

Leading the Vision

Stewardship in the Crop Protection Industry



Recycling Benefits from Container Management



Crop protection product containers in Malaysia are carefully stored and then recycled when empty.

The amount of plastic recovered from empty crop protection product containers in 2012 would have filled 238 Olympic-size swimming pools. More than 70,000 tonnes of plastic were recovered to be recycled into useful products, such as drainage pipes, fence posts and parking cones. This amount of recycling also spared energy use amounting to 130 million liters of gasoline or 24,000 fewer cars on the road per year.

Such responsible container management is part of an industry-wide stewardship initiative that is supported by CropLife International's member companies and global network of national and regional associations.

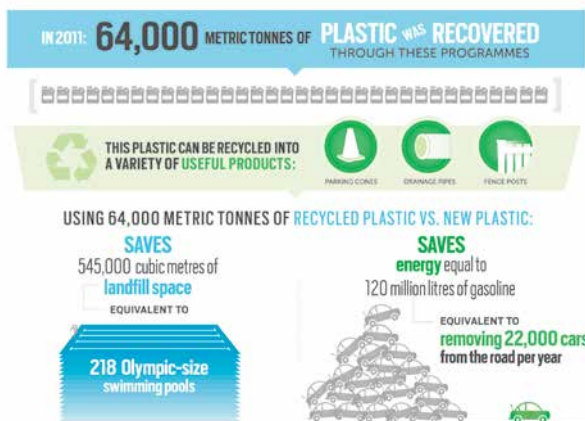
dustry members promote good practices. Such stewardship is critical to sustainable agriculture.”

Best practices include the crop protection industry developing suitable containers, training farmers on appropriate rinsing and disposal of containers, and creating disposal options. For example, CropLife International advocates the triple-rinse process — a tested and validated method for minimizing residual product in a container, preventing the possible contamination of soil and water. It also ensures that farmers benefit by using all of the product.

Once these properly rinsed containers are collected, the industry's goal is to recycle them into other products. The next best option is incinerating them with environmentally sound methods, such as in cement kilns, where they are used as an energy source. If these two options are not possible, then the containers are incinerated as waste in approved facilities. The worst case scenario and last resort is going to a landfill.

Without proper disposal, empty crop protection containers pose a potential risk to farmer health and the environment. In some communities, they may be reused to store other materials, such as water and food — a highly dangerous practice. Farmers, particularly those that have no easy alternatives, may also discard empty containers in the fields where they have been used.

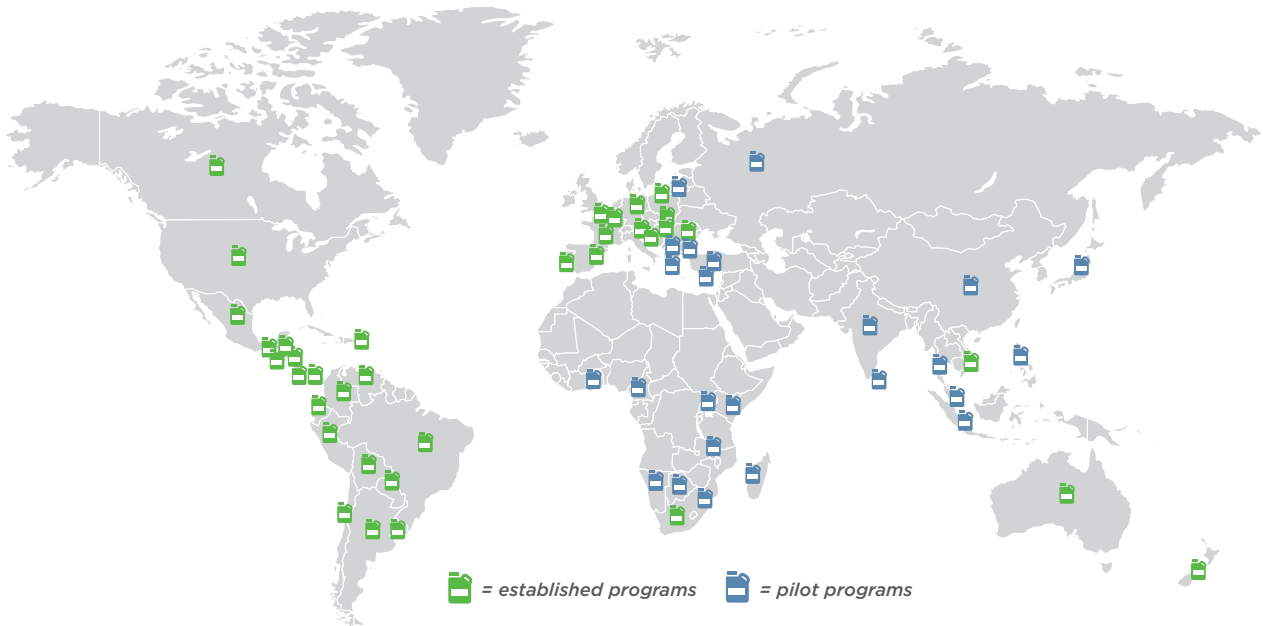
To address these problems, CropLife International has helped establish 36 container management programs around the world, mainly in Europe, North and Latin America, Australia and New Zealand. In addition, 24 pilot programs have been set up in Eastern Europe, Africa and Asia. The industry aims to maximize the collection, recycling



