

The University of Maryland Extension Agriculture and Food Systems and Environment and Natural Resources Focus Teams proudly present this publication for commercial agronomic field crops and livestock industries.

Volume 6 Issue 3

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Agronomic Crop Insect Update

By Joanne Whalen, DE Extension IPM Specialist
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Alfalfa

Continue to sample for potato leafhoppers on a weekly basis. We continue to find adults and nymphs in fields. Although both life stages can damage alfalfa, the nymphs can cause damage very quickly. Once plants are yellow, yield loss has already occurred. The treatment thresholds are 20 per 100 sweeps on alfalfa 3 inches or less in height, 50 per 100 sweeps in 4-6 inch tall alfalfa and 100 per 100 sweeps in 7-11 inch tall alfalfa.

Small Grains

We continue to find barley and wheat fields that were not treated with economic levels of armyworms. If you have not treated, be sure to sample fields and check all labels for the days between applications and harvest (pre-harvest interval).

Soybeans

Be sure to sample seedling stage beans for bean leaf beetles, grasshoppers, and thrips.

(I) Grasshoppers: Population levels are starting to increase in the earliest emerged no-till full season fields. As barley is harvested and soybeans are planted, these fields will be especially susceptible to attack by grasshoppers which can cause stand loss. If stand reductions are occurring from plant emergence to the second trifoliolate, a treatment should be applied. Although no precise thresholds are available, a treatment maybe needed if you find one grasshopper per sweep and 30% defoliation from plant emergence through the pre-bloom stage.

(II) Bean Leaf Beetle: As a general guideline, a treatment may be needed for bean leaf beetle if you observe a 20 – 25% stand reduction and/or 2 beetles per plant from cotyledon to the second trifoliolate stages. These treatment thresholds should be reduced if bean pod mottle virus is present in your area or you suspected virus the previous season.

(III) Thrips: Thrips can feed and reproduce on the leaves and buds of soybean seedlings. Their feeding creates bleached-out lesions along the leaf veins and

gives a silvery/bronzed appearance to the leaf surface when damage is severe. These insects are very small (less than a tenth of an inch) and are torpedo shaped. While thrips always occur on seedling stage soybeans, it is only during outbreak years that they cause concern. In particular, during dry weather and on earlier planted full-season soybeans, thrips populations can explode when plants are growing slowly. Under these circumstances thrips injury will occasionally kill seedlings. Other stressors, such as nutrient deficiencies and herbicide injury, can add to thrips damage and cause plant loss. Yellowing can occur from thrips but there are also a number of other factors that can cause yellowing so it is important to scout fields to identify what is causing the yellowing. Although no precise thresholds are available, as a general guideline, treatment may be needed if you find 4-8 thrips per leaflet and plant damage is observed.

Understanding the Lime Requirement Part 3: Soil Variability & Management

By Jarrod Miller
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Crops, soils and management are inherently variable in their response to pH change, so there will never be a universal pH for all situations. Prior to liming your fields, you should consider the cost/benefit of your management style on raising soil pH. The lime requirement is only as accurate as your personal knowledge of the system.

Ask yourself, what are the benefits of liming?

Lime is added to neutralize acidity, whether it is in the form of Al or H. By raising soil pH we expect to increase yield, mainly through the reduction of toxicity from Al, Mn and Fe. Lime can raise the soil base saturation by adding Ca and Mg, which are also essential nutrients for plant growth. In addition, soil biology is affected by the soil pH. Bacteria which assist in nodulation of legumes,

the breakdown of organic matter and the conversion of Nitrogen all prefer a mildly acidic to neutral pH. If a moderate cost of lime increases the yield and your bottom line, the choice should be clear.

What are the costs of lime, or over-liming?

