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CONTRIBUTE

We are always looking for news, photographs or event updates from our members. Please forward your contributions to elriza@croplife.co.za

WELCOME

As we enter our winter months in South Africa, a very warm welcome to our second issue of the Crop Circular, compiled and issued by CropLife South Africa.

Since the last issue, the CropLife SA team has been striving to execute the mandate provided by the ExCo (details of the 12 ExCo members were provided in the last issue) and you will see in this issue of Crop Circular that many of the articles are covering the key focus areas of this mandate, namely Stewardship; Government liaison, legislation and compliance; Communication and brand building of the crop protection industry; and Education, training and skills development.

Many CropLife SA member companies have invited CropLife SA employees to attend and present at various meetings and training sessions held by member companies in the past few months.

These invitations are accepted whenever availability of CropLife SA staff allows and they provide a fantastic opportunity for member company employees and sales teams to hear directly about the focus areas and direction in which the new CropLife SA strategy is taking the industry. It also allows for direct feedback from members as to what is working well with CropLife SA, plus highlight areas that need improvement.

The 2018/19 cycle of the Continuous Professional Development (CPD) programme for member company sales agents was eventually closed at the end of April 2019 after a one month extension to account for the transition from the old database to the new database and accounting system. The support of all member company Skills Development Facilitators (SDFs) is acknowledged and greatly appreciated – the transition was not without its problems and the effort of the SDFs was required to ensure closure of the past cycle. A focus session was recently held in Gauteng for SDFs to interact with the CPD programme administrator and for CropLife SA to learn of areas of improvement. A second session for SDFs who could not make the Gauteng session is being planned for the Cape, with a conference call meeting planned for all other SDFs who cannot make the face-to-face sessions.

A number of external factors continue to have an impact on our member companies, such as adverse climatic conditions, regulatory hurdles and political noise around land ownership, to name a few. However, it always amazes me that our industry continues to be positive about the future and strives to find ways to mitigate negative impacts and introduce innovative solutions to help ensure sustainable food production in our country. Facilitating and assisting our members in these efforts will continue to be of critical importance to the CropLife SA Team.

Finally, please remember that CropLife SA is an association of member companies – so it is **your** association and will only be as strong and relevant as we can jointly make it.

I look forward to your continued feedback as the CropLife SA continues on its journey of implementing the mandate provided by ExCo.



Rod Bell
Chief Executive Officer
CropLife South Africa

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Give us a Like

As part of our strategy to inform and educate as many people as possible about responsible crop protection, we have launched pages on three social media platforms:



Facebook - CropLifeSA



Twitter - @CropLifeSA



Instagram - croplifesa

Please help us spread the word by liking, following, retweeting and sharing our posts so that our message of stewardship, sustainability and responsibility can reach audiences far and wide.

A big thank you to all our members who have already shown their support and promoted CropLife SA on their platforms, whether on social media, email signatures or websites. It goes a long way to ensure that the people of South Africa, and even those abroad, know that we, as an industry, are serious about doing the right thing.

Member Portal



Our member portal has been launched and you should have received your login details. The portal acts as a library of resources reserved for members of CropLife SA.



Forums & Committees



Regulatory



Marketing



Training



Stewardship



General

The aim is to ensure that members have access to the latest versions of these resources 24/7 without having to search through emails or outdated saved documents.

If you have not received your login details, please contact elriza@croplife.co.za.

New CropLife Africa Middle East Board

During the Annual General Assembly of CropLife Africa Middle East (CLAME) that was held in Casablanca, Morocco on 16 May 2019, the assembly accepted the resignation and appointment of new directors to the Board of CropLife Africa Middle East. Amongst the newly elected directors are dr. Klaus Eckstein (representing Bayer) and Rodney Bell (representing CropLife South Africa). This now means that there are four directors of CropLife Africa Middle East based in South Africa – Klaus and Rod join existing board members Marcel Dreyer (representing UPL Limited) and Prabdeep Bajwa (representing Corteva Agriscience).

Nampo Harvest Day

This year, for the first time ever, CropLife SA exhibited at one of the largest agricultural exhibitions under private ownership in the southern hemisphere, Grain SA's Nampo Harvest Day. The event is held annually at Nampo Park just outside of Bothaville in the Free State province and attracted 81 345 visitors along with 775 exhibitors this year. A record number of 376 aeroplanes and 63 helicopters landed at the event, which gives an indication of the event's magnitude.

CropLife SA was represented alongside FERTASA (The Fertilizer Association of South Africa) and SANSOR (The South African National Seed Organization) in an effort to educate producers and consumers about the important role that industry associations play in agriculture.

The CropLife SA section was approximately 7m by 10m in size and focused predominately on various aspects of stewardship, including resistance management and the CropLife SA waste management programme.



Other topics covered the importance of the Continuous Professional Development programme for sales agents of crop protection products, and why it is recommended that producers only buy from CropLife SA accredited agents. In addition, elements such as Agri-Intel, the CropLife SA Agri-SETA accredited courses, correct protective clothing and responsible use were also promoted.



The event offered a platform to engage with producers, consumers and various industry role-players, while the stand attracted the likes of Mr Jonathan Mudzungu, the Registrar of Act 36 of 1947 (Left) and Mr RM Ramasodi, Deputy Director General of Agricultural Production, Health and Food Safety (Right).

We would like to take this opportunity to thank our members Villa Crop Protection, Rolfes Agri, Meridian and Philagro who offered to assist the CropLife SA team at the stand. Your dedication to the association is sincerely appreciated.

We would also like to thank every member who took the time to visit the stand and show your support. We hope this event achieved our goal of promoting our industry efforts in ensuring responsible production, distribution and application of crop protection and public health solutions across the entire value chain.



Hettie's Farewell

As many of you know, CropLife SA said farewell to Hettie Dickenson at the end of April this year. The team celebrated Hettie's 29-year tenure with a lunch at InnJoy Boutique Hotel and presented her with the combined amount of donations from our members, as well as a voucher to enjoy a spa day at Bakwena.

Thank you to every individual and company who donated towards Hettie's farewell gift and showing your appreciation for the hard work she has done for the association over the last three decades.



MRLs, Consumer Safety and Trade in Africa's Agricultural Produce

CropLife Africa Middle East hosted a workshop at Emperor's Palace on 4 and 5 June about MRLs, Consumer Safety and trade in Africa's Agricultural Produce. The two-day workshop focused on enhancing the understanding and engagement of stakeholders around MRLs, consumer safety and potential impact on trade in Africa's agricultural produce and brought together participants from 10 countries representing regulators, Ministries of Trade, Agriculture and Health officials, grower groups and Regional Economic Communities, among others.

The specific objectives of the workshop were to:

- Share experiences of regions, countries and grower groups on the current application of MRLs by countries.
- Provide a platform for participants to acquaint themselves with changes in the regulatory and policy environment on MRLs and Import Tolerance setting and their potential impacts on agricultural production and trade.
- Share best practices, strategies and platforms for development and implementation of effective MRLs and ITs.