[View Container Management Infographic](#)

“Good container management and recycling practices ensure product containers are non-hazardous to the environment and human health,” says Detlef Doehnert, Ph.D., chair of CropLife International's Container Management Project Team and director of supply chain stewardship, Crop Protection - Operations & Supply Chain Management Europe, Africa, Middle East, Central Asia, BASF SE, Germany. “All in-

Location of Industry-Led Container Management Programs Worldwide



and proper disposal of crop protection product containers worldwide by the year 2020.

Environmental Benefits

A total of nearly 130 million kilograms of crop protection product containers have been recycled since the CropLife International container management initiative began about a decade ago.

“Recycling used crop protection containers goes a long way in environmental benefits,” notes Doehnert. “It’s easy to demonstrate the value of container management programs.”

For instance, about 30,000 to 70,000 tonnes of empty crop protection product containers were collected each year between 2005 and 2012, accounting for 15 to 32 percent of the total amount of containers shipped to market globally, with collection rates increasing every year. During these seven

years, nearly 400,000 tonnes of containers were recovered. About 50 percent of them were in Brazil, which has the largest container management program in the world. In 2012, over 37,000 tonnes of plastic were collected there alone, representing almost 95 percent of the containers entering the Brazilian market.

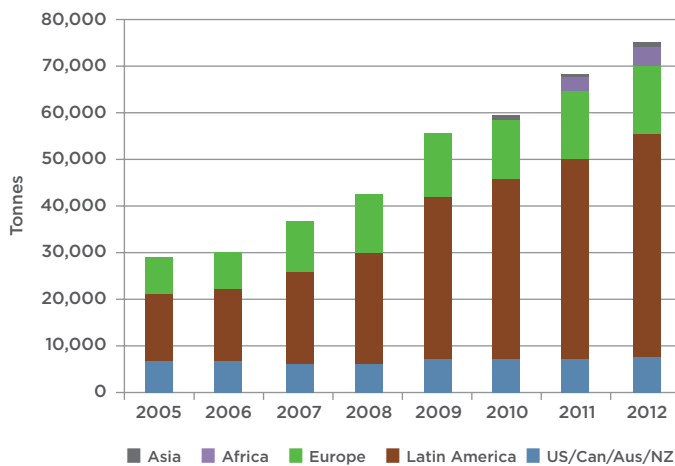
Increased efficiencies in programs due to better collection and greater added-value from recycling options resulted in almost a 50 percent reduction in the costs (USD/kg) of running them between 2005 and 2012. Latin America, particularly Brazil, has led these efforts. Such mature programs are looking to further cost efficiencies by collecting other agricultural plastics such as bale wrap and sheeting for covering row crops.

Case in Point: Malaysia Container Management

Partnerships with local authorities, governments and farmer groups are essential to develop or enhance container management and recycling programs. For example, in Malaysia, about 500,000 kilograms of empty containers made with HDPE plastic have been recycled since 2003 with collaboration from government agencies, the Malaysian CropLife & Public Health Association (MCPA) and some of its members. Research has shown that every tonne of HDPE plastic recycled into new products results in energy savings of 51.4 million British thermal units or the equivalent of 1,700 liters of gasoline.

