat (CAP) is a group of eminent professionals from diverse disciplines that are promoting the use of safe and environment-friendly herbicides in Nigeria.

For more information, please contact: Prof. M.G.M Kolo, mgmkolo@gmail.com, Friday Ekeleme, f.ekeleme@cgiar.org; and Godwin Atser, g.atser@cgiar.org

Printed by: IITA

Background

Paraquat is an acute toxic chemical that is widely used as an herbicide (plant killer), primarily for weed and grass control. Unfortunately, after several decades of its use in Nigeria, studies have confirmed from empirical evidence that this chemical substance is highly poisonous and has been linked to numerous incidents that affect the health of end users (mainly farmers).

Routes of exposure

- The most established routes of exposure to Paraquat in order of importance are oral ingestion through the mouth (swallowing or eating some highly contaminated food item); dermal or skin contact especially in non-intact skin (with sores, cuts, or severe rashes); and by inhalation through the nose that can lead to lung damage.
- Paraquat can be easily mixed with food, water, or other beverages. If the form that is used does not contain the safeguarding additives (dye, odor, and vomiting agent) people might not know that the food, water, or other beverage is contaminated. Eating or drinking contaminated food or beverages can poison people.
- All applicators are at risk of exposure but non-licensed applicators (especially farmers, and non-trained service providers) are the people at most risk .
- Residues are common in water and food commodities.
- Re-use of Paraquat containers for water and other food commodities.
- Entry into a treated area without being warned.
- Lack of use of personal protective equipment (PPE).

Immediate signs and symptoms of exposure to Paraquat

After anyone has ingested a large amount the person is immediately likely to have pain and swelling of the mouth and throat. The next signs of illness following ingestion are gastrointestinal (digestive tract) symptoms, such as nausea, vomiting, abdominal pain, and diarrhea (which may become bloody).

Severe gastrointestinal symptoms may result in dehydration (not enough fluids in the body), electrolyte abnormalities (not enough sodium and potassium in the body), and low blood pressure.

In general, ingestion may lead to the development of the following adverse health effects or symptoms from within a few hours to several weeks later (depending on the amount or quantity): acute kidney failure, confusion, coma, fast heart rate, injury to the heart, heart failure, liver failure, lung scarring (evolves more quickly than when small to medium amounts have been ingested), muscle weakness, seizures, pulmonary edema (fluid in the lungs), respiratory (breathing) failure, possibly leading to death.



Paraquat Poisoned lungs



Extensive Oral Ulceration



Extensive Oral Ulceration

Source: Tan et al. (2014) (Left); Qian et al (2013). <https://doi.org/10.3892/etm.2013.1320> (Center); Kondal et al. (2013). [https://doi: 10.4103/2230-8229.1220230](https://doi:10.4103/2230-8229.1220230) (Right)

Long-term health effects

If a person survives the toxic effects of Paraquat poisoning, long-term damage to vital human organs may result such as lung (scarring), kidney failure, heart failure, and esophageal strictures (scarring of the swallowing tube that makes it difficult for a person to swallow). There is an increased risk of developing Parkinson's disease later in life. People with large ingestions of Paraquat are not likely to survive.

Where Paraquat is found and used in Nigeria

In Nigeria, Paraquat is found in agrochemical companies, agro-dealers' shops, open markets, and retail shops, and in rural farming communities in crop production and in growing crops or predominantly used to control weeds before and after land preparation.

The precautions that are listed in the United States Center for Disease Control (USCDC) document concerning exposure and action are more difficult to follow in many developing countries than in developed countries.

- Status of Nigerian farmers and agro-input sellers handling Paraquat which makes safe use extremely difficult:
- There is minimal to no training for applicators.
- There is a lack of trained applicators, certified by regulating agencies in Nigeria.
- Paraquat can be purchased by anyone from street vendors who are not certified dealers.
- There are no requirements or strict regulations for the inclusion of safety additives in commercial Paraquat formulations.

- There are no requirements or strict regulations for handlers and applicators to wear PPE.
- There are no standards for proper maintenance of spray equipment, and anyone, including women and children, can apply Paraquat.
- There is no use of protective clothing.
- Knapsack sprayers often leak or are poorly maintained.
- Readily available medical attention or adequate washing facilities to remove Paraquat from the skin are lacking.
- Farmers make repeated applications, often with the same clothing not washed, and thereby increase their exposure.
- There is improper disposal of excess spray solution, liquid product containers, and packages of powdered and granular formulations.

Used containers are carelessly discarded and storage is often in unlocked facilities.