While recommendations of lime are meant to benefit, there can be hidden costs. At higher soil pH micronutrients like Zn and Mn may become difficult for plants to extract from the soil, becoming “non-exchangeable” precipitates. It is also hypothesized that mineral weathering within soils, which provides fresh micronutrients, will be limited if the pH is raised. Soils with higher pH can observe increased “effective” cation exchange capacity (CEC), but this can be at the cost of anion exchange capacity (AEC). Anion exchange is responsible for retaining negatively charged nutrients like sulfur (SO₄) or nitrate (NO₃). The additional Ca/Mg from lime may also induce the leaching of K from the soil, causing a macronutrient deficiency. The problem with predicting the costs of lime is that they will vary greatly with crop, soil and management.

Crop response to soil pH changes.

It is (or should be) well known that plants have a range of tolerances to pH and Al toxicity. Some plants, like azaleas or blueberries, prefer an acidic pH. Crops, such as potatoes, may be more susceptible to diseases at alkaline soil pH. All of this can be ameliorated by understanding the pH requirements of a particular crop (corn, potatoes, ect). More difficult to predict is the variability *within* a crop, such as different varieties or hybrids. Studies of soybean and corn have observed that some varieties may be more susceptible to Mn and Al toxicity than others. The susceptibility of your variety of choice may not be well known, which requires field observations by the producer to discern any differences.

Soil variability is the hardest to predict.

Soils will vary by the parent material they form in, so soils from Western Maryland will have different lime requirements than those on the Piedmont or Eastern Shore. There can also be differences within soils in each region of Maryland and how they respond to lime. As rocks and minerals in soils weather, they replenish bases (or nutrients) in the soil. However, the more weathered a soil is (i.e., the older it is), the more dominated by acids (Al and H) the CEC may be. The acidity within highly weathered soils can be neutralized with lime, but the lower amount of micronutrients present may quickly reach a plant deficiency state. As the pH rises many micronutrients (metals like Zn, Fe and Cu) precipitate as a solid mineral, and so are unavailable to plants. Soils lower in these nutrients will be the first to experience deficiencies with a mildly acidic soil pH (e.g, 5.5 to 6.5). Predicting how micronutrients will be affected by a rise in pH relies on many soil properties, but can be simplified with a discussion of soil texture. Coarse textured, sandy soils release nutrients slower through

weathering. Sandy soils also have lower CEC, which makes it harder to retain nutrients in the soil. Due to their lower nutrient content, coarse textured soils are sensitive to over-liming as compared to soils higher in clay. This is why pH recommendations for sandy soils may be 6.0, while those with finer textures can be up to 6.5.

Manganese is a micronutrient that can straddle the fence from toxicity to deficiency.

Toxicity is more likely to be present in acid soils with sufficient Mn. In the Mid-Atlantic, sandier soils of the Coastal Plain are unlikely to have enough Mn to be toxic at any pH. Additionally, they can quickly show Mn deficiencies when over-limed. Raising pH removes Mn from solution, but so can CEC, oxidation, and organic matter (OM).

Higher CEC removes Mn from solution by adsorbing it onto soil particles, reducing toxic effects. Salt contents of the soil are important though. The addition of fertilizers can increase soil salt concentrations (i.e., exchangeable nutrients), releasing Mn back into solution. Aluminum toxicity can follow a similar reaction. Soils high in Al may not see toxic effects if it stays sorbed to soil particles, but the addition of salts, such as fertilizers, may cause Al to be released into solution. Manganese can also be influenced by soil moisture, as it undergoes oxidation/reduction reactions, similar to rust colored soils from Fe. Dense, compacted, and saturated soils may dissolve Mn-oxides increasing toxicity, compared to well drained, oxygenated soils where Mn is a harmless precipitated mineral.

Organic matter is known to provide nutrients as it breaks down, but OM can also bond with micronutrients preventing plant toxicities. Similar to CEC, this can be good or bad, depending on the total amount of Mn present. Adsorption by OM may reduce toxic effects from Mn, Al or Fe. Alternatively, OM can cause deficiencies if Mn concentrations are already low in the soil.