The Malaysian container management program started off as a pilot project with the Pesticides Board of the Malaysian Department of Agriculture in April 2003 in the Cameron Highlands. MCPA member companies initially provided coupons to encourage farmers to triple rinse and return empty crop protection containers to their dealers for recycling. Upon return, they received redemption coupons to offset the price of their next products purchased. The Malaysian Department of

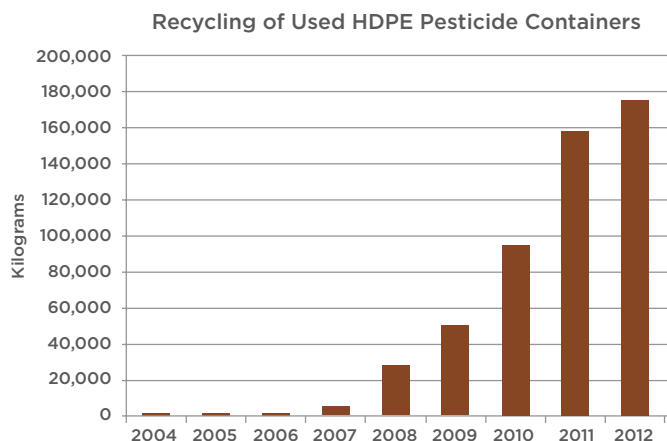
Empty Crop Protection Product Containers Collected by Industry-Led Container Management Programs Worldwide 2005-12



Environment exempted the triple-rinsed containers from classification as “scheduled waste,” which was key to the project’s success. This exemption was renewed in March 2013.

In the first year of the project (2003-04), about 900 kilograms of HDPE crop protection product containers were collected — enough to demonstrate the project’s value. So in 2006, the Malaysian government expanded the pilot project into a national recycling program. This allowed for the participation of

Empty Crop Protection Product Containers Collected in Malaysia 2004-12



Meeting 2020 Goals

Working towards the 2020 goal of maximizing global collection and recycling of these containers, the industry will focus on establishing programs in Africa, Eastern Europe and Asia (central, south and southeast).

The crop protection industry is also committed to creating innovative packaging and container design to improve their use and disposal and recycling methods as well. This includes researching and developing new recycling options, technologies and end-use products, such as new containers, electrical conduits and fence posts.



Between 2003 and 2012, a total of 175,000 kilograms of used crop protection product containers were recycled in Malaysia, saving \$800,000 USD in incineration fees.

“Partnerships with local authorities, governments and other stakeholders, including farmer groups, are essential to develop or enhance container management and recycling programs.”

commercial farm plantations, which are major users of crop protection products. MCPA members were instrumental in recruiting plantations and setting up recycling stations for them.

A critical element to the success of the national recycling program has been the involvement of contractors, who drive many kilometers to pick up empty plastic containers from remote rural areas at their own cost. Their trucks deliver products to plantations and then the empty trucks pick up triple-rinsed containers. These reverse logistics facilitate good working relationships with the plantations as well as foster goodwill with the Malaysian government, which organizes recycling in farming villages.

By 2012, a total of 175,000 kilograms of used crop protection containers were recycled, according to the Malaysian Department of Agriculture. This saved about \$800,000 USD in incineration fees. Slowly and steadily, more used product containers are being recycled, benefiting the environment and protecting human health.

New formulation and active ingredients as well as farm sizes will likely influence packaging designs. Highly active ingredients, for example, which require lower application rates, could lead to smaller packages along with the smaller farm sizes of Asia and Africa. In contrast, larger farms in Europe, North America and parts of Latin America and Eastern Europe are leading to more reusable bulk containers. New formulations could reduce product adhesions to container walls, thereby making them easier to rinse. The future may also contain new materials for packaging, improved application systems, and machinery for rinsing containers and puncturing them to prevent reuse.