CropLife Africa Middle East to Host Container Management Workshop

The stewardship director of CropLife Africa Middle East (CLAME), Les Hillowitz, has organised a workshop on container management from 24 to 26 June in Cape Town for representatives of members of CLAME to inform them about the process and success of the South African model. Twelve countries will participate in this event and will learn how the process works in South Africa.

They will be hosted at a collector in the Ceres district, after which they will get hands-on experience at MyPlas in Bellville to see how the triple-rinsed empty containers are shredded, cleaned, extruded and cut into small chips. Then the group will visit manufacturers that use the recycled plastics for making pipes and other valuable commodities from the plastic. The Global GAP inspectors, WWF-SA and CropLife SA will offer the group presentations about auditing, the CropLife SA model and various other relevant topics on container management.

AgriSETA Accredited Training

The first Aerial Application course of 2019 was held in Bethlehem from 20 to 24 May with a total number of 10 students participating. The course was presented by Gerrit van Vuuren, Head of Research and Development at Rolfes Agri.

We would like to take this opportunity to thank Rolfes Agri for supporting the course by providing such a valuable resource to CropLife SA free of charge.



The second Basic Crop Protection course for 2019 is scheduled to commence 1 July and registrations are open on www.croplife.co.za. A total number of 309 students were enrolled in the previous course and we anticipate achieving similar numbers this semester.

As we are continuously striving to improve the value we add, plans for the course include establishing a training committee that will review the content and make necessary changes to improve the offering going forward.

Professional Training on Dangerous Goods Transportation

Transportation of dangerous goods is regulated by the National Road Traffic Act, 1996 (Act No. 93 of 1996) and demands quite a stringent set of rules that must be complied with. Most pesticides are classified as dangerous goods in terms of the SA National Standard for the Transportation of Dangerous Goods by Road – Operational Requirements. Each pesticide label has a UN code on the main panel to identify its category as dangerous goods.

This code predetermines the exempt quantity for road transportation but in the case of mixed loads it is nearly inconceivable that such a load will be exempted from the articles and regulations of Act No. 93 of 1996. Only farmers and consumers who buy and transport less than 1,000 kilogrammes or litres of pesticides for own use are exempted, provided that the route they take is no longer than 250 kilometres and of that, no more than 50 kilometres are travelled on a national road. It is thus safe to believe that most pesticides transported by agrochemical agents or transport companies are subjected to Act No. 93 of 1996 which means it requires a professional driver's permit, a dangerous goods transport certificate and a vehicle that is licensed and certified to transport such goods.

CropLife SA tasked dangerous goods specialists, Keith McMurray, to draft training materials on dangerous goods transportation which have now been completed. Keith is prepared to offer such training to our members, and we are planning the first of such events in the Western Cape and Eastern Cape in the near future. It will be promoted through our membership network once we have finalised the logistics. Members who are interested in the training can contact Gerhard Verdoorn on gerhard@croplife.co.za.

CropLife South Africa's Loyal Plastic Recycling Warriors

Plastic containers are essential for dispensing pesticides safely to farmers and consumers, yet this packaging material can be a scourge of environmental pollution if not recovered and recycled. CropLife SA is privileged and very grateful for the 47 service providers that, out of their own accord, joined our network of collectors and recyclers of empty plastic pesticide containers.

We started off with a few service providers seven years ago and progressed to being one of the leading countries in the world with empty container management, all because we have a loyal group of individuals who share our concern about combating plastic pollution.

Some of our own CropLife SA members are service providers that collect and even recycle the empty containers into valuable commodities such as irrigation pipes, garden furniture, toys, fencing materials and highly durable plastic wood for decking and picket fencing.

One of our recyclers (a CropLife SA distribution member) collected 80 tonnes of empty containers in the Eastern Cape – Tinkie Muller of Nexus must be applauded for that. In the Langkloof valley, Louis Kritzinger of Wenkem collects vast numbers of containers and remanufactures it into plastic furniture that he provides free of charge to the community around him. This is truly commendable. Louis, however, warns that many farmers still give the containers to farm workers to carry water. This practice is very concerning, and we must endeavour to continuously educate the agricultural community about the dangers thereof.

There are many collectors and recyclers willing to take the empty containers and thereby eliminating the risk to people and the environment and it is our duty to collectively participate in responsible container management. Another distribution member, Die Koöperasie, has entered into an agreement with Rhino Plastics to recover and recycle vast numbers of empty containers in the Eastern Cape. Up North, Shiman, one of the CropLife SA distribution members, service their clients with container removal as does Jurie van Wyk of Freshpro Agri and Ernest Davey of Limpopo Landboudienste in Modimolle. Stiaan Breytenbach of InteliGro in the Langkloof valley is another member that collects containers. Drikus Prins of Novon Retail in Mpumalanga is designing a small scape shredder to shred containers for recycling. Hill van Schalkwyk of Laeveld Agrochem is also geared to collect containers in the new season.

The CropLife SA approved recyclers and collectors are innovative; Meagan Leach has a large group of people collecting plastics for her and she also promoted the recycling initiative with a stand at a festival in Welkom. Walter Jordaan of MyPlas provided CropLife SA with some of the products made from recycled plastic pesticide containers for Grain SA's Nampo Harvest Day. A lamb pen made from recycled plastic containers drew a lot of attention and even catalysed two farmers to enter the CropLife SA network as container collectors and recyclers. The list of 47 CropLife SA approved recyclers and collectors is available on www.croplife.co.za under Resources (Waste management) and is slowly expanding. We are looking for service providers in Limpopo, North West, the Free State and KwaZulu-Natal. As soon as an individual shows interest we engage the recyclers to ensure that the collected containers have a market in order to prevent a pile-up of triple-rinsed empty containers.

The need for triple-rinsed empty plastic pesticide containers (high density polyethylene) is huge: the 5,200 tonnes that the CropLife SA approved service provider processed last year is not even a drop in the ocean considering their needs, as they can take at least twice that amount. The need for polypropylene (PP) bags for recycling is also enormous – at least 75,000 tonnes of PP are required by recyclers annually to meet the market demands. Many of our collectors and recyclers are also starting to collect tripe-rinsed empty seed bags for recycling.

CropLife South Africa is indebted to our approved service providers, especially to our members for striving towards the dream of a plastic pollution-free environment. Well done, we applaud you all.

Any individual or company that would like to participate in our container management programme should call dr. Gerhard Verdoorn on 082-446-8946 or email gerhard@croplife.co.za. We will guide you and our existing approved service providers are more than willing to mentor you on responsible collection and recycling of empty plastic containers.

Giving Agri-Intel a Home

Viking Marketing has been generous enough to accommodate Chana-Lee White (Agri-Intel Manager) and Luigia Steyn (MRL Consultant) at their offices in Blackheath, Cape Town, free of charge for a number of years now.



