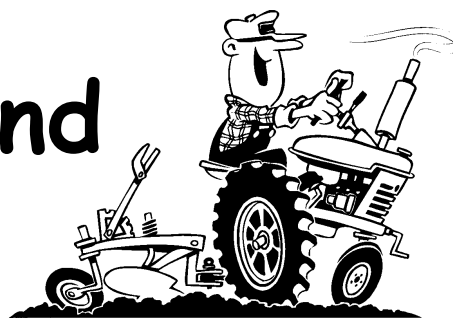


# Cultivating Cumberland

June - 2016 VOL. 21, ISSUE 6



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### Attachments:

Environmental Stewardship  
Pollinator Workshop  
OSHA Ag Safety Fact Sheet

**Cooperative Extension  
of Cumberland County**



1915-2015

## Pest Alert: Probable Allium Leafminer infestations found in NJ

Kris Holmstrom & Joe Ingerson-Mahar, Rutgers University

Two probable infestations of allium leafminer have been discovered. One of these was on the Hunterdon/Warren County border involving overwintered garlic and onions planted this spring. The second, a very minor infestation, was found near Princeton in Mercer County on overwintered chives. While we await word from USDA as to where specimens should be sent for final confirmation, the signs of infestation are very characteristic of allium leafminer, and larvae and eggs were found in association with the egg laying scars (oviposition scars) on the leaves of onions and garlic. Both of these infestations appear to be very recent, with larvae in very early growth stages.

It is likely that this pest is more widespread in the state than was assumed, given that we only became aware of it in Pennsylvania several weeks ago. The most serious damage from this pest is likely to be from rot-causing organisms that enter plant tissue via wounds caused as the miners burrow down the foliage and pupate near the bulbs. The easiest way to determine whether this pest is present is to observe upper leaf tissue for characteristic signs of oviposition. This will consist of pale circular-to-oval scars in straight lines near the edges of foliage on flat leafed hosts like garlic and leeks. On onion leaves, the scars might be anywhere on the leaf surface, but will usually be closer to the tip.

It is not known the extent to which this pest could be an economic threat this season. The current known infestations appear light, but reports from Europe, where the pest is endemic, indicate that it can be quite serious. Therefore, we would advocate regular scouting of onion and related crop fields. Look for the appearance of oviposition scars. If these are found, it may be prudent to make an insecticide application. Adult (fly) activity should decline after 2-3 more weeks, according to available information on this pest. After this point, larvae will pupate and remain dormant for much of the summer. Flies will emerge in late summer and early fall to infest the fall crop.

Insecticides which are labeled on onion are: Entrust (spinosad), Radiant (spinetoram), Scorpion (dinotefuran) and Triguard (cryomazine). All are labeled for leafminer on onion. Be sure to check labels for specific crops.

**Rutgers Cooperative Extension 100 Years of Service in Cumberland County**

## Telecommunication Problems

The County of Cumberland has agreed to act as the lead agency on behalf of 16 communities in South Jersey to pursue a petition before the Board of Public Utilities against Verizon NJ in an effort to compel Verizon to maintain copper landline services. CC Freeholder Director, Joe Derella, said, "Verizon is attempting to discontinue maintenance of copper landlines which means that telephone and telecommunication services, including internet service through copper landlines will ultimately deteriorate and fail. At that point, telecommunications may be unavailable and unless telephone service through Comcast or cell phone service is available there may be no landline coverage at all in many communities. The County and 16 communities are fighting against the effort by Verizon to discontinue landline maintenance".

Deputy Director Darlene Barber said, "A page on the County website has been set up to allow any person who is experiencing problems with telephone and telecommunication services to inform us of the problems in order to allow us to present this information to the Board of Public Utilities. The information can be found by going to [www.co.cumberland.nj.us](http://www.co.cumberland.nj.us), click on the "citizen resource center" and the questionnaire link is in the second paragraph".

We are requesting that everyone experiencing problems go to the website and complete the questionnaire. The more information we have to put before the BPU the better.

