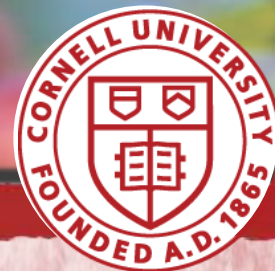


# Tree Fruit News



## Weed Management in Newly Planted Orchards

Mike Basedow, CCE ENYCHP

Early weed control is a critical component of establishing a new planting. Newly planted fruit trees compete poorly against fast growing weeds for water and nutrients. This competition can severely limit a new block's growth, which can ultimately reduce potential yields in the third year by 50 percent (Breth and Tee, 2013). Weeds also harbor insects and diseases, provide habitat for rodents, and can serve as hosts for viruses, further complicating effective orchard management (Stivers et al., 2017).

Weed management for a new orchard should begin with excellent site preparation. Prior to planting, your orchard site can be cultivated, allowed to fallow until weeds emerge, and then treated with a post-emergence herbicide to control problematic perennial weeds. Cover crops can then be planted to compete against emerging weeds, and subsequently mowed and incorporated into the soil. In the fall prior to tree planting, you can seed the planting site with your preferred orchard sod mix. This will give the sod for the row middle some time to establish. You can then kill the sod in the rows with glyphosate two weeks prior to planting the orchard (R. Crassweller, 2018). The killed sod in the rows will act as a mulch for the trees at planting.

Once the trees are planted and the soil has had time to settle, a mix of pre-emergence herbicides should be utilized. There are a number of pre-emergence formulations that can be used in newly established orchards (they require the soil around the trees be settled before applications are made), and a few provide some post-emergence control when weeds are in the seedling stage. These are listed below, and more in-depth product descriptions can be found in the 2018 Cornell Tree Fruit Guide.

- **Surflan (oryzalin)** controls most annual grasses and some broadleaf weeds. It controls pigweed, but not ragweed or PA smartweed. Surflan can be used in new plantings as soon as the soil has settled, but requires ½ to 1 inch of rain prior to seed germination to be effective.
- **Prowl (pendimethalin)** controls annual grasses, and some broadleaf weeds, including lambsquarters and pigweed when used as a pre-emergent. Prowl 3.3EC can be used in non-bearing trees in newly planted orchards. Using the higher rate will give a longer window of control.

## Table of Contents

Weed Management in Newly Planted Orchards.....1

Upcoming Webinar: Ag Labor Tips and Tools.....2

Rootstock Blight– The Killer of Trees.....3

Fire Blight Checklist.....5

Proper Disposal of Pesticide Containers.....6

Upcoming Events: 20 Minute Farm Manager Webinar Schedule.....9



- **Chateau SW (flumioxazin)** provides pre-emergent control of grasses and broadleaves, and will also control emerging broadleaf seedlings when they are between 2 and 6 inches tall. It must be applied prior to pink bud. It can be applied to trees that have been established less than 1 year, but trees must be protected with non-porous tree wraps.
- **Goaltender (oxyfluorfen)** has pre and post-emergent activity on young seedlings. It controls broadleaf weeds, and should be combined with a grass herbicide. It can only be applied to trees when dormant.
- **Sinbar (terbacil)** controls most annual grasses and broadleaf weeds, and has some activity against perennials like quackgrass, horsenettle, and nutsedge. Sinbar requires rainfall within 3-4 days after application to effectively move into the germination zone. It can be used in newly planted trees at very low rates once the soil has settled. Do not use on soils coarser than sandy loam, this would include high gravel content soils in the Hudson Valley.
- **Solicam (norflurazon)** controls most annual grasses and many annual broadleaf weeds, and suppresses nutsedge and quackgrass. It requires rain to move into the seed germination zone, and is often combined with another pre-emerge that has greater efficacy against broadleaf annuals.

This initial treatment can be combined with post-emergence herbicides to control any weed seedlings that may have already emerged (Always check the label before combining any products). Additional follow-up spot treatments of post-emergence herbicides should be

performed to control weeds that escape your initial treatments. Be careful to avoid contact with the trunks and green tissues of the young trees. The application of white latex paint to trunks affords some protection, but the use of spiral tree guards should be discouraged in regions with high dogwood borer pressure, such as the Hudson Valley.