Trade names of Paraquat in use in Nigeria

Paraquat is traded in Nigeria under the following major trade names: Gramoxone Super, Weed-off, Dragon, Paraforce, Dizmazone-20%, Weed Crusher, paraquat Liquid. Other trade names are Bret P-20 Liquid, Miazone, Premium Paraquat, Ravage, Uniquat, Mxiquat, Paracot, Para-One, Paratex, Slasher, Scud, Weedex 200 Sl, Baraquat Liquid, Chemquat, Glopara-Liquid, Grass Cutter 20%, Philozone, Paracom Eraser LQ, Paragliquid, Reliquat, Uniquat Liquid.

Countries that have banned or de-registered Paraquat

Paraquat has been banned by the European Union and America; by many European countries: Austria, Belgium, Denmark, Finland, France, Norway, Slovenia, Sweden, and Switzerland; by African countries: Côte d'Ivoire and Zambia, and by many other countries across the world: Belize, Cambodia, the Caribbean, Chile, Columbia, Costa Rica, Dominican Republic, Indonesia, Korea, Kuwait, New Zealand, Malaysia, the Philippines, South Korea, Syria, and the United Arab Emirates.

Countries exporting Paraquat to Nigeria

China accounts for more than 60% of the formulations imported into Nigeria (Fig. 1 below), and of 80% of the total export of Paraquat to the world. However, China is now prepared to prohibit or ban use and sales of any Paraquat formulation in China by September 2020 (<http://www.cnchemicals.com/Press/89866->). Other countries including Germany, India, South Africa, Switzerland and the UK together account for less than 40% of the imported product.

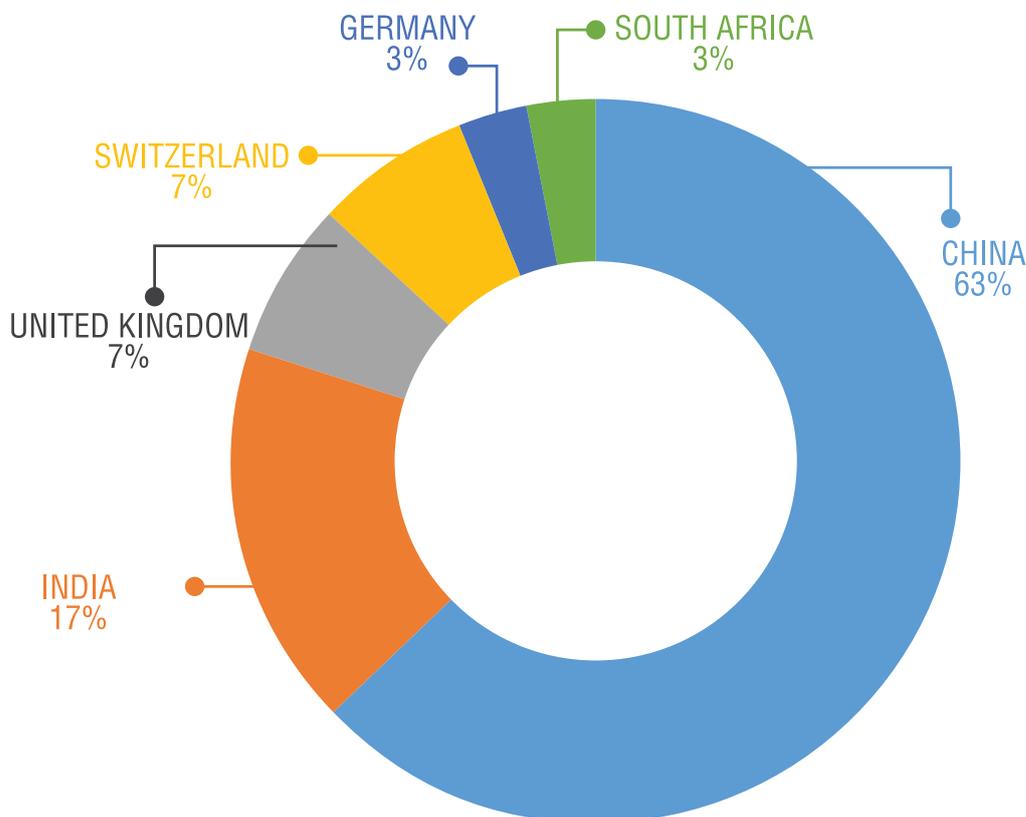


Figure 1: China accounts for 63% of Paraquat imported into Nigeria. India comes second with 17%”

Special appeal

From the above analysis, it is very clear that deregistration of Paraquat in Nigeria is the quickest way to save a multitude of current users from preventable death as well as to protect our environment and secure

our future. Hence further consideration of tested alternatives becomes imperative and there is need for further appeals to marketers and producers to come together and quickly give Nigerian farmers alternatives from the following.

