



# Chemically Speaking

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## Weed Seed Destruction

Experts with the Weed Science Society of America (WSSA) say one often-ignored strategy for controlling herbicide-resistant weeds is now getting a second look. Farmers are finding success by ensuring that weed seeds remaining in the field at harvest time aren't dispersed and left to sprout in subsequent growing seasons.

One country working with the issue is Australia, where a decade ago weeds resistant to multiple types of herbicides were overrunning crops. Scientists and farmers began to collaborate on nonchemical strategies to address weeds that persisted through to harvest with seeds still attached. Many Australian farmers now attach a chaff cart to the back of each harvester. Weed seeds are gathered in the cart

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with other chaff and then destroyed or used for feed. “Bale direct” systems take things one step further. The chaff is actually baled as it is collected and then used for livestock feed. Studies have shown chaff carts and bale direct systems can capture 90 percent or more of the weed seeds gathered by the harvester and keep them from being blown back onto the field.

Australian grower Ray Harrington has created another alternative – a system that mills chaff to destroy weed seeds as they are collected. Residues can then be dispersed directly onto the field so moisture and nutrients are conserved. A recent study shows the commercially available Harrington Seed Destructor successfully destroys more than 90 percent of harvested weed seeds. Several growers in the western U.S. and western Canada are scheduled to try the Harrington Seed Destructor beginning in 2015, with weed scientists evaluating the outcome.

Regardless of the technique used, harvest-time weed seed control is now commonplace in Australia and has given the upper hand against most herbicide-resistant weeds to growers of all sizes – from small family farms to those with thousands of planted acres. Grower Lance Turner, for example, farms 15,000 acres of cereal, legumes and canola and pulls a chaff cart behind every harvester, on every acre, every year. “We’ve seen a big reduction in weed numbers,” he says. “It is helping us prolong and protect the effectiveness of the chemicals we’ve got since we’re reducing the population of resistant weeds.”

Michael Walsh, Ph.D., a member of the Australian Herbicide Resistance Initiative, concurs with Turner’s assessment. He says harvest-time seed control techniques are helping farmers achieve significantly better weed control results than with herbicides alone. It’s a message he’s been sharing recently with growers in the U.S. and Canada, where he has visited farms and led workshops on harvest-time weed seed control.

One observation from his travels is that weed densities on many U.S. and Canadian farm fields in particular are “out of control” by current-day Australian standards. “After a decade of struggling with multiple types of herbicide resistance, we simply don’t tolerate weeds at any stage in our cropping system,” Walsh said. “I’ve strongly recommended to the farmers I’ve met that they realign their thinking about the weed densities they allow in their fields. Taking preemptive action with harvest-time weed seed control can benefit crop yields and improve profitability.” (*AgProfessional.com*, 11/5/14).

## **Drift Reduction Program Announced**

The Environmental Protection Agency announced a voluntary Drift Reduction Technology (DRT) program intended to encourage the use of pesticide spray products that are most likely to reduce pesticide drift and

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save farmers money. "Our new star-rating system of products and technologies protect neighbors and reduce costs by keeping more of the pesticide on the crop," says Jim Jones, assistant administrator for the Office of Chemical Safety and Pollution Prevention. As with other rating systems, more stars in the program equals greater potential for reducing spray drift.

DRT is a voluntary program that encourages manufacturers to test their technologies (such as nozzles, spray shields and drift reduction chemicals) for drift reduction potential. The EPA encourages pesticide manufacturers to label their products for use with DRT technologies. The four DRT ratings represented by one, two, three or four stars are awarded for technologies that demonstrate at least 25% reduction in potential spray drift compared to the standard. One percent to 10% of agricultural pesticide sprays drift, losing about 70 million pounds of pesticides valued up to \$640 million each year, EPA estimates. The new rating system is designed also to decrease the amount of time and money spent investigating drift complaints.

Spray technology manufacturers interested in participating in EPA's DRT program may now submit data verifying their technology reduces pesticide movement. The EPA will evaluate each data submission and, if appropriate, assign a drift-reduction star rating to the product based on its ability to reduce spray drift. The EPA will post these ratings on a special pesticide drift website. A pesticide manufacturer can

choose to label a product for use with a DRT of a particular rating after receiving approval from EPA. Over time, the program will move the agricultural sector toward the widespread use of low-drift technologies with ratings that could appear on pesticide labels as early as fall 2015. (*Farm Futures*, 10/23/14).