You might also consider developing an orchard weed log or map for your blocks to fine tune your weed management plan. When you see weeds in the orchard, write down their location, the species that are present, and the average height, growth stages, and percentage of ground cover for each species. These records can help you schedule your post-emergence treatments. They can also help you select an appropriate herbicide mix in your future applications when you have more herbicide options as the block matures. Having these notes to look back on will also allow you to recognize your long term persistent weed trends, and determine the effectiveness of your weed management program (Stivers et al., 2017).

By being proactive with weed management in the first few years, you can get your trees off to a great start to maximize your future potential yields.

*Breth, D., and L. Tee. 2013. New Findings in Weed Control in Young Apple Orchards. New York Fruit Quarterly. 21(4):13-18.*

*Crassweller, R. 2018. Orchard Establishment - Site Selection and Preparation. Penn State Extension. 24 April 2018. <<https://extension.psu.edu/orchard-establishment-site-selection-and-preparation/>>*

*Stivers, L., T. Baugher, and M. Basedow. 2017. Integrated Weed Management: Weed Scouting for Fruit Production. Penn State Extension. 25 April 2018. <<https://extension.psu.edu/integrated-weed-management-weed-scouting-for-fruit-production/>>*

## UPCOMING Webinar: Ag Labor Tips and Tools

When: May 9, 2018 11:30 AM-1:30PM Eastern Time (US and Canada)

***Do you hire H2A, Migrant Farmworkers or farmworkers whose primary language is not English?***

Join Mary Jo Dudley, the Director of the Cornell Farmworker Program, Melissa Buckley Supervisor and Foreign Labor Certification Specialist, NYS DOL, and staff from the Finger Lakes Community Health, and NYS Migrant Education to learn about resources to help you manage and support your employees this season. They will also be able to answer questions that you may have.

**This free webinar is supported by a grant from NERME and USDA.**

For more information, contact Mary Jo Dudley Cornell Farmworker Program at [mjd9@cornell.edu](mailto:mjd9@cornell.edu).

**Please register through the following link: <https://tinyurl.com/y9luja82>** After registering, you will receive a confirmation email containing information about joining the webinar.





## Rootstock Blight- The Killer of Trees

Srdjan G. Aćimović – Cornell University, Hudson Valley Research Laboratory

The often left unnoticed and rarely presented part in the life cycle of fire blight pathogen *Erwinia amylovora* is the rootstock blight (Fig. 1). In recent years, rootstock blight has been a top cause of tree decline in young, mid- to high-density orchards in north-eastern USA and south-eastern Canada, where it was a lingering consequence of a fire blight epidemic in 2016. The key contributors to such a high incidence of rootstock blight are several: (1) unexpected, favorable weather conditions for fire blight infection late in bloom, (2) widespread use of blight susceptible rootstocks such as M.9, M.9-337, M.9 Nic29, and EMLA 26, and (3) young fruiting limbs in spindle-

shaped training systems allowing quick progress of internal fire blight infections into the tree trunk and then into the rootstock. Moreover, every year during dormant pruning, the fruiting limbs are renewed by removing 3-5 of the thickest scaffolds on spindle-shaped training systems.

This facilitates constant presence of young, blight susceptible tissue, that if fire blight infections occur on flowers or shoots, allows direct, quick progress of fire blight pathogen into the trunk and then rootstock. Rootstock blight infections are initiated either through downward transfer of fire blight pathogen from the crown via the trunk xylem or via direct infection of root suckers (Fig. 1). In the 2016 fire blight

epidemic, it seems that the major pathway leading to rootstock death and tree decline was internal pathogen spread from infected flowers and shoots via trunk xylem.

On the thick, old limbs of classic training systems this downward pathogen transfer does not or rarely happens. In north-eastern USA orchards with classic training systems, trees survived the 2016 epidemic, and with canker removal during pruning they ended up in good shape. However, in high-density orchards, the resulting cankers on trees with small diameter trunks and visible or latent fire blight infections of rootstock, led to the death

of a large number of trees due to rootstock collapse (Fig. 1). Trees with an infected rootstock senesce earlier in the fall than the trees with healthy rootstocks (Fig. 2).