## GAPs Online Produce Safety Course

The following Produce Safety on-line courses are scheduled for 2016:

- June 8th running through June 28th
- July 13th running through August 2nd
- September 7th running through September 27th
- October 5th running through October 25th

Taking this course will not result in your farm being "GAPs Certified". GAPs certification is done by a third party (e.g. USDA, Primus, Global GAP) and involves the successful completion of an on-farm audit.

It is also important to consider that the GAPs Online Produce Safety Course is not currently equivalent to the required supervisor training described in the FSMA Produce Safety Rule 21 CFR Subpart C § 112.22©. This Gaps Online Produce Safety Training Course may, however, satisfy training requirements as described in the FSMA Produce Safety Rule in §§ 112.21(a) and (b).

The Produce Safety Alliance plans to offer in-person training that meets the requirement in § 112.22© of the FSMA Produce Safety Rule. You can sign up for the listserv on the Produce Safety Alliance website: <http://producesafetyalliance.cornell.edu/> to be notified of where and when in-person trainings will be held.

To register for the on-line courses contact Betsy Bihn at [eab38@cornell.edu](mailto:eab38@cornell.edu) or call 315-787-2625. Course cost is \$190.00 per course. Submit payment at : [www.ecornell.com/gaps](http://www.ecornell.com/gaps)

## **Controlled Release vs Slow Release Fertilizer Products in Vegetable Crops**

May 6, 2016 Emmalea Ernest, Vegetable Crops Delaware Weekly Crop Report

*Gordon Johnson, Extension Vegetable & Fruit Specialist; gcjohn@udel.edu*

There has been considerable work on controlled release fertilizer over the years and many of the different technologies have shown potential for use with vegetable crops. Controlled released fertilizer is most useful with nutrients that are subject to leaching losses, particularly nitrogen.

Controlled released fertilizers should not be confused with slow release fertilizers. With slow released fertilizers, release pattern over time is not easily predicted and may be affected by moisture, temperature, and microbial activity. Historically slow released fertilizers have included organic sources that require decomposition and mineralization such as manures, composts, waste products from plant or animal sources, and plant residues.

There are also slow release mineral based fertilizers such as magnesium ammonium phosphate (an N, P and Mg source), clinoptilolite (a natural Zeolite that can be reacted with  $\text{NH}_4$  which is held tightly and reacts as a slow release N source), rock phosphate (a P source), greensand (a K source), limestone (Ca and Mg source), glass frits (fritted trace elements in a fused glass form), and elemental sulfur. These materials are released upon weathering and dissolution (sulfur is converted to sulfate by microbial action). An older technology that produces slow release N fertilizer is when urea is combined with an aldehyde. These fertilizers are in liquid or dry forms and include UreaForm (UF), Methylene Urea (MU), Triazone, and IBDU. Longevity depends on length of chemical chain and microbial activity needed to release the N. An exception is IBDU where N is released by hydrolysis at a slow rate and granule size controls longevity. Liquid forms of these products are very useful for foliar fertilization as they have much less injury potential than salt based N sources.

Another older slow release fertilizer technology is sulfur coated urea. This technology was developed at the TVA and commercialized in the 70s. Liquid sulfur coats urea prill then hardens (prills are often then coated with wax. Breakdown and release of the N in sulfur coated urea is by both physical and microbial action and the size of coat determines the release rate.

In contrast to slow release fertilizers, controlled released fertilizers have a predictable release pattern over time that is commonly temperature based. Controlled release fertilizers that are currently used are based on diffusion coatings (polymer and resin coated products). These coatings include thermoset resins, where a fertilizer prill is surrounded by a hardened shell from resins added in multiple layers (such as Original Osmocote), thermoplastics where the prill surrounded by plastic shell with additives to create pores or

wicks (such as Nutricote); and reactive layer coatings where a thin polyurethane shell is produced when 2 chemicals react as they are sprayed on the fertilizer prill (such as ESN).

Polymer coatings can be used on most fertilizers and are common in the nursery and greenhouse industries with complete fertilizer products applied to potted plants. Coated product technologies have advanced over the years to give more precise release properties. However, release will still be dependent on the type of coating, the thickness of the coating, as well as temperature and moisture. Controlled release fertilizers are commonly rated as to how long they take to release nutrients in days (70 day, 90 day, 120 day formulations for example). They can also be mixed with a small amount of regular soluble fertilizer to give an initial nutrient charge.