Both CEC and OM are important soil components for nutrient holding. As soils become acidic, precipitated minerals dissolve, releasing micronutrients. These nutrients are quickly absorbed onto the CEC or become associated with organic matter. Of the micronutrients Zn, Cu, and Fe though, Mn is the most likely to be on the CEC and not complexed by OM.

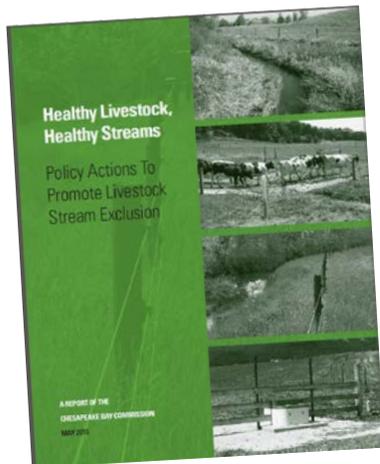
Soil tillage is a management practice that affects liming results.

To deal with plant and soil response to lime, understanding tillage types is needed. Conventional tillage, through discing or plowing, helps mix lime in the root zone. Inadequate mixing will limit neutralization of acidity. Under no-till, lime moves into the root zone through leaching by rainfall or irrigation. This will result in a slower neutralization compared to mixing into the root zone. In addition the increased nitrification from organic matter in no-till systems will add acidity to soils.

If lime is not adequately mixed, roots may still encounter acidic subsurface horizons. It is recommended to add lime incrementally over several years so that acidity is ameliorated deeper than the root zone. It is not recommended to use higher rates of liming.

Although this would increase leaching into the subsoil, you may have several seasons of unnecessarily high pH at the surface. If high rates of lime are applied, it is better to mix it deeper into the soil. Small quantities of lime should not be mixed too deep, but take care of the surface acidity. Sometimes an acid subsoil may benefit a producer when the surface pH is too high. Roots reaching these zones may have access to micronutrients that have become unavailable at the surface.

Lime recommendations from labs may be precise for some soils, but all producers should make their own efforts to ensure it fits with their management situation. Be sure to check if lab results are based on reaching a pH of 6.0 or 6.5, because your soil type may require you to do your own calculation.



Healthy Livestock, Healthy Streams: Policy Actions to Promote Livestock Stream Exclusion

This Chesapeake Bay Commission report entitled, *Healthy Livestock, Healthy Streams: Policy Actions to Promote Livestock Stream Exclusion*, examines the health benefits to livestock and to stream health and then looks into reasons why more farmers have not adopted this practice. Reasons cited include tradition, upfront costs, absentee landlords and tenant farmers, not enough flexibility for buffer requirements, and some farmers not wanting to accept government funds. The report then examines federal and state regulations governing stream exclusion, and also federal and state cost share programs and other incentives offered like tax credits. Finally, the report offers some ideas for policy options to address farmer reticence and to increase adoption of stream exclusion practices.

The full report can be found at:

<http://www.chesbay.us/Publications/Healthy%20Livestock,%20Healthy%20Streams.pdf>

Comments on the report may be directed to:

Bevin A. Buchheister, Esq.

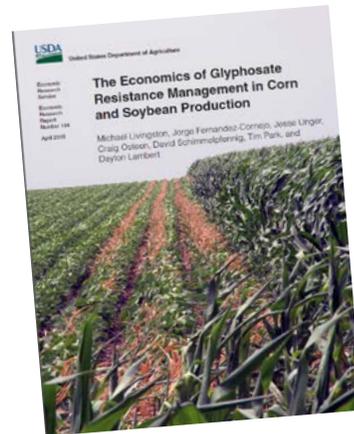
Maryland Director, Chesapeake Bay Commission

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USDA Glyphosate Resistance Report The Economics of Glyphosate Resistance Management in Corn and Soybean Production

<http://www.ers.usda.gov/publications/err-economic-research-report/err184.aspx>

The USDA has released a report on the economics of glyphosate resistance. Attached are the 2 page summary and the full 52 page report.