“Responsible container management is part of industry-wide, global stewardship that is making agriculture more sustainable, communities safer, environments cleaner and new useful products available,” concludes Doehnert. 💧

Sharing the Story



CropLife Asia's New Stewardship Director Raghavan Sampathkumar

Sampathkumar is an agribusiness professional with diverse experience working with crop protection products, biotech crops, animal nutrition and commodity trade in the Asia Pacific region. He holds a master's degree in agribusiness from the University of Adelaide, Australia, and a bachelor's degree in agriculture from Tamil Nadu Agricultural University, India. Prior to joining CropLife Asia, he worked as a freelance marketing consultant for many international agri-food organizations, including the United States Department of Agriculture and a Canadian farmers' association. Sampathkumar also worked with Monsanto India as a stewardship manager.

Q How did your interest in agriculture begin?

I grew up in a rural town in India, but didn't have any strong connections to agriculture until I chose to study it for my degree. Then I realized the industry's potential opportunities to feed the whole world and its impact on billions of livelihoods and that really got me going.

Q What impresses you most about Asia's farmers?

This is a region with 4.3 billion people and the huge responsibility to feed the growing population is in the hands of the majority of its small farmers. They do it with relentless dedication and commitment despite several difficulties including financial, marketing and technological challenges. I also appreciate the great diversity of Asian agriculture.

Q What are you working on at the moment?

There are three main areas of work: container management, Integrated Pest Management/Responsible Use and the International Code of Conduct on the Distribution and Use of Pesticides. As a region, we are making good progress in all of these areas. The major focus of our work is on high impact countries where the relative potential to deliver our regional strategic goals is big – these are China, India, Indonesia, Thailand and Vietnam.

Q What are the big challenges for stewardship in Asia over the next 10 years?

The first and biggest challenge is to change the way farmers think about and use crop protection products and changing habits and attitudes is a long process. The second challenge is to gain support, mainly from the governments, to prioritize stewardship initiatives. The third challenge, or rather opportunity, is to amplify our messages and expand our sphere of influence by partnering with like-minded organizations in the region.

Q Are you looking forward to the challenge?

I am excited to play my small part through CropLife Asia in helping Asia's farmers to be healthy and prosperous and to produce more quantities of safe food.

Raghavan Sampathkumar is based at CropLife Asia in Singapore.

You can reach him at raghavan.s@croplifeasia.org.

Partnership Profile

CropLife Latin America and U.S. Government



Who:

CropLife Latin America with U.S. government agencies:

- U.S. Environmental Protection Agency (EPA)
- National Association of State Departments of Agriculture Research Foundation (NASDARF)
- U.S. Agency for International Development (USAID)

Where:

Costa Rica, Dominican Republic, Honduras, Nicaragua, Guatemala and Honduras.

What:

In 10 years, the **partnership with EPA-NASDARF** has provided around \$300,000 USD to CropLife Latin America to help establish crop protection training programs in Central America and the Caribbean. By learning Good Agricultural Practices (GAPs), farmers in these regions have significantly improved public health and crop quality. The most recent EPA-NASDARF projects include Costa Rica (2011-13), where CropLife Latin America member Fundación Limpiemos Nuestros Campos trained 4,000 field workers on GAPs, such as how to properly apply crop protection products. With improved spray techniques, accidental intoxication has been greatly reduced. Similarly, in Nicaragua (2011-14), field workers are being trained on GAPs for



Perspective

Removing Africa's Obsolete Crop Protection Products

by Hans Dobson



When a community in rural Africa 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 or crop protection 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, inefficient distribution, changing weather patterns and uncoordinated supplies from donors — have led to stocks building up, no longer being needed and becoming out-of-date: in a word, obsolete.

In 2005, the amount of obsolete crop protection products stockpiled across Africa was estimated at 50,000 tonnes. However, most African countries lacked the capacity to properly manage their destruction and to clean up contaminated sites.