Cost of reactive layer coated urea has decreased over the last decade and this provides an economical opportunity to provide controlled released nitrogen to vegetable crops. These fertilizers increase plant nitrogen-use efficiency by reducing N applied. Use of these products also eliminates need to sidedress or fertigate, giving fuel and time savings. From an environmental perspective there is reduced nitrate contamination from leaching due to the release pattern of the coated fertilizer.

Controlled released fertilizer research in Delaware on vegetable crops has shown equivalent yields to conventional fertilizer in multiple application with the controlled release fertilizer placed before planting (thus eliminating applications). In some cases reduced rates were needed and there was reduced N leaching. Controlled released fertilizers were tested on squash, melons, watermelons, tomatoes, peppers, and strawberries with good results.

Research on the use of ESN polymer coated urea by Cornell on Long Island showed that reduced rates of N could be used on potatoes and sweet corn with equivalent yields. Recommendations from these studies were not to use straight controlled release but to blend with conventional N sources to provide 75-80% of the total N as controlled release. Overall they were able to reduce total N rates/acre by up to 20% in these vegetable crops.

Because controlled released N fertilizers are more expensive, for the economics to work out they need to be used at 10-25% reduced rates. Research has shown that this is possible on many vegetable crops.

## Rutgers Fact Sheets

The following fact sheets are now available on NJAES Publications:

- FS1253 New Jersey's Right to Farm Act - What it is and How it Works  
Kimmel, D., Everett, J. and Schilling B.
- FS1255 Ecology and Control of the Freshwater Aquatic Plant Spatterdock  
Haberland, M.

These fact sheets and many more are available to download from:  
<http://njaes.rutgers.edu/pubs> or by calling your local Extension Office.

## Sandea Label Changes for Cucumbers/ Pickles

May 20, 2016 Emmalea Ernest Vegetable Crops  
*Mark VanGessel, Extension Weed Specialist; [mjv@udel.edu](mailto:mjv@udel.edu)*

There is a new Supplemental Label (24c) for Sandea on cucumbers allowing a 14 day pre-harvest interval (PHI), reduced from the current 21 day PHI. This label will eventually be on the full label, but growers wanting to use the 14 day PHI will have to have a copy of the supplemental label in their files. Copies of the 24c label are available on CDMS (<http://www.cdms.fnet/Label-Database>).

While the PHI has been shortened, the label still requires an early POST application window from after the 3 to 5 true leaves stage but before the first female flower appears. In addition, Sandea is labeled for preemergence application.

## Farm Directory

The Cumberland County Board of Agriculture has received a Specialty Crop Block Grant for the purpose of increasing public awareness of the importance and availability of specialty crops grown in the county. One of the project goals is to help county residents "buy local" through the use of social media tools. To this end, we need to develop a retail directory of Cumberland County farms. If you sell, or wish to sell, directly to the public and wish to have your farm included in this directory, please email your farm name and contact information to: [cumberlandnjboa@gmail.com](mailto:cumberlandnjboa@gmail.com) by June 30, 2016.

We are also looking for wholesale farming operations willing to help promote Cumberland County agriculture by sharing farm pictures, farm family stories, etc. If your operation is strictly wholesale, but you would like to support this public awareness campaign, please email your farm name and contact information with a "wholesale only" designation.

To reply to be in the directory, send farm name and contact information to:

[cumberlandnjboa@gmail.com](mailto:cumberlandnjboa@gmail.com)

## SNAP EBT Farmer's Market Sign Up

The SNAP EBT program is a collaborative effort between USDA/FNS, Farmers Market Coalition & State Agencies for Agriculture and SNAP.