Some highlights include:

- More resistance to glyphosate was found on soybean than corn acres
- Glyphosate resistance management was more likely to be done on corn acres
- Herbicides other than glyphosate accounted for most application on corn acres

To manage resistance the report recommends:

- 1) Use glyphosate during fewer years
- 2) Combine glyphosate with one or more alternative herbicides
- 3) Avoid applying glyphosate in consecutive growing seasons

Scout Fields for Timely Postemergence Herbicide Applications

By Mark VanGessel
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There are a number of issues that can result in poor performance of postemergence herbicides (weather, plant stress, surfactants etc.); but the two major reasons are selecting the wrong herbicide for the weeds present and applying herbicides to weeds that are too large. We have become accustomed to glyphosate controlling weeds well over 6 inches tall. But as we experience more glyphosate-resistant weeds, we need to include an effective tankmix partner and apply it to small weeds. In our experience, this means most postemergence applications need to be made within four weeks of the soil-applied or preemergence application; if soil-applied herbicides did not get proper incorporation, weeds may need to be treated even earlier. So if the preemergence herbicide was applied 2 weeks before planting, a postemergence application may be necessary by 2 weeks after planting. Scout your fields regularly so you can keep an eye on weed growth and apply the postemergence sprays to weeds while they are still susceptible. If these postemergence sprays are made earlier than 5 weeks after planting, it may be necessary to include a herbicide that will provide residual control. Waiting longer to allow "all the weeds to emerge" often results in reduced control of the earliest emerging plants.

Soil Health Google Group [Discussing Soil Health in MD](#)

By Nevin Dawson
Sustainable Agricultural Coordinator
University of Maryland

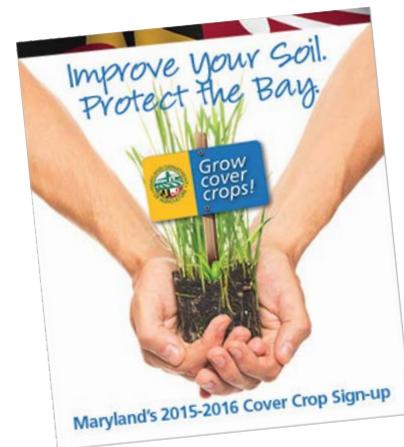
Welcome to the Maryland Building Soil Health Google group. We have about 85 members and counting. To kick off the conversation, I would like to ask some discussion questions and provide an action-oriented summary of the notes I took during the discussion session at our recent "Soil Health: How to Lead Change" workshop (below). Please respond with your thoughts. Note that clicking "Reply" will automatically select the Group email address to respond to the entire group, and not the single address of the sender you're replying to.

I'd also like to highlight our website. It still has lots of room to grow, but for now it serves as a basic directory of good tools and resources, as well as a library of

presentations and materials related to past workshops and events: <http://extension.umd.edu/soil-health>. Feel free to suggest additional research-based resources by emailing me directly at: ndawson@umd.edu <<mailto:ndawson@umd.edu>>

Thank you for your interest in this important and "growing" topic.

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**2015-2016 MDA Cover Crop Sign-Up
June 24 – July 15**

ANNAPOLIS, MD (June 9, 2015) – The Maryland Department of Agriculture (MDA) has announced that its 2015-2016 [Cover Crop Sign-Up](#) will take place June 24 through July 15 at soil conservation district (SCD) offices statewide. This popular program provides grants to help farmers offset seed, labor and equipment costs associated with planting cover crops on their fields this fall to control soil erosion, reduce nutrient runoff and protect water quality in streams, rivers and the Chesapeake Bay. New this year, cover crop mixes containing crimson clover, Australian winter peas or hairy vetch are eligible for grants. Governor Larry Hogan has allocated approximately \$22 million for MDA's [2015-2016 Cover Crop Program](#).