It is not known what role the infected rootstocks play in disease renewal in spring and how important they are as inoculum sources for infection. The reason why their role might be questionable in providing inoculum is the fact that they are close to the ground and hence, generally a fair distance away from opened flowers. This distance should reduce chances for fire blight bacteria to easily reach flowers or shoots by rain or wind and infect. However, if the lowest fruiting



**Figure 1. M.9 rootstocks infected by fire blight on 'Ambrosia' and 'Snapdragon' trees. Clockwise: Dark fire blight canker expanding from rootstock onto the scion, damp ooze smear visible on rootstock without canker, dry ooze smear on dead tree rootstock, dead trees due to fire blight rootstock death, shaved bark on fire blight reveals dead bark and xylem, damp ooze and fire blight infected root or rootstocks suckers (Photo by Aćimović S. G. 2016).**

*continued on next page*



limbs of high-density orchards are trained by previous year's heavy fruit loads to hang down, and are not removed during dormant pruning, this could place flowers closer to the ground and closer to the fire blight cankers on the rootstock. In this case, bacterial ooze from rootstocks might reach the flowers more easily by rain splashing and then be carried by pollinators to new flowers. It is known that infected rootstocks, with or without visible cankers, can exude fire blight ooze in the current or the following season (Fig. 1).

Even though copious amounts of ooze containing bacteria can emerge in spring and summer on rootstocks, their role in providing inoculum might also depend on year-specific weather conditions and insect vector activity. Therefore, their role as sources of inoculum could be less or more important depending on a year's specific conditions.

Depending on the time and number of flower, shoot, or root sucker infections, rootstocks or trees can collapse earlier or later in the year. That is why the tree death was prolonged from early into late 2016, and continued all the way into the 2017 growing season, after the 2016 epidemic in north-eastern US and south-eastern Canada. Finally, other causes of tree or rootstock decline can be confused with fire blight. One example is *Phytophthora* Crown and Root Rot (PCRR) which can sometimes infect trees after fire blight infection on rootstock has been established, complicating the diagnosis. Hence, careful symptom and sample analysis need to be done to determine the causal agent of tree death. In some cases, symptoms of early infection caused by *Botryosphaeria dothidea*, a fungus that infects wood after trees were exposed to drought stress (Fig. 3), can be very similar to fire blight and deceive the examiner. In Fig. 3 you can see ooze-like orange sap leaking from the round-shaped bark dents with cracked edges that occur when this fungus infects. However, bark shaving can reveal that cankers are superficial (Fig. 3 middle) and not affecting the deeper xylem, which is typical for fire blight (to discern fire blight from PCRR one should look for presence of bacterial ooze and black infection zones in xylem). With further lab tests one can



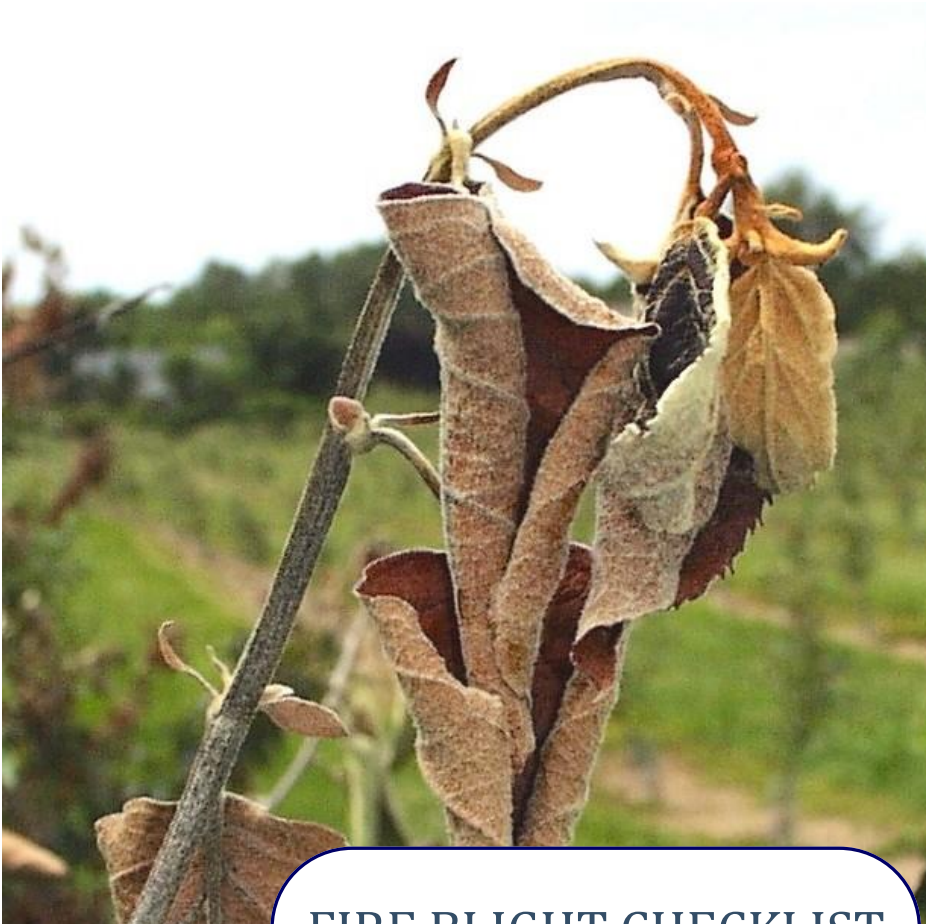
**Figure 2. 'Ambrosia' apple orchard with super-spindle training system showing earlier leaf senescence on trees with infected, dying M.9 rootstocks (Photo by Aćimović S. G. 2016).**