## Florida Pesticide Residue Violations

The Florida Department of Agriculture and Consumer Services, Chemical Residue Laboratories, conducts pesticide residue testing of fresh fruits and vegetables with a focus on Florida-grown products. The table below lists Florida grown commodities found adulterated. Only a small fraction of all samples tested were violative and those found were at very low levels. The labs conduct follow-up investigations to identify and verify the source of the contaminated crop and remove it from distribution. The Division of Agricultural Environmental Services conducts misuse investigations to assist in correcting any pesticide misuse problems.

Careful application of pesticides according to label directions will avoid violations. Tolerances can be found on the web at <http://www.ecfr.gov> in 40 CRF 180. Hopefully, by posting these findings, additional misuse may be avoided.

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## Violations in Florida Grown Commodities

(April - September 2014)

(Only 2.9% of samples tested were adulterated.)

DATE	COMMODITY	ANALYTE_NAME	FOUND	TOL
04/23/14	BEANS-SNAP, SUCCULENT	DINOTEFURAN	0.18	0
04/11/14	BEANS-SNAP, SUCCULENT	DINOTEFURAN	0.12	0
04/29/14	BEANS-SNAP, SUCCULENT	DINOTEFURAN	0.095	0
04/08/14	CABBAGE	PROPICONAZOLE	0.58	0
04/23/14	CABBAGE	PROPICONAZOLE	0.59	0
07/07/14	CARROTS-ROOTS*	DCPA	0.054	0
07/07/14	CARROTS-ROOTS	PENTACHLORO-NITROBENZENE	0.094	0
07/07/14	CARROTS-TOPS*	CYPERMETHRIN	0.75	0.05
07/07/14	CARROTS-TOPS	DCPA	0.072	0
07/07/14	CARROTS-TOPS	PENTACHLORO-NITROBENZENE	0.052	0
05/20/14	CUCUMBERS	ENDOSULFAN SULFATE	0.037	0
04/08/14	LETTUCE-LEAF	PROPICONAZOLE	0.45	0
04/23/14	LETTUCE-LEAF	PROPICONAZOLE	0.14	0
04/08/14	PEPPERS-HOT*	CYPERMETHRIN	0.33	0.20
04/08/14	PEPPERS-HOT	NOVALURON	1.6	1.0
04/08/14	PEPPERS-HOT	PYRIMETHANIL	0.020	0
04/08/14	PEPPERS-HOT	THIAMETHOXAM	0.66	0.25
08/19/14	POTATOES	PENTACHLORO-NITROBENZENE	0.18	0.1
09/17/14	POTATOES	PENTACHLORO-NITROBENZENE	0.28	0.1
05/20/14	STRAWBERRIES	CHLOROTHALONIL	0.86	0

(TOL-TOLERANCE)

\*Some Samples may contain multiple violations

## New CAST Report

All agree that the world needs a safe, plentiful supply of food, and most acknowledge that global demand will grow along with the expanding population. A new Council for Agricultural Science and Technology (CAST) report examined how pesticides fit into this equation. The authors concluded that a safe, thoughtful integration of pesticides is essential if we hope to attain an abundant food supply for a hungry world.

The paper gives a brief background about the use of pesticides and then a thorough look at why they have become popular and widely used. Intelligent use of pesticides has led to crop management that is more efficient, sustainable, and productive. For example, the authors produce evidence that fungicide use has helped stem the curse of soybean rust, aided with the prevention of fusarium head blight in wheat, and increased farmer income.

Along with better pest management, pesticides have helped with the development of improved agronomic practices such as no till, low till, higher plant densities, increased yields, and efficient use of water and nutrients. The authors point out that in comparison to hand weeding, herbicide use is less expensive and more effective. "By substituting for cultivation, herbicide use leads to lower fuel use, less carbon emissions, less soil erosion, and less water use."

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Of course there are controversies and challenges. The authors indicate that concerns exist regarding water, soil, and atmospheric resources, as well as the need for safety during application and food processing. Regulations, testing, worker training, and other safeguards are factors that mitigate unwanted effects.