Essentially, the entire Agri-Intel platform is managed from this office, which means we are able to add value, while saving money by receiving such a benefit from a committed member. We would like to take this opportunity to convey our gratitude for your hospitality and supporting the association in this manner.

Condolences

It was with great sadness that the CropLife SA team learned of the passing of Phillip Luus and Harry Meyer respectively. Both these gentlemen were involved in the agricultural industry for many years and will be fondly remembered by many.

Rewriting Current Regulatory Guidelines

CropLife SA would like to acknowledge the work being done by our members, under the guidance of Sarah le Grange from Adama and Fikile Nzuza from CropLife SA, to rewrite the current regulatory guidelines.

For years there have been issues raised by members that certain guidelines are not very clear about what exactly the requirements are to be submitted for registration. After consultation with DAFF, they advised that guidelines were created by industry in conjunction with government, therefore, any issues with the guidelines, should be discussed within industry and a proposal sent to DAFF for their consideration.

CropLife SA initiated a Guidelines Revision Working Group which is led by Sarah le Grange of Adama. The objective of the working group is to look at the current guidelines for registration of Agricultural Remedies and sort through any issues that relate to interpretation. The working group started with the Guidelines on the data and documents required for registration of Agricultural Remedies in South Africa 2015.

The documents have been circulated to Regulatory members for comments and the working group is now working through the comments and will compile a proposal which will again be circulated to members. Once finalised, it will be sent to DAFF for their consideration.

Please note that Fikile Nzuza, Regulatory and Government Liaison will be on maternity leave as from 8 July 2019 for four months. Kindly contact the office or another member of the CropLife SA team for any regulatory matters during this time.

Tygerberg Poison Information Centre

Dr Gerhard Verdoorn
Operations and
Stewardship Manager

The Tygerberg Poison Information Centre (TPIC) is situated at the Tygerberg Academic Hospital of Stellenbosch University in the Department of Clinical Pharmacology. It is endowed with five medical specialists, clinical pharmacology registrars, four pharmacists and two medical scientists. Some people may know the name

dr. Gerbus Muller, who was paramount in establishing and building up the centre while the current director, Carine Marx, is also well known in the pharmaceutical arena. The TPIC operates 24 hours a day, seven days a week and hosts a wealth of information and advice at the hands of the staff who operate the centre. A poison centre is a specialised unit that advises on, and assists with, the prevention, diagnosis and management of poisoning. The structure and function of poison centres vary around the world, however, at the very least a poison centre is an information service. TPIC not only offers all this expertise, but also organises and hosts workshops on clinical toxicology. Luthando Tiya is enrolled for a master's degree in Experimental and Instrumental Toxicology at the department and is mentored by basically all the members of the TPIC as well as his own supervisors. CropLife SA supports Luthando financially with his studies as we believe it is in the interest of our industry to train enthusiastic young people in experimental toxicology.

I am privileged to have a close association with the TPIC due to me managing the Griffon Poison Information Centre, but must state that the TPIC operates at a totally different level; their vast expertise on poisoning with clinical drugs, narcotics, pesticides, industrial chemicals and envenomation puts the centre at the forefront of poison centres globally. A very well-known herpetologist, Johan Marais, is also associated with the TPIC with his specialist knowledge on snakes and snake bites. Dr Gerbus Muller on the other hand is a total wizard with scorpion stings and has been widely published on this topic. TPIC manage a vast number of calls annually and compile excellent statistics on clinical poisoning, pesticide poisoning, envenomation and industrial chemical poisoning. In 2017 the centre handled 9,893 enquiries and of those, more than 5,200 incidents were related to pharmaceuticals, while about 1,400 incidents were due to pesticide exposure. Envenomation measured around 750 calls for the year while industrial chemicals, household products, cosmetics, food, handyman products and antiseptics made up the rest. TPIG subscribes to international toxicology databases to source information, but the collective knowledge amongst the staff is sufficient to handle most calls.

The centre is funded in part by the Western Cape provincial government as part of the Poisons Information Helpline of the Western Cape that also houses the Red Cross Children's Hospital of the University of Cape Town. CropLife South Africa assists the TPIC annually with a small sponsorship. It is an essential service to industry and society that saves lives by offering diagnostic services and clinical advice on managing poisoning incidents. They often prevent a patient even requiring hospitalisation and, if required, hospitalisation is mostly shortened as a result of offering advice on clinical treatment. TPIC under auspices of their hosting department will soon offer a post graduate diploma in medical toxicology. South Africa is in dire need of toxicologists and a distance learning course like this is just what we need. A similar course is also on the charts at the University of Pretoria.

CropLife SA is proud to be associated with a professional body like the TPIC and its suite of highly skilled specialists. Without a poison information centre like the TPIC, the country would be at a loss and would have lost many lives to poisoning.

The Work of Luthando Tiya

Luthando Tiya is a master's degree student currently studying Experimental and Instrumental Toxicology with some financial assistance from CropLife SA.

As part of his studies, Luthando has embarked on research with the following aims and objectives:

1. Identify toxins that are relevant in the South African context
2. Develop and validate an LCMSMS method that can aid in screening for pesticide active ingredients
3. Develop a protocol that allows for the analysis to be done on dry blood spots
4. Test the method and protocols on spiked blood samples
5. Do analysis en route pathology samples of patients that were admitted with pesticide poisoning

Essentially, he is creating a database that will help medical practitioners identify toxic ingestions quickly. In order to identify which toxins or compounds to investigate, Luthando made use of the information gathered from various experts within the toxicological sphere in South Africa, such as:

Dr Gerhard Verdoorn

Director of Griffon Poison information centre and Operations and Stewardship Manager of CropLife SA. Part of the work he does is to respond to emergencies arising from pesticide use, transportation, manufacturing and sales. He also does investigations into pesticide related illegal activities, human, animal and environmental poisoning. Dr Verdoorn's impeccable knowledge into pesticides will give the research the edge it needs to list relevant toxicants in South Africa.

Experts from the Tygerberg Poison Information Centre

These are experts that manage a call line whose main function is to advise health care professionals and the general public on how to deal with acute poisonings. The Poison Information Centre deals with poisonings that involve medicines and drugs, household products, industrial chemicals, pesticides, plants and animals. The wealth of knowledge of this Poison Information Centre will be a very strong guide as to which toxicants to focus on.

Dr Eric Decloedt

A medical specialist with a wealth of knowledge in pharmacology. He is attached to the Clinical Pharmacology Department of Stellenbosch University.

Upon completion of the list, all relevant standards will be procured. The initial work was done at the Central Analytical Facilities (CAF) under the mentorship of dr. Marietjie Stander. The focus was primarily on developing an untargeted method for the identification of both drugs and pesticides.

Currently, they are finalising the development and validation of a targeted method on pesticides alone. This "targeted" part is done under the mentorship of dr. Tracy Kellerman at the Tygerberg Campus.

Next, they will spike the pesticides and drugs into whole blood and look at different extraction methods to determine optimal extraction. Then, they will compare recovery from whole blood to DBS for all methods and optimise the methods and, if necessary, perform matrix effects, recovery and process efficiency to determine method robustness.