### **A win/win for Farmer's Markets and Direct Marketing Farmers:**

*Increased customer base*

*Increased economic benefits for you and your communities*

*Healthy and nutritious options for SNAP recipients*

To Apply to become authorized to accept SNAP (Online takes approximately one hour):

- Visit: <http://www.fns.usda.gov/ebt/learn-about-snap-benefits-farmers-markets>
- Call to receive a paper application - 1-877-823-4369

Items Needed to complete application:

- Picture ID (driver's license or passport)
- Social Security Card
- Copy of voided check for bank account you will use to deposit funds

For Non-profit Organizations:

- Copy of your 501(3)© for Non-Profit Organizations
- Employer Identification Number

### **Find Out if you qualify for FREE wireless point of sale EBT equipment?**

For more information, visit the following website:

<http://farmersmarketcoalition.org/programs/freesnapebt/>

New Jersey was also awarded grant money to offer free wireless equipment. Please contact the NJ State EBT for more information: Dewanda Kelly, State of NJ, Division of Family Development, EBT Unit, 609-631-4960

## **Calendar of Important Events**

↗ Indicates the newly added event since last calendar

### **June 2016**

#### **June 8**

**Pollinator Victory Garden Workshop**, Rutgers Cooperative Extension of Cape May County, 5:30 p.m.- 8:00 p.m.; \$25. For more information call 609-465-5115 x607

#### **June 11**

**Rose Day Festival**, Colonial Park Gardens (Free with suggested donation); 11 a.m. - 5 p.m. For more information call 732-873-2459 x21.

#### **June 25**

**Children's Container Gardening with Edible Plants Workshop**, Colonial Park Gardens, \$15 ages 7-10 (limit 10 children must be accompanied by an adult). Pre-registration by Friday, June 17th; 10am-noon. For more information call 732-873-2459 x21.

#### **June 30-July 2**

**Bee-ginner's Beekeeping**, Rutgers Continuing Education, New Brunswick; Day 1-2 9am-4pm, Day 3 9am-noon. \$215.00, some discounts apply. For more information call 848-932-7315.

### **July 2016**

#### **July 16**

**17th Annual Garden Party**, Colonial Park Gardens; Free with suggested donation; 11am-3pm. For more information call 732-873-2459 x21.

### **August 2016**

#### **August 6**

**Sense & Scents-Ability "All About the Birds and the Bees"**, Colonial Park Gardens, 156 Mettlers Road, Somerset. Free (suggested donation); 11am-2pm. For more information call 732-873-2459.

#### **August 22-26**

**Introduction to Food Science**, Rutgers Continuing Education; \$1,495 by 8/8. For more information visit: [www.cpe.rutgers.edu/food](http://www.cpe.rutgers.edu/food) or call 1-848-932-9271 x2.

### **September 2016**

#### **September 10**

**Autumn in the Perennial Garden**, Colonial Park Gardens, 156 Mettlers Rd., Somerset; \$15 per person with a limit of 30 people. For more information/to register, call 732-873-2459.

#### **September 17**

**Flower & Garden Photography**, Colonial Park Gardens, 156 Mettlers Rd., Somerset; \$35.00 a person with 12 people limit. Pre-registration by 9/9 required. For more information/to register, call 732-873-2459.

**October 2016****October 5-7**

**HACCP Plan Development for Food Processors**, Rutgers Continuing Education; \$945 by 9/21; \$995 after. For more information call 1/848/932/9271 x2 or visit: [www.cpe.rutgers.edu/FOOD](http://www.cpe.rutgers.edu/FOOD)

**November 2016****November 19**

**Thanksgiving Floral Arrangement Class**, 2016 Horticultural Programs/Events, Park Commission Headquarters, North Branch Park, 355 Milltown Road, Bridgewater. 10a.m.—12 noon; \$25 per person with a limit of 15 people and includes supplies. Pre-registration due by Thursday, November 10th is required. For more information call 732-873-2459 x21 or visit: [www.somersetcountyparks.org](http://www.somersetcountyparks.org)

**December 2016****December 3**

**Holiday Kissing Ball Workshop**, 2016 Horticultural Programs/Events, Park Commission Headquarters, North Branch Park, 355 Milltown Road, Bridgewater. 10am-12 noon; \$45 per person (limit 15 people & includes supplies). For more information call 732-873-2459 x21 or visit: [www.somersetcountyparks.org](http://www.somersetcountyparks.org)