Alternatives to Paraquat

Herbicide	Activity		Presence in Nigeria as:
Glyphosate	Broad-spectrum activity, kills both annual and perennial weeds	Widely used in no-till farming Complete weed death requires 7-14 days Less rainfast	TouchDown, Roudup-Pro Roundup, Delsate, Roundup Turbo, ForceUp, Glycel, TouchDown, Sarosate, Clearweed, Relisate. etc
Glufosinate-ammonium	Broad-spectrum herbicide for many crops where Paraquat is now used and has soil inactivation characteristics similar to Paraquat	Good rain fastness, can be used in no-till farming	Basta, Lifeline , Facinate, and SlashGold
Diphenyl ether	Effective against broadleaf weeds, has low mobility in soil	Has short-term soil activity against newly germinating weeds	
Fluazifop-p-butyl	Grass-specific herbicides	Effective against a variety of annual and perennial grasses Excellent safety in all broadleaf crops such as cassava. Causes grass weeds to stop growing almost immediately and die within 7-14 days	FusiladeForte
Haloxypop-p-methylester	Grass-specific herbicides	It is selective for control of annual and perennial grass weeds in pepper and other crops.	Gallant Super

Source: WSSA Herbicide Handbook, 2015

<https://emergency.cdc.gov/agent/paraquat/basics/facts.asp>

Immediate deregistration of Paraquat in Nigeria and possible legislative backing for the following reasons:

What do we advocate?

- This is a highly hazardous pesticide associated with an alarming rate of self-poisoning and an occupational hazard in the rural areas of most developing countries including Nigeria.
 - Paraquat is included in the Highly Hazardous Pesticides (HHPs) group being phased out or replaced that are so highly toxic to humans that one sip can be fatal. There is at present no antidote (<http://pan-international.org/resources>).
 - Long-term health effects that may lead to Parkinson's disease; acute renal injury, kidney failure, and death have been reported in Nigeria and elsewhere.
 - Most applicators of Paraquat in Nigeria use the knapsack/back pack sprayer which makes 100% contact with the body but not the boom sprayer with less body contact. The European Union (EC 2002) has stated that applicators of Paraquat using knapsack sprayers might exceed the short-term acceptable level of exposure by 60 times when PPE is worn and by 100 times when PPE is not worn. Because farmers in developing nations lack the capacity to operate with boom sprayers, deregistration would appear to be the better option.
 - Most of the rural farmers are not able to separate the symptoms of Paraquat intoxication from the symptoms of daily work stress, and therefore may not consult a doctor until it is too late. Hence, prevention in the form of deregistering Paraquat is far better.
 - This can be further strengthened by the fact that in the USA where Paraquat is under restricted use, licensed applicators adhere to due diligence in using all PPE/PPC and this is enforced by appropriate agencies. This is the opposite to the situation in Nigeria
- where farmers hardly use PPE and there is no enforcement of any kind in place.
- Thirty-two countries including 27 countries of the European Union, and one in West Africa (Watt, 2011; PANAP, 2011; www.panap.net) have deregistered or banned Paraquat
 - Over 5,000 persons have signed petitions to ban Paraquat in the Cayman Islands (www.cayman.com/2013/01/09/Renwed-push-to-ban-paraquat).
 - Research and evidence-based reports have shown that food crops and aquatic food resources (fish, periwinkle molluscs), are being poisoned. Drinking water with Paraquat residues can result in high exposure.
 - Extended soil half-life, bioaccumulation, pollution, and contamination of the environment may lead to habitat and biodiversity losses and ecosystem destabilization.
 - The rising numbers of cases of Pesticide Cocktail effects in Nigeria implicating Paraquat are alarming.
 - China that accounts for about 80% of the total export to the world is now prepared to prohibit or ban use and sales of any Paraquat formulation in China by September 2020 (<http://www.cnchemicals.com/Press/89866->).
- We cannot tolerate the continuous influx of Paraquat into the country when most countries, including developed countries, are banning or de-registering it. Unless the relevant agencies charged with responsibility of regulation and the Nigerian Government take up the fight for the environment and our farmers, we are not being protected.
- Rural farm-households and Figure 1: China accounts for 63% of Paraquat imported into Nigeria. India comes second with 17%”

Who are we protecting?

- Our target in the short-term is to protect the rural farmers who work tirelessly to provide the food we eat, but are not properly informed on the hidden danger, and are unaware of the menace in their domain, as they reap from sowing with Paraquat.
- The consumers and the general public, who consume commodities produced using this chemical, due to residue accumulation.
- In the long-term, the aim is to protect the environment, maintain its integrity, and sustainability for production by the next generation of farmers in the farming communities in Nigeria.

Conclusion

In conclusion and from the foregoing, we strongly recommended that the Federal Republic of Nigeria through the appropriate agency (NAFDAC) de-register the importation and prohibit the distribution, sale, and use of Paraquat in Nigeria. This is based on research and science-based evidence that this product is dangerous to human health and hazardous to the environment.

Who we are

We are concerned professionals and patriotic Nigerians working in the framework of the Coalition against Paraquat, who care about the wellbeing of our farmers and the protection of our already troubled environment.