"Maryland farmers' proactive steps to protect our natural resources make them national leaders for conservation practices," said Governor Hogan. "Last fall, our farmers planted the largest cover crop in Maryland history, a record 478,000 acres. This helped to prevent roughly 3 million pounds of nitrogen and 95,000 pounds of phosphorus from impacting Maryland waterways. The cover crop program is one of the most cost effective and

efficient means to ensuring we have a healthy Bay, which is key to a strong economy and high quality of life for all Marylanders.”

Cover crops are widely regarded as one of the most cost-effective ways to prevent nitrogen and phosphorus from entering the Chesapeake Bay and its tributaries. Under the MDA program, small grains such as wheat, rye or barley, brassicas, forage radish, and for the first time, legume mixes are planted immediately following the fall harvest on fields that would otherwise be barren. Once established, cover crops recycle unused plant nutrients remaining in the soil from the previous summer crop, protect fields against wind and water erosion over the winter, and help improve the soil for the next year’s crop.

MDA’s 2015-2016 Cover Crop Program offers two planting options for farmers. Traditional cover crops receive a base rate of \$45/acre and up to \$45/acre in add on incentives for using highly valued planting practices. They may not be harvested, but can be grazed or chopped for livestock forage for on-farm use after becoming well established. Harvested cover crops qualify for \$25/acre with a bonus payment of \$10/acre if rye is used as the cover crop.

Maryland’s nutrient management regulations require farmers to plant cover crops when organic nutrient sources are applied to fields in the fall. In addition to their water quality benefits, cover crops improve soil health and water retention, increase organic matter in the soil, reduce weeds and pests and provide habitat for beneficial insects.

“Maryland farmers routinely plant cover crops as part of their crop rotation. It makes sense for their farms and the Bay,” said Maryland Agriculture Secretary Joseph Bartenfelder. “I urge all farmers to visit their soil conservation district to sign up for this important program during our three-week enrollment window.

This will be your only opportunity to enroll in this year’s program.”

Farmers should check their mailboxes for information on the 2015-2016 Cover Crop Program. Details are also available at www.mda.maryland.gov under “Hot Topics.”

[Maryland’s Cover Crop Program](#) is administered by MDA and the state’s 24 soil conservation districts through the Maryland Agricultural Water Quality Cost-Share (MACS) Program. Funding is provided by the 2010 Chesapeake Bay Trust Fund and the Chesapeake Bay Restoration Fund. To participate, applicants must be in good standing with MACS and in compliance with the Nutrient Management Program.

23rd Year Maryland Recycles Pesticide Containers

Collection Dates Open in June

ANNAPOLIS, MD (June 1, 2015) For 22 years, the Maryland Department of Agriculture’s pesticide container recycling program has helped prevent pesticide residues from entering the soil and local waterways and has saved valuable landfill space by recycling nearly 850,000 empty, plastic pesticide containers. The program will open its 23rd year of operation in June for farmers, pesticide applicators and others. A total of 24 collection days are scheduled June through September at six locations throughout the state. Those participating are asked to properly rinse and recycle their empty pesticide containers.

“This recycling program protects the environment from possible contamination and gives producers and others an easy, free way to dispose of pesticide containers. We are very pleased with the response by farmers, commercial agricultural pesticide applicators and other pesticide users to this program,” said Agriculture Secretary Joe Bartenfelder.

In addition to removing potential contaminants through proper disposal, the program provides a source of recycled material for vendors.

The pesticide container recycling program is **FREE** and open to all agricultural producers and pesticide applicators. The Agricultural Container Recycling Council (ACRC) provides a chipper to grind the plastic containers into flakes, which are then transported to a contractor for recycling. The containers collected in Maryland have yielded 374 tons of recyclable plastic flakes.

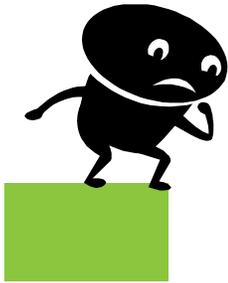
“We are especially pleased with the cooperative effort of the Ag Container Recycling Council and USAg Recycling, Inc., which makes local recycling and special pick up for large quantities possible, providing a convenient and much cheaper alternative to landfill disposal,” said Secretary Bartenfelder. “With continued cooperation among the participating groups, farmers and pesticide applicators, the program will continue to be successful and will protect the natural resources of the state from potential contamination by pesticides.”