## REGULARLY SCHEDULED MEETINGS

✓ Indicates meeting will be held at RCE of Cumberland County

<p style="text-align: center;">✓</p> <p style="text-align: center;"><b>Pesticide Certification Exam Schedule—Cumberland County</b> 291 Morton Avenue Millville, NJ 08332 (Between Rosenhayn &amp; Carmel)</p> <p style="text-align: center;"><u>2016</u></p> <p style="text-align: center;">Sept 22      Oct 20</p> <p style="text-align: center;"><b>To Register call 609-984-6614 For directions call 856-451-2800</b></p> <p>*****</p>	<p style="text-align: center;">✓</p> <p style="text-align: center;"><b>Cumberland County Agriculture Development Board</b> Soil Conservation Office 1516 Highway 77 Deerfield Street, NJ 08332</p> <p style="text-align: center;"><u>2016</u></p> <p style="text-align: center;">Jun 8 Jul 13    Aug 10    Set 14 Oct 12    Nov 9    Dec 14</p> <p style="text-align: center;"><b>Reg. Meetings start at 7 p.m. Information call 856-453-2211</b></p> <p>*****</p>	<p style="text-align: center;">✓</p> <p style="text-align: center;"><b>Cumberland County Board Of Agriculture</b> 291 Morton Avenue Millville, NJ 08332 (Between Rosenhayn &amp; Carmel) 7 pm meetings</p> <p style="text-align: center;"><u>2016</u></p> <p style="text-align: center;">Sept 15              Oct 20 Nov 17              Dec 15</p> <p style="text-align: center;"><b>For info call Hillary Barile, President 856-453-1192</b></p> <p>*****</p>
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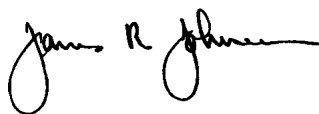
**Cumberland County Improvement Authority (CCIA)  
Pesticide Container Recycling  
9:00 a.m. to 12 Noon**

Cumberland County Solid Waste Complex  
169 Jesse's Bridge Rd. (located off Route 55 Exit 29)  
Deerfield Township, New Jersey

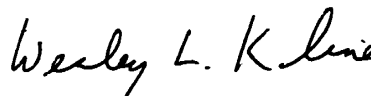
Questions? Call Division of Ag & Natural Resources, NJ Dept. of Ag 609-292-5532

June 17    July 15    Aug 19  
Sept 16    Oct 21    Nov 18

Sincerely,



James R. Johnson  
Agricultural Agent  
Nursery Management Commercial  
Internet: [jjohnson@njaes.rutgers.edu](mailto:jjohnson@njaes.rutgers.edu)



Wesley L. Kline, Ph.D.  
Agricultural Agent  
Vegetable & Herb Production  
Internet: [wkline@njaes.rutgers.edu](mailto:wkline@njaes.rutgers.edu)

**Pesticide User Responsibility:** Use pesticides safely and follow instructions on labels. The user is responsible for the proper use of pesticides, residues on crops, storage and disposal, as well as damages caused by drift.

**Use of Trade Names:** Trade names are used in this publication with the understanding that no discrimination is intended and no endorsement is implied. In some instances the compound may be sold under different trade names, which may vary as to label.

Have you visited the Cumberland County website for the  
Present and/or past issues of "Cultivating Cumberland"? It's a great  
resource for information and dates.....

<http://Cumberland.njaes.rutgers.edu/>

Public Notification and Non-discrimination Statement

Rutgers Cooperative Extension is an equal opportunity program provider and employer. Contact your local Extension Office for information regarding special needs or accommodations. Contact the State Extension Director's Office if you have concerns related to discrimination, 848-932-3584.