African Stockpiles Programme

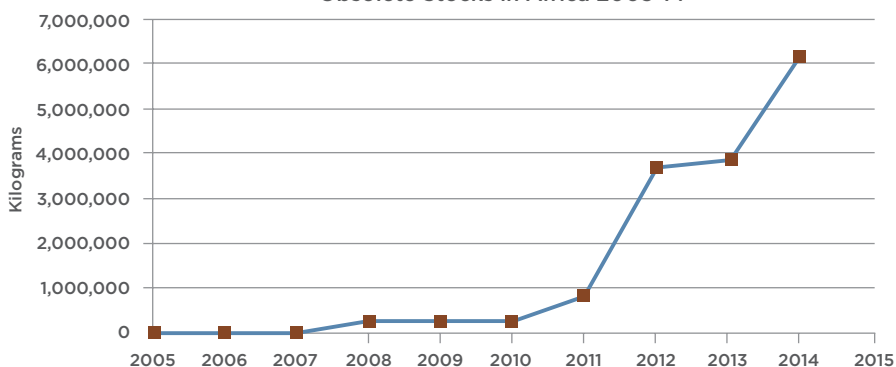
The Africa Stockpiles Programme (ASP) was created to remove obsolete crop protection products through a part-

nership between African countries, the World Bank, United Nations' Food and Agriculture Organization (FAO), CropLife International, Pesticides Action Network in the UK and Africa, and the World Wide Fund for Nature. It was estimated that about \$200-250 million USD would be needed to remove all 50,000 tonnes of obsolete stocks in Africa.

The ASP began with a 10- to 15-year timeframe with phase one launched in September 2005 in seven countries: Ethiopia, Mali, Morocco, Nigeria, South Africa, Tanzania and Tunisia. All had ratified the Stockholm Convention and Basel Convention on Transboundary Shipment of Hazardous Waste, which called for national implementation plans to get rid of Persistent Organic Pollutants (POPs) and prevent inappropriate disposal of hazardous waste. The Stockholm Convention listed nine crop protection products to eliminate: aldrin, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex and toxaphene.

In the first phase, country operations included national inventories; safe-guarding, disposal and site clean-up; ↴

Recorded and Projected Destruction of Obsolete Stocks in Africa 2005-14



the safe handling of crop protection products. In the Dominican Republic (2007-13), a primary reason for training farmers on GAPs was to meet export requirements for crop protection product residues. The number of people trained through this program leapt from 500 in 2012 to 1,800 in 2013.

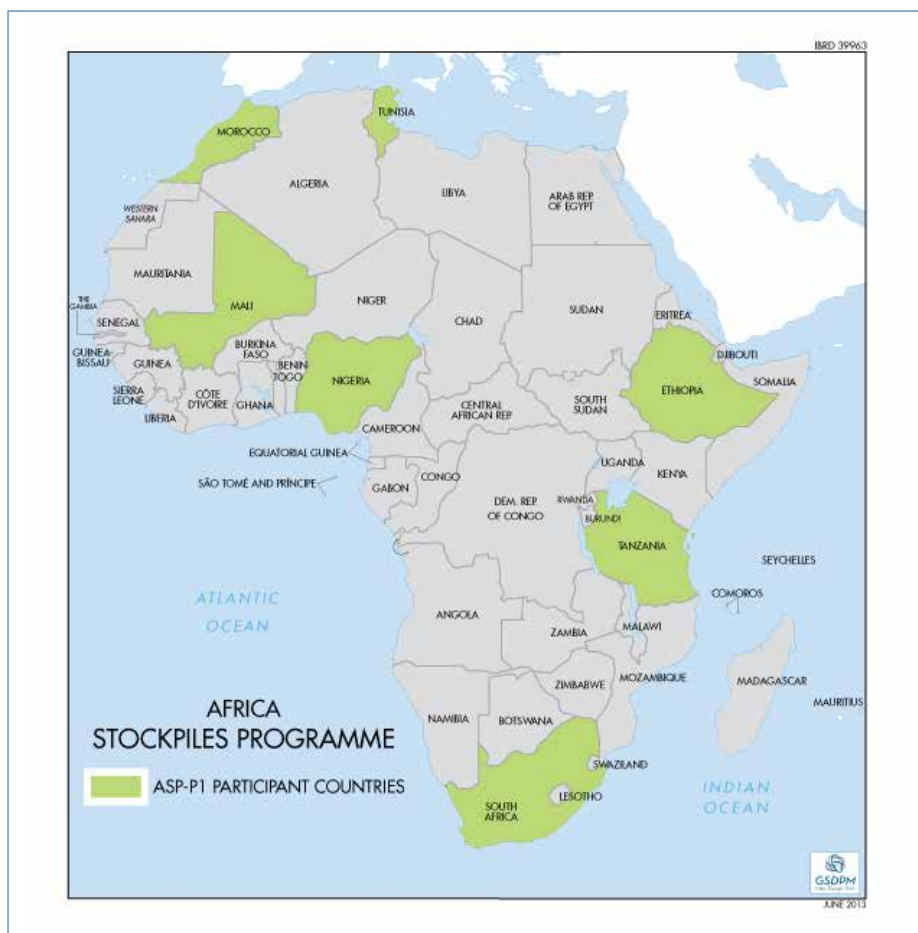
The partnership with USAID will provide funds of \$120,000 USD for CropLife Honduras to deliver training on GAPs (2013-2015). The funds are an important element of the USAID ACCESO project, which is part of the U.S. government's "Feed the Future" initiative. CropLife Honduras trained more than 100 extension workers last year to train farmers in the field. The overall goal is to train 40,000 Honduran farmers.