In between the method development, there are a couple of routine samples that were run successfully on the method, which is pleasing. The potential impact the toxicology database will have on healthcare is very positive.

CropLife SA Embarks on Focused Rodenticide Stewardship

Statistics about rodenticide poisoning of dogs and children have prompted the Small Pack Forum of CropLife South Africa to embark on a focused stewardship programme for rodenticides. Data from the Griffon Poison Information Centre paints a daunting picture, namely not using rodenticide bait stations, irresponsible placing of rodenticides within easy access of children and dogs, and poor understanding of rodenticide toxicity and mode of action.

Some people believe that some rodenticides are not harmful to dogs while science shows that they are all toxic to dogs, whether to a lesser or greater extent. The CropLife SA rodenticide stewardship programme has a number of key elements that were agreed upon by members of the Small Pack Forum:

1. Adequate training of technical staff, sales staff, merchandisers and the public about rodenticide safety;
2. Compulsory use of bait stations for all applications;
3. Recovery and proper disposal of split baits; and
4. Recovery and disposal of dead rodents.

It is understandable that the public uses rodenticides as the country is overrun with Norwegian rats and house mice, but that does not warrant irresponsible use that leads to primary poisoning of children and dogs, and secondary poisoning of owls. If common sense and responsibility prevail, the scourge of rodenticide poisonings can be curtailed, and the stewardship programme is tailored to address these issues.

POPS and PICS Listing of Pesticides

During the 9th meeting of the Conference of Parties (COP) of the Stockholm Convention on Persistent Organic Pollutants (POP) and the Rotterdam Convention on Prior informed Consent (PIC) in Switzerland, some chemicals were added to the annexes of the two conventions:

Dicofol, an insecticide/acaricide closely related in chemical structure to DDT was added to the Stockholm Convention's Annex A, meaning all parties have to phase it out completely. This will not affect CropLife South Africa as there is no agricultural remedy with dicofol registered in South Africa.

Phorate has been added to Annex III of the Rotterdam Convention, meaning the export country and import country both need to agree in a bi-lateral agreement on the import of Annex III chemicals. The discussion about listing of paraquat dichloride SL or EC formulations with 200 g/l paraquat ion or higher, fenthion ULV formulations with 640 g/l or higher, carbosulfan and acetochlor has been postponed to COP 10 in May 2021. It is highly likely that paraquat will end up in Annex III while the listing of carbosulfan and acetochlor are unlikely to make it to Annex III at this stage.

Emergency Eradication Plan for Palmer Amaranth Weed

Lindi Botha
Farmer's Weekly
April 2019

CropLife SA has released an emergency eradication plan for the invasive weed Palmer amaranth (*Amaranthus palmeri*), which can result in almost total crop failure in maize.

Prof Charlie Reinhardt, project leader at the South African Herbicide Resistance Initiative, said the weed was resistant to glyphosate.

“Local research has shown that it is also resistant to two other groups of herbicides. This makes it very difficult to control with normal agricultural practices that rely on herbicides for weed management.”



He noted that Palmer amaranth had a rapid growth rate of more than 6cm a day and the ability to accumulate large biomass quickly, making it an extremely competitive weed.

Infestation has resulted in documented yield losses of between 11% and 91% in maize, 11% and 59% in cotton, and 17% and 79% in soya bean, depending on the level of infestation.

Palmer amaranth plants also interfered with the harvesting of cotton as the large quantity of biomass attained by mature plants resulted in frequent work stoppages to dislodge thick plant stems from harvesting equipment.

Outlining its emergency eradication plan, CropLife SA advised farmers to control Palmer amaranth plants prior to planting through tillage practices.

Internationally registered burndown herbicides such as Paraquat could be utilised to control the weed, while Auxin-type herbicides such as 2,4-D and MCPA could be utilised pre-planting when crop rotation systems allowed for it.

As this species was new to South Africa, current registered herbicides did not have it listed on their labels. Farmers were advised to consult CropLife SA for a full list of chemicals that could be used.

Visit www.croplife.co.za to download the information bulletin as well as the Emergency Eradication Plan.

American Invader Demands Drastic Measures

The Big Scare

South African farmers are attentive men and women who are probably not scared of anything. Not even the political threats about land are enough to let them stand back or give up. Yet every now and again there is something that gives farmers cold shivers. Two years ago, Fall Armyworm suddenly made its appearance in South Africa. With GM crops and the swift emergency registration of more than twenty suitable pesticides, the possible damage that Fall Armyworm could have caused was well under control.

Dr Gerhard Verdoorn
Afrikaans version
Published in AgriAbout
April 2019

At the same time, farmers close to Douglas established crops and applied the necessary weed control as usual. It was, however, of slight concern when a pigweed blatantly ignored the herbicides; farmers tried other herbicides but the weed just grew, and it almost seemed as if the glyphosate and two other herbicides were fertilising the weed. Weed experts were urgently enlisted and came to the shocking realisation that the strong weed was none other than the dreaded Palmer amaranth (*Amaranthus palmeri*).

This weed is part of a group of pigweeds that is often identified as food crops, but it originated in the US where it has long since been classified as an extremely tough weed, resistant to at least six herbicide groups. This means that the plant cannot be controlled with these types of herbicides. For cash crop farmers, and especially for farmers farming with Roundup Ready maize, it's a nightmare as glyphosate is totally ineffective against the Palmer amaranth. It is not known how the plant found its way to South Africa and venturing a guess would be pointless; the fact is that we have the plant in the Northern Cape and it poses a serious threat to crop producers.

Identification of the Palmer Amaranth

The Palmer amaranth appears similar to other indigenous pigweeds and can therefore be easily overlooked. However, a few smaller, inconspicuous properties make identification possible. The petiole is longer than the leaf and it distinguishes the plant from other *Amaranthus* species. Our indigenous pigweeds have short petioles. The second trait that can easily be identified, is the long inflorescences for both the male and female plants. The inflorescences of the indigenous pigweeds are comparatively much shorter. Unlike most other pigweeds, the leaves are smooth (without fine hairs) and also long and spear shaped. Adult plants grow robustly up to nearly two meters high. One of the major dangers of this pigweed is the ease with which it comfortably hybridises with other pigweeds, thus establishing its resistance to certain herbicides within the other species. There are already indications that hybridisation has occurred in the Northern Cape.

Threat to Crops

When the Palmer amaranth invades a farm, it does so with a vengeance. Every female plant can bring forth as many as 600,000 seeds which, naturally, can cause tremendous population growth. The plant therefore quickly takes over the farmland and supplants the farmer's crops. In addition, the weed spreads vegetatively, in other words, if it's pulled out by hand and not completely incinerated, the stems can shoot roots and grow like there's no tomorrow. Lastly, it's resistant to the most common herbicide, glyphosate, as well as presumably at least five other groups of herbicides. This leaves very little space to manoeuvre to control the invader. The risk for the value chain is that crops harvested from infected fields, may possibly transfer those seeds if the crops are not properly sanitised of seed.