*Rutgers Cooperative Extension 100 Years of Service in Cumberland County*

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Cooperative Extension of Cumberland County  
Extension Education Center  
291 Morton Avenue  
Millville, NJ 08332-9791

**RUTGERS**  
New Jersey Agricultural  
Experiment Station

## *An evening of wine and equine*



### ***Environmental Stewardship on New Jersey Horse Farms***

**Thursday, June 2<sup>nd</sup>  
5:30 pm – 8:00pm**

**Journeyman Farm  
419 Greenville Rd  
Pittsgrove NJ**

*(May 19<sup>th</sup> meeting in Monmouth County;  
May 26<sup>th</sup> in Hunterdon County; More Details to Come)*

**Rain Simulator  
Demonstration!**

**The event is FREE,  
but registration is required.  
(See below.)**

**Wine Tasting  
Winery TBA**

#### **Who:**

New Jersey equine farmers interested in sustaining the environment

#### **What:**

Environmental management priorities on equine farms

- Funding opportunities available for horse farms
- Program eligibility and signup
- Water runoff demonstration and facilities tour
- Wine tasting and networking

#### **Why:**

Equine farms in New Jersey account for nearly 200,000 acres, over 20% of the state's agricultural land base. Improving the environmental sustainability of horse farms will help maintain open space in the Garden State.

This free program will expose you to some of the latest in environmental research for equine farms, help you to understand USDA's NRCS funding programs, give you an opportunity to sign-up for these programs, and give you a chance to network with other managers and owners of New Jersey equine farms.



**United States  
Department of  
Agriculture**

Natural Resources Conservation Service

**RUTGERS**

New Jersey Agricultural  
Experiment Station

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program administered by USDA's Natural Resources Conservation Service (NRCS). All eligible agricultural producers including livestock, forestry, and organic production can apply. EQIP offers financial and technical assistance to implement conservation practices on eligible agricultural land.

For more information and to RSVP, please contact:

Dr. Mike Westendorf at [westendorf@aesop.rutgers.edu](mailto:westendorf@aesop.rutgers.edu) or

Dr. Carey Williams at [carey.williams@rutgers.edu](mailto:carey.williams@rutgers.edu)

## **The Pollinator Victory Garden: Winning the War on Pollinator Decline**



**Wednesday, June 8, 2016**

**5:30 to 8 p.m. *Rain or Shine***

**Rutgers Cooperative Extension  
355 Court House - South Dennis Rd.  
Cape May Court House, NJ 08210**

**Presenter: Kim Eierman**  
**Environmental Horticulturist, founder of EcoBeneficial**

Participants will learn how to:

- Attract an array of pollinators
- Know which plants they need for food
- Provide them with shelter
- Help win the war on pollinator decline

**Each participant will receive starter plants for their victory garden!**

**Beginners class, no prior experience required**

**\$25, Dinner included**

**Registration due by June 1, 2016**

**Call (609) 465-5115, ext. 607 or email [dana.tyndall@co.cape-may.nj.us](mailto:dana.tyndall@co.cape-may.nj.us)**

**Jenny S. Carleo, Agricultural and Resource Management Agent**

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.





# Agricultural Safety Fact Sheet



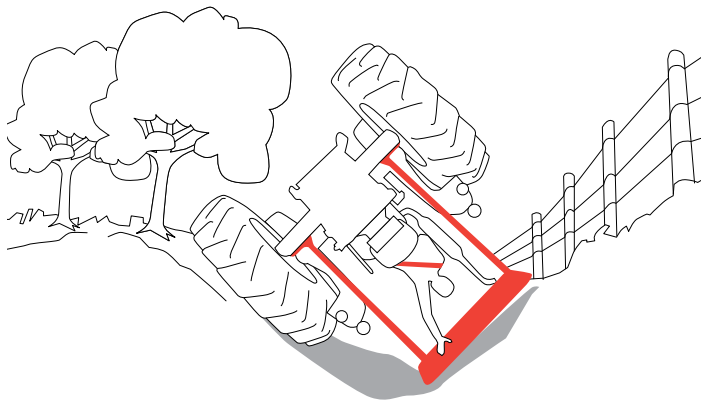
## Protecting Agricultural Workers from Tractor Hazards

Most farmworker injuries and deaths are caused by tractor incidents such as overturns, runovers, power take-off (PTO) systems, and unintended contact with tractor attachments or implements. Employers are responsible for ensuring a safe work environment for every worker. This fact sheet provides employers with information about these tractor hazards, along with safety measures to protect tractor operators.