Maryland’s container recycling program is a combined effort of state, county and federal agencies, as well as private industry, working together to protect the environment. With cooperation between MDA and Mid-Shore Regional Solid Waste Facility, Kent County Public Works, Wicomico County Public Works, Frederick County Bureau of Solid Waste Management, Harford County Public Works, Crop Production Services Pocomoke, Southern States Centreville Cooperative, Southern States Frederick Cooperative, Martin’s Elevator, Angelica Nurseries, Inc., The Mill of Black Horse, Willard

Agri Service Inc., Chesapeake Ag. Air, Tim's Aerial Applications, Delmarva Aerial Crop Service, Lippy Brothers, Inc., Eddie Mercer, Inc., Hobbits Glen Golf Course, MRW Lawns, USDA, ARS, Maryland Environmental Service, and Maryland farmers and applicators, the program has been effective in reducing the landfill disposal of plastic pesticide containers and in allowing the plastic to be reused.

A [schedule of collection dates and sites is available on the MDA website](#), and as an attachment.

For additional information, or to schedule a chipping date at your site, contact Rob Hofstetter, special programs coordinator, Pesticide Regulation Section, Maryland Department of Agriculture, at 410-841-5710.



See the Attachments!

**1) Recycle Pesticide Containers
Flier for Collection Dates.**

Agronomy News

A timely publication for commercial agronomic field crops and livestock industries available electronically in 2015 from April through October on the following dates: April 16; May 14; June 11; July 9; August 13; September 10; and October 22.

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Submit Articles to:

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410 222-3906
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Article submission deadlines for 2015 at 4:30

p.m. on: April 15; May 13; June 10; July 8; August 12; September 9; and October 21.

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MARYLAND DEPARTMENT OF AGRICULTURE'S 2015 PESTICIDE CONTAINER RECYCLING COLLECTION DATES

EASTERN SHORE

Kent County - Chestertown

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
Nicholson Transfer Facility on Earl Nicholson Road	June 12 July 10 August 14 September 11	9:00 - 3:00 9:00 - 3:00 9:00 - 3:00 9:00 - 3:00

Talbot County - Easton*

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
MidShore Regional Solid Waste Facility on Barker's Landing Road	June 19 July 17 August 21 September 18	8:00 - 12:00 8:00 - 12:00 8:00 - 12:00 8:00 - 12:00

Wicomico County - Salisbury

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
Newland Park Landfill on Brick Kiln Road	June 26 July 24 August 28 September 25	9:00 - 3:00 9:00 - 3:00 9:00 - 3:00 9:00 - 3:00

* **Note** - Because of legal restraints, only residents from Caroline, Kent, Queen Anne's and Talbot counties are able to use the collection site in Easton. Lower Shore residents must use the collection site in Salisbury.

CENTRAL MARYLAND

Harford County - Street

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
Scarboro Landfill, 3241 Scarboro Road	June 5 July 2 August 7 September 4	9:00 - 3:00 9:00 - 3:00 9:00 - 3:00 9:00 - 3:00

Harford County - White Hall

The Mill of Black Horse 4551 Norrisville Road

Facility will be accepting clean, empty containers from June 1 through September 30, during normal business hours. *Containers will be collected from their current customers, only. Call 410-329-6010 or 410-692-2200 for hours of operation and drop-off instructions.*

Containers must be cleaned (triple-rinsed or pressure-rinsed) according to label directions. *Please remember to remove lids and label booklets from the containers prior to drop-off.*

WESTERN MARYLAND

Frederick County - Frederick **

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
Frederick County Landfill, 9031 Reich's Ford Road	June 23 July 21 August 25 September 22	9:00 - 3:00 9:00 - 3:00 9:00 - 3:00 9:00 - 3:00