More than 800 million people in the world are food insecure, and the amount of crop yield lost each year to pests could run upwards of 30%. But many experts are optimistic about developments involving safe, efficient production methods occurring around the globe. When pesticides are effectively applied and integrated into a comprehensive approach, the world is better able to provide food for the 9 billion humans on earth in 2050. (CAST, 11/17/14).

## ***Pesticide Registrations and Actions***

### ***Other Actions***

- In 2009, EPA considered two petitions from the Natural Resources Defense Council to cancel the use of propoxur and tetrachlorvinphos (TCVP) in pet products. In response, EPA developed new human health risk assessments for the pet uses of both pesticides. In 2013,

EPA found unacceptable risks to children from exposure to propoxur pet collars. The EPA and the manufacturers reached an agreement to cancel propoxur pet collar products. This decision was reached as a result of discussions about how to reduce children's exposure to propoxur in pet collars. Unlike propoxur, the EPA found no risks of concern regarding pet uses of TCVP. Based on the risk assessment findings, the EPA has denied the petition to cancel pet uses of TCVP. (EPA, 11/6/14).

- A coalition of groups filed a lawsuit at the end of October seeking to overturn regulatory approval granted earlier in the month to Dow AgroSciences. The lawsuit, filed in the U.S. Court of Appeals for the Ninth Circuit in California, argues that the EPA did not adequately analyze the impact of one of the new herbicide's active ingredients, 2,4-D, before granting approval on Oct. 15 to Dow's Enlist Duo herbicide. The groups are asking the court to set aside the EPA's approval. They claim the EPA's approval violated the Endangered Species Act and the Federal Insecticide, Fungicide, and Rodenticide Act. The Natural Resources Defense Council filed a similar action on Oct. 16 against the EPA to block Enlist Duo, saying the new weed killer will be destructive to monarch butterfly populations and pose risks to humans. The suit was filed by the Center for Food Safety and by

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Earthjustice, a nonprofit environmental law firm, on behalf of Beyond Pesticides, Center for Biological Diversity, the Environmental Working Group, the National Family Farm Coalition, and Pesticide Action Network North America. Initially, EPA approved Enlist Duo only for Illinois, Indiana, Iowa, Ohio, South Dakota and Wisconsin but is considering approval in ten more states. (*AgProfessional.com*, 10/23/14).

## Pesticide Potpourri

- The National Association of State Departments of Agriculture (NASDA) Research Foundation and the EPA announced the release of the National Pesticide Applicator Certification Core Manual revision. The second edition is now viewable at: [foundation.nasda.org](http://foundation.nasda.org) under Pesticide Safety and Applicator Certification. It will be available for the state's Pesticide Safety Education Program to support applicator education. The NASDA Research Foundation wishes to recognize contributors including personnel from state pesticide regulatory agencies, land grant university pesticide safety education programs, private industry, and EPA. The project and other resources found on

the Pesticide Safety section of the Foundation's web site were jointly developed under a Cooperative Agreement X8-83456201 with EPA. (NASDA, 10/28/14).

- An international study funded by the German Federal Ministry of Economic Cooperation and Development and the European Union's Seventh Framework Program FOODSECURE concluded that GM crops are good for the economy and reduce the amount of pesticides used in agriculture. The German study is the largest review ever conducted on the effect of GM crops on farming. It is a meta-analysis, meaning a rigorous study of the numbers inside past studies on the topic. The review included studies of GM crops conducted from 1995 to March 2014 that were published in English. According to the authors, GM crops have reduced chemical pesticide use by 37 percent, increased crop yields by 22 percent and increased farmer profits by 68 percent. Yield gains and pesticide reductions are larger for insect-resistant crops than for herbicide-tolerant crops, they reported. The authors also found that yield and profit gains are higher in developing countries than in developed countries, with yields 14 percentage points more in the developing world than in the developed world. Pests and weeds are a bigger problem in developing nations, another reason GM technology brings bigger

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benefits there. The study found that herbicide-tolerant crops have lower production costs, while insect-resistant ones do not. In that case, the need for less insecticide is offset by the higher seed prices. (*Food Safety News*, 11/11/14).



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