### Overturns

Tractor overturns are the leading cause of fatalities in the agriculture industry, resulting in approximately 130 deaths per year. The majority of tractor overturn incidents take place when these farm vehicles turn on their side or tip over backward. These overturns come about very quickly, often in seconds, which leaves the operator little or no chance to get clear as the tractor tips or rolls.

When operated properly, tractors are generally quite safe. Tractors that are old, in poor condition, lack safety guards and devices, or are driven in an irregular or risky manner can contribute significantly to unsafe or hazardous conditions.



*A roll-over protective structure and a seat belt can protect workers from being crushed by an overturned tractor.*



### Roll-over Protective Structures (ROPS)

An operator's chances of surviving a tractor overturn without a serious injury are very good if the tractor has a ROPS and the operator is wearing a seat belt. A ROPS is a roll bar or cage frame that is designed to form a zone of protection around the operator if a tractor overturns. To prevent being thrown from a tractor, operators must wear a seat belt.

A qualified dealer can retrofit older tractor models with a ROPS/seat belt system. The National Institute for Occupational Safety and Health (NIOSH) Division of Safety Research and Protective Technology Branch has developed a Cost-Effective Rollover Protective Structure Program (CROPS) for four tractor models that lack commercially available ROPS.



### ROPS and Seatbelt Requirements

- Agricultural tractors with over 20 horsepower manufactured after October 25, 1976 are required to have ROPS. (1928.51(b)(1)).
- Each tractor with a ROPS must have a seat belt.
- Ensure that each operator uses a seat belt properly.
- Employers must ensure that each operator tightens their seat belt so that they are confined within the ROPS protective area.



Employers must ensure that tractor operators receive initial and at least annual training on the safe operating practices described below (29 CFR 1928.51(d)):

- Fasten seat belts securely (for tractors with rollover protection).
- Where possible, avoid operating the tractor near ditches, embankments and holes.
- Stay off slopes too steep for safe operation.
- Reduce speed when turning or crossing slopes, and on rough, slick, or muddy surfaces.
- Operate the tractor smoothly, without jerky turns, starts, or stops.
- Be attentive, especially at row ends, on roads, and around trees.

## Power Take-Off (PTO) Shafts

A PTO allows farmworkers to use power from the tractor's engine to drive a variety of machines and implements. PTOs are useful, but they can pose a serious safety hazard. Operators and workers have come into contact with unprotected as well as protected PTOs. Employers must protect workers from coming into contact with hazards created by a rotating PTO, and they must inspect the PTO shaft to ensure that the PTO guard is always in place. Employers should replace any missing or damaged PTO guard.

At the time of initial assignment and at least annually thereafter, the employer should train every farmworker in the safe operation and servicing of all equipment with which the operator will be involved, including the following safe operating practices (1928.57(a)(6)(i)):

- All PTOs, including rear, mid- or side-mounted shafts, shall be guarded either by a master shield, or by other protective guarding (1928.57(b)(1)(i)).
- Before servicing, adjusting, cleaning, or unclogging the equipment, stop the engine, disconnect the power source, and wait for the PTO shaft to stop, except when the machine must be running to be properly serviced or maintained. In that case, the employer must train workers on all steps and procedures needed to safely service or maintain the equipment (1928.57(a)(6)(iii)).
- Keep all guards in place when the machine is in operation (1928.57(a)(6)(i)).
- Ensure that everyone nearby is clear of the machine before starting the tractor's engine and engaging the PTO shaft's selector switch (1928.57(b)(6)(iv)). Tie back and tuck in long hair and do not wear loose clothing. A rotating PTO shaft can catch long hair or loose clothing.
- If possible, avoid working alone around PTO-driven machinery. If entanglement occurs, a coworker may be able to stop the PTO shaft in time to prevent more serious injury, or death.



*In 34 states, SMV emblems must be displayed on the rear of any tractor and its towed attachment traveling 25 mph or slower.*

## Tractor Operator Training

Employer-provided tractor operator training can aid in reducing tractor incidents. Employers should train tractor operators to:



- Comply with the tractor's operating instructions.
- Allow no riders, unless the tractor is manufactured with a seat and a seat belt for each rider.
- Hitch only to the draw bar and hitch points.
- Set the brakes and hand brake, if available, when the tractor is stopped for more than a few seconds.
- Ensure that operators have the experience and knowledge to operate the tractor.