Emergency Measures to Keep the Palmer Amaranth in Check

After many investigations by weed scientists and a couple of workshops, the HRAC (Herbicide Resistance Action Committee) of CropLife SA compiled a very informative but easily digestible information bulletin about the Palmer amaranth. It is available in the Resources tab on www.croplife.co.za in both Afrikaans and English. Along with this, CropLife SA compiled an emergency eradication plan, also available on the website.

The most important thing for farmers on the Orange River in the Douglas area and further downstream, is to treat all pigweeds as suspicious and to eradicate it with determination, especially because it's suspected that an indigenous Amaranth already hybridised with the Palmer amaranth. Farmlands where maize, wheat, cotton and lucerne are cultivated, is subject to possible contamination with the Palmer amaranth while water channels, streams, brooks and riverbanks are also a favourable habitat for the pest. Even road reserves are already infected with this pigweed.

Farmers should take note of the possible herbicides as set out in the management plan which are able to eradicate the weed and should also consider spraying tank mixtures (according to the label instructions) to eradicate the plant in its entirety. When the weeds are erased, those stands must be burned. It will be necessary to investigate after a week or two to ensure there are no new sprouts of the weed, and if there are, to tackle it with a vengeance once again. For crops such as cotton, the writing is on the wall because the Palmer amaranth cannot be controlled with herbicides as it will damage the cotton. Maize and wheat are much safer because the broadleaf herbicides that can be used in the two grain crops against the pigweed, do not damage the monocotyledon crops. Lucerne still faces a challenge because we do not yet have the right herbicide that doesn't burn the lucerne when sprayed for Palmer amaranth. Currently trials are being conducted with a variety of herbicides to determine what is best for each crop.

Farmers have already launched great efforts to tackle the Palmer amaranth. The weed is manually removed, stacked and burned, especially where it occurs in cotton fields. There are also plans to beat the weed in lucerne; here, farmers cut the lucerne every two weeks, which prevents the Palmer amaranth from making flowers and seeds. This greatly helps to prevent seed accrual, but we need a herbicide that completely eradicates the invader in lucerne.

The major danger of seed is at the harvest stage. If harvesters are used, the chances are great that such implements can be infected with the Palmer amaranth seed. When these infected harvesters are moved to other fields, or worse, other farms, they are vectors for the dreaded invading seed. It is therefore imperative that harvesters and other implements used where Palmer amaranth was present, are thoroughly cleaned, preferably on a concrete slate, and that any plant material coming from it, is burned.

It will certainly take more than one season to conquer Palmer amaranth, therefore integrated management over at least four to five years is of cardinal importance. Pre-emergence herbicides contribute greatly to the purge of the weed, while herbicide application during crop production is also important. We should know within six months which herbicides are up to the task. Of course, there is also a mechanical method of control, namely, to plough the soil at least 500 millimetres deep and to bury the remaining plant material and seed where it will perish. For conservation farmers, ploughing this deep is needed every four to five years anyway.

Farmers are cautioned to view the Palmer amaranth as a critical threat to crop production. To let your guard down for just one season could cost a farmer dearly. Be vigilant and if there is any possibility that the invader has arrived, contact one of the experts who are part of the Amaranthus group, or send an email to gerhard@croplife.co.za for advice and assistance.

At this stage, the agricultural sector, organised agriculture such as Grain SA, CropLife SA, the Agricultural Research Council and scientists of the University of Pretoria are combining forces to help producers and cooperatives tackle the invader. This cooperation is already bearing fruit and farmers have gone to great lengths to try and control the Palmer amaranth. We are working hard together for the sake of our crop producers.

Glyphosate Debate Continues

Glyphosate as Anchor Product in Crop Protection.

Glyphosate has been available for more than half a century in agriculture and horticulture and is used worldwide for general weed control. It is a basic glycine amino acid molecule that is absorbed by the parts of the plant above the soil, and systematically spread throughout the plant. Glyphosate is not selective and will affect and damage or kill most monocots (grass types) and dicots (broad leaf plants). When spraying glyphosate on the bark of mature trees and shrubs, the uptake is very weak and will barely affect the plant, if at all.

Activism Against Glyphosate

With the arrival of Roundup Ready crops such as maize and cotton, glyphosate's profile has noticeably increased both in the agricultural sector and in the public arena. The latter is the result of activism against genetically modified crops, and glyphosate was just the right horse for such groups to saddle.

Dr Gerhard Verdoorn
Afrikaans version
Published in SA Grain
May 2019

This initiated several actions, among others, the widely discussed research that glyphosate is probably carcinogenic. Research groups in Europe tested this hypothesis by exposing laboratory mice to glyphosate. One of the studies found that the mice had developed cancer and it sent shockwaves about glyphosate throughout the world. The International Agency for Cancer Research (IARC) declared glyphosate as a probable carcinogen under category 2A at once. This had the activists rejoicing and several countries immediately banned glyphosate. As is typical in modern society, the well-known herbicide was branded as "extremely toxic".

Pragmatic Evaluation of the Glyphosate Research

It is important that the public takes note of the research protocol that was followed where it was proven that glyphosate is carcinogenic and to place it in context with at least two other studies in which no carcinogens were found.

The researchers chose mice that were genetically prone to cancer, in other words, they could develop cancer very easily if exposed to the right conditions. Then the mice were dosed with more than 1,403 milligrams per kilogram body mass glyphosate. No wonder the mice developed cancer. They had an increased tendency to develop cancer in the first place, and secondly, they were subjected to glyphosate levels that were completely irrational. The only living organism on earth that will ingest such a high dose of glyphosate, is someone who removes the container cap and deliberately drinks it. In South Africa, tests have shown that certain breads contain two to four milligrams per kilogram glyphosate. This means that if the mouse weighed 20 grams, the poor animal would have had to consume a whopping 7.15 kilograms of bread containing four milligrams per kilogram glyphosate to get to that dose! Such research is not worth the name "science" and should be blatantly ignored.

Two other teams of researchers used ordinary mice and couldn't bring about cancer in the mice, not even with doses higher than the first study. The results are consistent with other research around the world where cancer could not be generated with glyphosate. A very large and comprehensive study conducted in the US, with more than 5 000 farm workers, could not find any relationship between glyphosate use and cancer.

Declarations by Authoritative Bodies About Glyphosate

The Cancer Research Agency is only one of many authoritative bodies in the world that delivers a verdict on pesticides and toxins. The European Food Safety Authority (EFSA) and the US Environmental Protection Agency (USEPA) literally have thousands of scientists that delve into the science of pesticides. EFSA especially, is very strict about pesticides. However, EFSA stated in 2015 that there are no grounds to believe that glyphosate can cause cancer in humans. They have done a comprehensive review on all research concerning glyphosate and cancer and found that it is unlikely that glyphosate poses a cancer risk to people.