Why:

Crop protection products are used widely by farmers in Central America and the Caribbean to prevent weeds, pests and diseases from destroying their produce. The long-running partnership between CropLife Latin America and the U.S. government helps farmers maintain production while preserving the environment and safeguarding their health and safety. The programs also work to reduce poverty and malnutrition through improved health and nutrition practices as well as access to economic development opportunities.

"Thousands of farmers and their families are benefiting from this training," says Gabriela Briceno, stewardship programs coordinator of CropLife Latin America. "Collectively, with CropLife Latin America partners and local training organizations, we are making a difference in farmers' lives — from increased money in their pockets to human and environmental health protection."

For more information, contact Gabriela Briceno at CropLife Latin America at gbriceno@croplife.org.



capacity building in the prevention, management and handling of obsolete stocks; project management; and monitoring activities. The FAO's Pesticide Stock Management System, a web-based database, was used to store detailed information on the stocks in all inventoried countries, including the original donors, manufacturers and suppliers.

Crop protection products are of course most widely used in agricultural areas, where distributors and small-scale farmers often have little knowledge of exposure risks and storage facilities are below internationally recognized standards. Obsolete crop protection products are often located in these poor rural areas so the primary beneficiaries of the ASP have been the farming communities themselves. Governments, namely the ministries of health, environment and agriculture in participating countries, benefit from the ASP through improved environmental protection and product management capacity. People, wildlife and ecosystems are global beneficiaries.

Steady Progress

By August 2013, of the roughly 6,000 tonnes of inventoried obsolete crop protection products across Africa, ASP projects led by the World Bank, FAO and CropLife International had disposed of 3,146 tonnes of stocks in the following countries:

- Tanzania - 700 tonnes
- Tunisia - 1,792 tonnes
- Ethiopia - 448 tonnes
- South Africa - 100 tonnes
- Kenya - 60 tonnes
- Malawi - 40 tonnes
- Cameroon - 6 tonnes

In addition to these obsolete stocks, a further 687 tonnes were safeguarded – repackaged to UN-approved containers and transported to a secure, central store pending disposal:

- Eritrea - 72 tonnes
- Nigeria - 6 tonnes
- Malawi - 389 tonnes
- Ghana - 170 tonnes
- Cameroon - 50 tonnes

Safeguarding the Future

CropLife International-led safeguarding projects were concluded in Malawi, Ghana, Kenya and Cameroon with disposal envisaged through the FAO and other follow-up projects. Planning is now underway to repeat such effective collaboration in several other countries, such as Benin and Morocco, over the coming years.

The FAO is also starting in other West African countries projects that include obsolete crop protection product disposal, prevention of accumulation, sustainable container management and regulatory reform.

Although there has been significant progress in the past 25 years in eliminating obsolete crop protection products, there is still much to do. The FAO is the appropriate organization for the global coordination of obsolete stock management but it continues to collaborate closely with crop protection product manufacturers who are most familiar with their active ingredients and formulations. 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 healthier communities. Good product stewardship is as essential as crop protection itself.

Hans Dobson is a crop protection specialist at the Natural Resources Institute of the University of Greenwich in Kent, U.K., and a consultant for CropLife International's obsolete crop protection product activities.

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