

Managing plastics out of the farming sector

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Plastic products on the farm

The year 1898 is long forgotten with nary a human being ever heard of a German scientist by the name of Hans von Pechman for who it was a turning point in his career. As happens with other many scientists, 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 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 of polypropylene nowadays. 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 their very 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 container before going to the camp where the cattle were supposed to be dosed. 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 is a risk as some of the seed dressing chemicals such as tefluthrin are very irritating and may cause severe skin burns. On top of that is this hand-harvested maize exposed to seed dressing pesticides that should never be on maize. If people eat that, they may be subjected to toxic chemicals that is never 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 for 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, palettes, 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 while it may serve a very good purpose in the recycling industry.

Empty plastic pesticide containers are not 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 30-second shake will dissolve or disperse the last pesticide traces into the water. Decant this rinse water into the spray tank. Repeat the rinsing another two times. 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 purposes it must be punctured by 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 Manager






CERTIFICATE OF ADEQUATE DISPOSAL[®]
OF TRIPLE RINSED EMPTY PLASTIC PESTICIDE CONTAINERS

Atlantic Plastic Recycling hereby certifies that ____ (quantity) triple rinsed empty plastic pesticide containers were received or collected from _____ (full name) of _____ (farm or company name) in the _____ (district) of the _____ (province), on _____ (date).



Atlantic Plastic Recycling Representative <small>Atlantic Plastic Recycling is a CropLife SA approved plastic container collector/recycler CLSA Certificate CRR2019/AP1</small>	Farm or Company Representative
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Date: _____ 2019

Report fraudulent use of this certificate to 082-446-8946

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2019 CERTIFICATE OF APPROVAL[®]
 Certificate number CRR2019/DMH

TO RECOVER AND RECYCLE TRIPLE RINSED EMPTY PLASTIC PESTICIDE CONTAINERS

CropLife South Africa hereby certifies
Drom Monster Hoofkantoor nationwide

as a CropLife South Africa approved collector and recycler of triple rinsed empty plastic pesticide containers

The bearers of this certificate may issue a CropLife South Africa certificate of adequate disposal to individuals and companies that dispose of triple rinsed empty plastic pesticide containers through their services

Issued by CropLife SA on 15 December 2018
Valid until 31 December 2019

Report fraudulent use of this certificate to 082-446-8946

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under the Resources bullet on www.croplife.co.za. There is no need any longer to stress about empty containers; contact one of the approved service providers and get the triple rinsed containers off the farm. The collectors and recyclers who service the farmers issue a CropLife SA Certificate of Adequate Disposal that means quite a lot 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 must the bags be cleaned although very little of the seed dressing chemicals remain in such bags. Turn the bag inside out, rinse off with running water all over for thirty seconds. Shake the water off and repeat the rinsing twice. This bag is nominally clean and can be recycled. Take note as mentioned earlier that polypropylene decompose quite rapidly especially if left in the sun. To prevent this from happening, tie 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 bag now in full swing the farming sector can now work towards taking their plastics out of the environment and into the recycling chain. In 2018 South African farmers through the assistance of the CropLife SA approved recyclers and collectors recovered and recycled more than 5,200 tonnes of pesticide containers – that is a significant percentage of the 8,000 tonnes of containers going into the market. We should not pat ourselves on the back 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!! ■