USEPA recently launched their own cancer unit's evaluation in which they found that glyphosate cannot cause cancer in humans. Both USEPA and EFSA have considered all possible data sets where research on glyphosate and cancer have been concerned, while the IARC has only taken specific data sets.

What was disappointing about IARC, is that the agency did not act scientifically sound in their evaluation. They did not indicate that, in five comparable studies with mice, only one study found that the mice were more prone to cancer formation, and that those mice were already genetically prone to cancer. The reports also omitted the fact that some studies were done with formulations of which the chemical content was suspicious. One such formulation contained formaldehyde, a very high-profile carcinogen. What was astounding, was the impossibly high dose of glyphosate administered, as mentioned earlier. Interestingly, the studies that used pure glyphosate (without possible contaminants that may be dangerous) where the same dose was applied, could not establish any signs of cancer in any tissue. There were also no signs of hormonal deviations, birth defects or similar clinical effects.

The Broader Perspectives About Glyphosate

The sad thing is that blatantly dishonest research has given glyphosate a bad name and that many people are terrified of the herbicide. Recently in the US, two juries granted large sums of money because they, by their own convictions, apparently contracted cancer from glyphosate. It's laughable that a jury of ordinary people can deliver such judgments. The same jury's people probably often drink an alcoholic beverage, classified by the IARC as a category I carcinogen. Furthermore, many of them probably smoke, which is also category I while exposure to sunlight has the same status.

Now the question is: "What should we do?" Should we ban glyphosate because two juries of ordinary non-scientists ruled that it causes cancer? Surely not? The well-known herbicide should still be used with all the necessary safety measures and within the label's recommendations.

It will be technically impossible to bring the activists to their senses, regardless of the findings of EFSA and USEPA, because the activists stand firm in their beliefs about glyphosate. But then again, one should remember that some people still believe the Earth is flat...

Managing Plastics out of the Farming Sector

Plastic Products on the Farm

The name of German scientist, Hans von Pechman was unheard of prior to 1898, however, it was a turning point in his career.

As so often happens, he accidentally synthesised a new chemical product called polyethylene while researching diazomethane, which is a synthetic dye. Little did he know what a massive impact this simple, yet useful polymer would have on society. More than half a century after his little "accident", another scientist by the name of Giulio Natta discovered a very similar polymer namely polypropylene.

In the modern agricultural arena, there is probably not a single farm on earth where polyethylene and polypropylene are not both present. Polyethylene pesticide containers are produced in their billions while seed bags that used to be hessian, are made out of polypropylene nowadays.

Dr Gerhard Verdoorn
Published in AgriAbout
May 2019

These two commodities offer farmers strong containment of their agricultural inputs but also pose a risk to the farming operation, human health and the environment if they are left without good management practices.

Hazards and Risks of Pesticide Containers and Seed Bags

Logic dictates that pesticide containers pose a threat to human health and the environment as they contain toxic substances. Yet, many people do not think about that risk. Seed bags on the other hand are also a risk due to the seed treatments used on seed to prevent seed decay and insect impacts after planting. The farming sector thus have two very useful, but high-risk products on the farm. Should such containers and bags be left unattended, they pose not only a poisoning risk, but also a severe pollution risk to the environment. Good polyethylene takes decades to decompose in nature, while polypropylene has a short lifespan during which it becomes brittle and breaks up into micro-particles that are dreaded by environmentalists due to their negative impact on marine biodiversity.

On the farm, it is sometimes common practice for farm workers to use empty plastic pesticide containers for drinking water or even cooking oil. An example of the sheer danger of this practice is an incident in 2005 in the George area in which an entire family died. They used an empty plastic pesticide container for cooking oil. On a Sunday the family made vetkoek with the oil for lunch. By two o'clock they all fell sick. By five o'clock two mothers and three children died of organophosphate poisoning. In another incident in the Free State, farm workers poured the cattle oral dose into smaller plastic pesticide containers before going to the camp where the cattle were supposed to be dosed. Needless to say, the farmer lost a herd of cattle due to the organophosphate pesticide that was still left in the containers.

Empty seed bags are often used by farm workers to collect maize cobs that escaped the harvesting. This in itself is a risk as some of the seed dressing chemicals such as tefluthrin are very irritating and may cause severe skin burns. In addition, this hand-harvested maize is exposed to seed dressing pesticides that should never be on maize. If people eat that, they may be subjected to toxic chemicals that shouldn't be in normal maize products or green mealies.

Measures to Rid the Farming Community of Hazardous Plastic Waste

Farmers are always in search of solutions for problems. CropLife South Africa devised a plan to manage empty plastic pesticide containers and seed bags with the help of plastic collectors and recyclers. Polyethylene is a highly sought-after polymer, especially that which comes from pesticide containers. It is recycled into a range of other products like pipes for fibre optics, irrigation pipes, pallets, fruit picking crates, fence posts, sheep pens, vineyard supports, children's toys and garbage bags. It is therefore sinful to leave empty containers lying around on the farm when it could serve a much better purpose in the recycling industry.

Empty plastic pesticide containers are not really empty until they have been triple rinsed. This is a simple procedure that is best performed at the site of application where the rinse water can be decanted into the spray tank. Once the container is "empty", it must be held with the spout over the spray tank for thirty seconds while turning the container to drain the last bit of pesticide into the spray tank. Then one adds fresh water to the container – about one quarter of the container volume is enough – after which a good thirty second shake will dissolve or disperse the last pesticide traces into the water.

Decant this rinse water into the spray tank. Repeat the rinsing twice again. This renders the container nominally clean and free of pesticide. Any student at the second-year level knows from analytical chemistry that a single rinse with the full volume of the container is far less effective than a triple-rinse with three times a quarter of the volume water. The latter removes 99.9997% of the contents and such a container is no longer hazardous. This means the container is regarded as regular waste by the waste management legislation and may be recycled. In order to render the container unsuitable for any other purpose, it must be punctured with a pickaxe or sharp object. Check the CropLife SA website for guidelines on triple-rinsing and proper cleaning of containers.

CropLife SA has an ever-growing list of plastic collectors and recyclers that can liberate farmers of their triple rinsed empty plastic pesticide containers. The list of approved recyclers and collectors is available under Waste Management in the Resources tab on www.croplife.co.za. The collectors and recyclers who service the farmers issue a CropLife SA Certificate of Adequate Disposal that is quite important to Global GAP certified farmers. Without such a certificate the auditors may ask a few very troubling questions and the farmer may face a penalty.

A recent development is the recovery of empty polypropylene seed bags. These bags are also highly sought after with a market need of over 70,000 tonnes of recyclable polypropylene. Once again, the bags must be cleaned, even though very little of the seed dressing chemicals remain in such bags. Turn the bag inside out, rinse it all over with running water for thirty seconds. Shake the water off and repeat the rinsing twice. The bag is then nominally clean and can be recycled. Take note as mentioned earlier, that polypropylene decomposes quite rapidly, especially if left in the sun. To prevent this from happening, the cleaned bags should be tied in bundles and stored in a cool, dark place and be sent to a recycler as soon as possible.