## Emergency Planning and Preparedness

Many injuries in agriculture occur far from hospitals and emergency medical facilities. Moreover, most employers do not have the training or capability to treat these injuries. Because treatment facilities are not typically located within a reasonable distance or timeframe, employers should:



- Develop an emergency action plan that addresses all likely hazards.
- Designate an emergency staging area for the field or the office.
- Train tractor operators on how to respond to emergency situations.
- Ensure that each tractor has a first-aid kit and a working fire extinguisher.
- Assemble a first-aid kit that is designed to address agricultural injuries and incidents. Agricultural first-aid kits should contain basic medical items such as gauze, splints, ice packs, surgical tape, disposable gloves, eye patches, burn dressings and a first-aid instruction booklet.

- Call local first responders or 911 in case of an emergency. When reporting an emergency, provide your name, location, the nature of the emergency and where the worker(s) can be reached.
- Maintain frequent communication with tractor operators who work alone or in remote areas.

## Workers' Rights

Workers have the right to:

- Working conditions that do not pose a risk of serious harm.
- Receive information and training (in a language and vocabulary the worker understands) about workplace



hazards, methods to prevent them, and the OSHA standards that apply to their workplace.

- Review records of work-related injuries and illnesses.
- File a complaint asking OSHA to inspect their workplace if they believe there is a serious hazard or that their employer is not following OSHA's rules. OSHA will keep all identities confidential.
- Exercise their rights under the law without retaliation, including reporting an injury or raising health and safety concerns with their employer or OSHA. If a worker has been retaliated against for using their rights, they must file a complaint with OSHA as soon as possible, but no later than 30 days.

For additional information, see [OSHA's Workers page](#).

## General Safety Precautions

- **Inspections and review:** Ensure that operators and workers are thoroughly familiar with farm machinery that may be used for just a few days out of the year. This is especially important with harvesting equipment such as combines and cotton harvesters.
- **Safety checks:** Conduct preoperational safety checks, review proper operating procedures and ensure that tractor safety decals and stickers are not worn, damaged or removed.
- **Be aware:** Ensure that operators are familiar with the ground where the tractor will be used. Operators should be aware of ditches, uneven ground, and bystanders in the area.
- **Children:** Keep children away from tractors and their implements. Having children on a tractor is unsafe.
- **Indoor safety precautions:** Prevent indoor carbon monoxide buildup by ensuring that adequate ventilation is always available when starting or operating a tractor indoors.

Make sure that exhaust fans are running if available, and always leave the structure's doors open if exhaust fans are not available.

- **Highway safety:** Employers should train tractor operators to avoid highways during busy peak travel times or poor visibility, and at night or during bad weather. Lighting and markings for tractors and towed equipment should be up-to-date and in accord with transportation regulations. Tractor operators should consider using emergency flashers and an escort vehicle to increase the tractor's visibility. The tractor should have a clean, highly visible, unfaded slow-moving vehicle (SMV) emblem affixed to the rear. SMV emblems are required in 34 states, and they must be displayed on the rear of any tractor and its towed attachment traveling 25 mph or slower. Employers should check state highway regulations to determine if a SMV emblem is required in their state or local jurisdiction.

**For questions or to get information or advice, to report an emergency, fatality, inpatient hospitalization, amputation, or loss of an eye, to file a confidential complaint, or to request OSHA's free on-site consultation service, contact your nearest OSHA office, visit [www.osha.gov](http://www.osha.gov), or call OSHA at 1-800-321-OSHA (6742), TTY 1-877-889-5627.**

**For more information on ATV safety and other issues affecting farmworkers, visit OSHA's Safety and Health Topics Agricultural Operations website at [www.osha.gov/dsg/topics/agriculturaloperations](http://www.osha.gov/dsg/topics/agriculturaloperations).**

**For assistance, contact us. We can help. It's confidential.**



U.S. Department of Labor

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory-impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