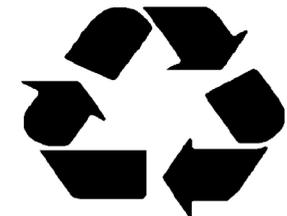
Washington County - Hagerstown

<u>LOCATION</u>	<u>DATES</u>	<u>TIME</u>
Martin's Elevator 13219 Mau-gansville Road	June 9 July 7 August 4 September 8	9:00 - 3:00 9:00 - 3:00 9:00 - 3:00 9:00 - 3:00

** **Note** - Frederick County has agreed to allow residents from outside Frederick County to submit empty pesticide containers for recycling, but NO TRASH from outside of the county will be accepted at the landfill under any terms.

INSPECTION CHECKLIST

- All containers must be made from high density polyethylene (HDPE).
- The container must have held an EPA-registered pesticide or adjuvant, crop oil, etc.
- Any size container will be accepted. All containers over 30 gallons must be cut prior to recycling (contact MDA for instructions).
- Pesticide containers must be properly rinsed (pressure-rinsed or triple-rinsed).
- Caps and other non-HDPE parts, such as metal handles and rubber linings, cannot be recycled.
- Stained containers are acceptable provided no material can be smeared or removed when touched by a rubber glove.
- Please remove lids and label booklets prior to recycling.**



The Maryland Department of Agriculture (MDA) is offering the empty plastic pesticide container recycling program in 2015.

Maryland's pesticide container recycling program is a combined effort of state, county, and federal agencies and private industry working together to protect the environment. Rinsing and recycling empty pesticide containers will help to reduce the potential for contamination of ground water and the Chesapeake Bay while saving valuable landfill space.

A schedule of collection sites and dates is enclosed. **Triple-rinsed (or equivalent)**, clean, plastic, **pesticide** containers will be collected on the scheduled days and times at these sites. Containers acceptable for recycling will be chipped and transported by the contractor, under contract with the Ag Container Recycling Council (ACRC), for processing at an approved recycling facility.

To ensure a successful program, each individual container will be inspected by MDA personnel and only **triple-rinsed (or equivalent), clean, pesticide containers** will be accepted. Any container that is not clean will be returned to the owner, who will be responsible for disposing of the container in a legal manner.

Additional information on the rinsing of empty pesticide containers and recycling program can be obtained from the following MDA publications: *Rinsing & Recycling Empty Pesticide Containers*, and *Pesticide Information Sheet No.7 - Pesticide Container Recycling Program*. For further information, contact the Maryland Department of Agriculture, Pesticide Regulation Section at 410-841-5710 or visit our website at www.mda.maryland.gov.

The Maryland Department of Agriculture, Pesticide Regulation Section would like to thank all of its private cooperators and participants for making this a successful and worthwhile program. We would like to especially thank the Ag Container Recycling Council (ACRC) and USAg Recycling, Inc. Without their assistance and dedication, this program would not be possible.



Ag Container
Recycling Council



USAg Recycling, Inc.



Proud Member of
The Pesticide Stewardship Alliance (TPSA)

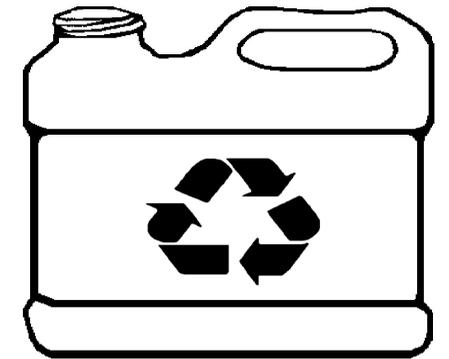


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Maryland's 2015 Pesticide Container Recycling Program



Larry Hogan
Governor

Boyd Rutherford
Lt. Governor



Joseph Bartenfelder
Secretary

Mary Ellen Setting
Deputy Secretary