Be Part of the Green Revolution

Farmers live off the land and share the planet with a multitude of wildlife and abiotic components of nature. With the recycling of empty containers and bags now in full swing, the farming sector can work towards taking their plastics out of the environment and into the recycling chain. In 2018 South African farmers recovered and recycled more than 5,200 tonnes of pesticide containers with the assistance of the CropLife SA approved recyclers and collectors. That is a significant percentage of the 8,000 tonnes of containers going into the market. We should not pat ourselves on the back as yet as 5,200 is not even 65% of the total tonnage. With a little effort we could reach 90% recovery and recycling by the end of 2021. Let's go for it!

Regulatory Advocacy

Efficacy Testing of Plant Protection Products

The ultimate goal of pesticide efficacy testing is to demonstrate a net positive effect of using a particular plant protection product (PPP) in a crop production system. A positive effect is generally understood as the protection or improvement of crop yields or quality, or more generally, a positive effect on resource efficiency in crop production.

Johannes Hutzler
Chair RRC
Published in CropLife
Africa Middle East
Newsletter April 2019

Thereby, it is important to test PPPs under local conditions as these can significantly affect product performance. It is for instance not guaranteed that a product originally developed for temperate latitudes works well in tropical climates. The major local factors influencing product performance are local agricultural practices, the degree of mechanization, climatic and environmental conditions, soil types, and the respective pest, weed, or disease spectrum. Only if a PPP proves performance under the respective conditions, can its use be recommended. In the worst case, PPPs may also have negative effects, such as phytotoxicity, adverse effects on succeeding crops, yield reduction, negative impact on pollinators or natural enemies of plant pests, or an increased risk of resistance.

Another important goal of local efficacy testing is the development of label claims and use recommendations, which must be derived from and supported by field data and must reflect the actual performance of the product. Label claims include pests, diseases and weeds for which the product is to be used, recommended equipment and methods of use, dose rates, timing and number of applications, situations of use, nature, extent and duration of pest control, potential compatibility with other products and uses and potential adverse effects under certain conditions of use.

In many countries, a local proof of product performance is required to register PPPs. The obvious reason for this is that the regulator should prevent ineffective or phytotoxic products from being placed on the market. Efficacy data can be obtained in field, glasshouse or laboratory tests, depending on the targeted use. Requirements on the type of data are defined and released by the registering authority as well as the question of who is qualified to generate the studies.



*Figure 1: typically used field trial settings for efficacy testing

In some countries, the applicant (usually the PPP manufacturer or importer) is responsible for the generation of trial data, in other countries trials are conducted by state-owned institutes or certified service providers. Depending on the country, data may be required from different locations or geo-ecological zones and from one or more growing seasons on a number of widely-used local varieties.

Some countries, such as the United States, do not require that biological efficacy data are submitted as part of the registration dossier. The evaluation of the effectiveness of PPPs remains with the user. This approach is based on the assumption that products cannot prevail in the market if they are not sufficiently effective.

The Effort for Efficacy Testing of New Active Ingredients and PPPs is High

The development of new active substances for plant protection products is a complex task and a significant financial investment for R&D companies. It is estimated that around EUR 250 million will have to be invested in R&D and registration over a period of more than ten years until the introduction of a new active substance. A significant portion of these expenditures goes into efficacy testing: around 10,000 field trials are carried out at various locations around the globe until the market launch of an active substance.

Also, new formulated products containing well-tried active ingredients must be tested under local conditions, since the recipes of the products usually differ significantly and thus their performance in the field can be very different. This is especially important regarding generic products, which are in African countries often registered based on basic equivalence assessments of the active ingredients but differ largely in their product composition from the originator products. If such PPPs are marketed without being tested properly in the field under local conditions, severe damages such as phytotoxicity or crop losses can happen.

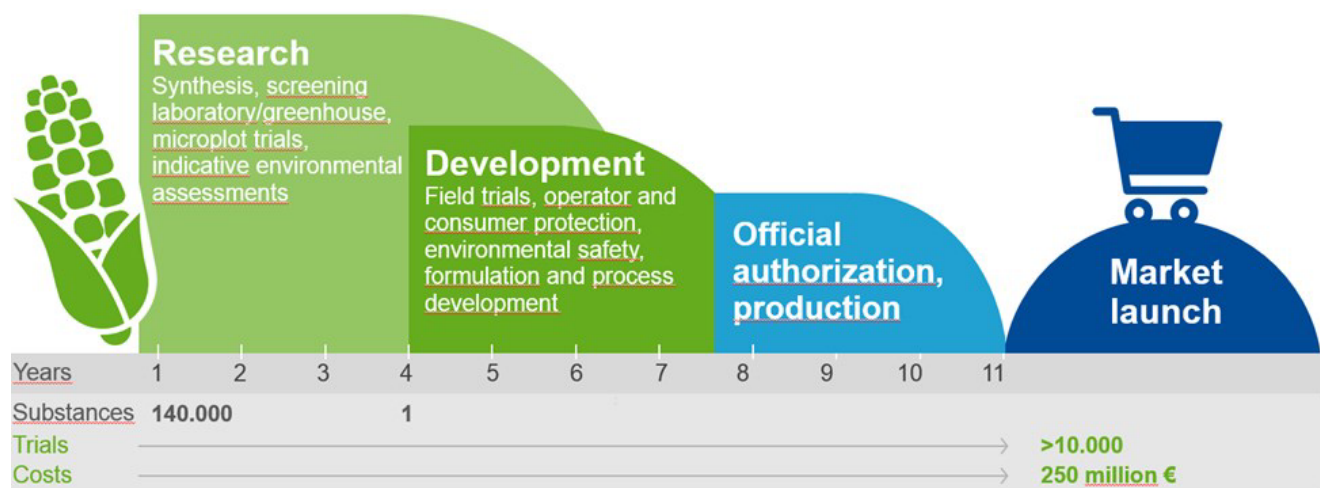


Figure 2: The development of a new active ingredient is complex and costly process which involves screening of more than 100.000 substances, more than 10.000 field trials and an overall investment of roughly 250 million Euros.

Regional Harmonization

Regional harmonization of efficacy testing methods and evaluation approaches is a reasonable approach that can help save resources and make data packages and thus product performances more comparable. Thereby, harmonization can take effect at various levels, including the adoption of common experimental protocols by a group of countries, the mutual recognition of results of the efficacy studies prepared under comparable geo-ecological conditions, and the joint assessment of efficacy data. The most far-reaching approach that is conceivable is the mutual recognition of registration approvals between neighboring countries such as practiced by the European Union (EU) and the CILSS countries in West Africa. A recent example is the East African Community, where regional harmonization standards are currently under development.

Standards for Field Trials

Field trials for efficacy evaluation during PPP registration must follow certain standards in order to allow the comparison of results between different PPPs or comparisons of performance over time (e.g. related to resistance development).

There are international standards that are also used in some AME countries, such as the *European EPPO standards* or the *Guidelines on Efficacy Evaluation for the Registration of Plant Protection Products from the FAO International Code of Conduct on the Distribution and Use of Pesticides*. Other countries and harmonized regions developed individual standards like e.g. the *Guidelines on the data and documents required for registration of agricultural remedies in South Africa* or the *Framework Protocols for the Biological Evaluation of Plant Protection Products in the CILSS region*.

Key Factors for Successful Efficacy Trials

The successful conduct of efficacy trials requires a decent knowledge of the test product (e.g. mode of action, formulation properties, expected dose rates etc.) and the agricultural framework in the target country or region (e.g. the spectrum of target organisms, local agricultural practices, crop rotation patterns etc.). Based on this, definition of clear trial objectives and the preparation of a trial protocol are key. The protocol defines all necessary tasks and steps to be conducted for a successful trial as well as the number and set up of trials that need to be carried out.

Proper planning is needed before and during the conduct of the trial which includes: application for trial approvals, selection of a proper trial site, ordering of seeds and samples of the test product, allocation of labor for the entire season, availability and maintenance of machinery and equipment, training of all persons involved, and so forth.

Following the predefined trial protocol supports to receive trial results that can be statistically analyzed and that are comparable throughout a series of trials from different regions and seasons. This makes it possible to observe the behavior of the test product under various environmental conditions, thereby ensuring the development of proper label claims and use recommendations that lead to reliable and reproducible effects in agricultural practice.

Prevention and Disposal of Obsolete Pesticides

Published by CropLife
International
Stewardship in Action
Newsletter April 2019

When a rural community is plagued by mosquitoes that carry the deadly malaria parasite, or its food crops are infested with pests that decimate yields, it will often use vector control products to tackle the threat.

These products are essential in the daily fight to protect people from tropical diseases and maintain food production. But a combination of factors — including a lack of infrastructure, poor storage, late distribution, changing weather patterns, product bans and uncoordinated supplies from donors — have led to pesticide stocks building up, no longer being needed and becoming out-of-date: in a word, obsolete.

How do we Fix the Problem?

Prevention of unwanted and obsolete stocks through accurate ordering and donation estimates, good storage practices, and high-quality packaging, is immensely important in the control of build-up.

CropLife International supports a multi-stakeholder approach to finding disposal solutions. While the main responsibility for disposal often lies with the owner of the stocks, the participation of other stakeholders is frequently essential for the successful completion of a disposal project. Stakeholders include manufacturers, suppliers, donor agencies, exporting governments and regional bodies, as well as hazardous waste disposal companies.

Since the 1990s, more than 15,000 tonnes of obsolete pesticide stocks have been collected and destroyed in OECD countries.

The Africa Stockpiles Programme

The Africa Stockpiles Programme (ASP) was established in 2005 to remove obsolete pesticides from the African continent and provide capacity building and institutional strengthening to prevent and manage obsolete pesticides.

Partners included national governments, FAO, World Bank, various NGOs and CropLife International. Although the ASP partnership ended in 2014, CropLife International, together with the FAO and other stakeholders have continued to collaborate to remove obsolete stocks from Africa. By the end of 2018, the project had removed more than 6,000 tonnes of obsolete pesticides from Africa and incinerated them safely.

Plan for the Future

CropLife International has recently committed to a new project phase to manage obsolete stocks from 2019 to 2025. Working with the FAO, national governments and other partners, the project will have a core focus on prevention of obsolete stocks, as well as managing existing stocks and the small amounts of obsolete stocks that unavoidably rise from responsible pesticide use.

CropLife International and its members, with the support of these critical partners, remain dedicated to the removal and disposal of obsolete stocks to promote sustainable agriculture and prevent pollution.

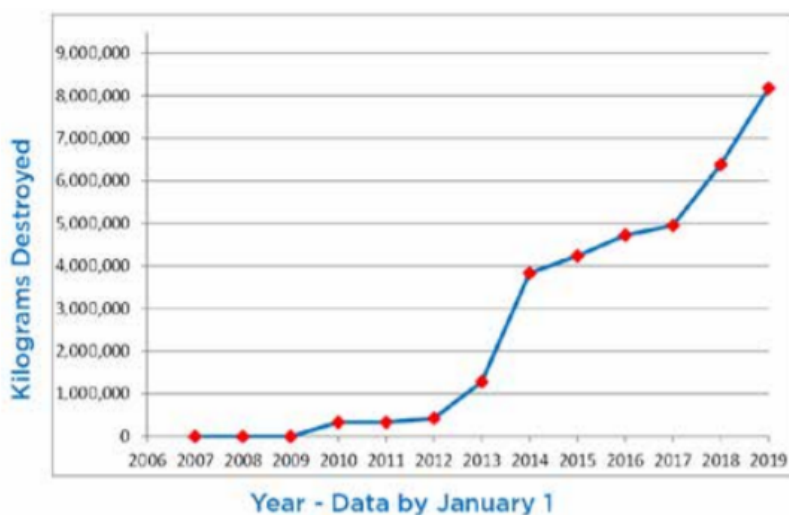


Figure 1: Quantity destroyed to date since the start of the Africa Stockpiles Programme.

Visit www.croplife.co.za to download the guidelines for cleaning polypropylene seed, fertilizer and animal feed bags.

Remember to Make Use of our Services

Members are encouraged to participate in, and make use of the services that CropLife SA has to offer:

Ideal dossier checklists	Advertisement compliance verification	Guidelines for regulatory compliance
Waste management programmes	Agricultural remedies databases	Stewardship best practices
Participation in forums addressing key issues such as:		
Pollinator health	Resistance management	Regulatory affairs
Stewardship	Application technology	Seed treatment

We're Here to Help

If you require assistance with any of the above services, would like to become a member, or if you have general feedback, we would love to hear from you. Please contact any member of our team or visit our offices in Centurion:

CropLife SA	Office	+27 (0)87 980 5163	info@croplife.co.za
Rodney Bell	Chief Executive Officer	+27 (0)66 273 6027	rod@croplife.co.za
Gerhard Verdoorn	Operations and Stewardship Manager	+27 (0)82 446 8946	gerhard@croplife.co.za
Fikile Nzuza	Regulatory and Government Liaison	+27 (0)71 383 2391	fikile@croplife.co.za
Elriza Theron	Marketing and Communications Manager	+27 (0)72 443 3067	elriza@croplife.co.za
Nadia van Niekerk	Financial and Membership Administrator	+27 (0)72 940 5591	nadia@croplife.co.za
Chana-Lee White	Agri-Intel Manager	+27 (0)72 298 9389	chana@croplife.co.za
Luigia Steyn	Agri-Intel MRL Consultant	+27 (0)60 508 6369	lsteyn@viking.co.za
Susan Ramaila	Office Assistant	+27 (0)76 063 6629	susan@croplife.co.za

310 Lougardia Building
Corner of Hendrik Verwoerd drive & Embankment road
Centurion, Gauteng
South Africa