**Figure 3. Sap leaking from the round-shaped bark patches with cracked edges caused after infection by *Botryosphaeria dothidea*. Middle image shows that cankers below these patches are superficial distinguishing them from fire blight (Photo by Aćimović S. G. 2017).**

easily confirm that fire blight bacteria are not recovered from superficial cankers shown in Fig. 3.

In conclusion, there is very little to no tolerance for fire blight infections in high-density orchards and rootstock blight is the deadliest symptom of fire blight disease. Growing a high-density apple orchard entails a high risk of tree destruction by fire blight and requires a proactive and diligent approach in fire blight management, where spray applications should be timed based on fire blight prediction models (Maryblyt, NEWA's EIP, RIMpro, Cougarblight).



## FIRE BLIGHT CHECKLIST

It's that time of year again...

1. Monitor ENYCHP E-Alerts, [Dr. Srdjan Acimovic's blog](#), [NEWA Fire Blight EIP model](#), [RIMpro](#) Fire Blight model etc... Be ready to act when conditions warrant an application.
2. Be prepared to spray streptomycin during bloom. All applications of antibiotics should be at the labeled rate.
3. The key to resistance management for streptomycin is to avoid strep sprays after bloom.
4. See [Cornell Pest Management Guidelines for Commercial Tree Fruit Production](#) for more detailed information.



**The New 2018 Cornell Pest Management Guidelines are now available for purchase!**

Commodities include: Berry Crops, Vegetables, Tree Fruit, and Grapes.

Please contact Abby Henderson at 518-746-2553, or [aef225@cornell.edu](mailto:aef225@cornell.edu) if you would like to place an order!





## Proper Disposal of Pesticide Containers

Dan Donahue, CCE ENYCHP

Tree fruit producers generate substantial quantities of empty pesticide containers over the course of the growing season. Back in the “old days”, paper bags found their way into a burn barrel, and plastic jugs into a landfill. Neither option is viable today, so what to do? Landfill disposal is still an option for some types of pesticide containers, and recycling is available for others, but first, here’s what’s legal in New York State:

**Burning of paper pesticide bags:** Illegal under all circumstances in New York State. Yes, it’s true, organic agricultural wastes may be burned on-site where they are grown or generated including brush and wood produced by clearing fields and other activities. The fire must be located on contiguous agricultural land larger than 5 acres, and the materials capable of being fully burned within 24 hours. However, pesticides and pesticide containers are not defined as “agricultural wastes”, therefore, the burning of pesticides, empty pesticide containers of any sort, plastics or other non-organic material is prohibited.

### **Disposal of plastic pesticide containers in landfills:**

While not specifically illegal, the disposal of even properly rinsed plastic pesticide jugs in landfills, or through the conventional recycling channel used for household plastics is strongly discouraged. The good news is that specialty plastics recycling companies make it their business to recycle plastic pesticide containers (more on this later). Disposal in a landfill is unnecessary and would be an environmentally unfriendly choice. As for recycling, household plastics often end up reconstituted into new products associated with food transport and storage, so including even well-cleaned former pesticide containers in the recycle stream is not a good idea. Landfill operators are likely to reject your delivery of empty 2 ½’s, and it’s their option to do so.

### **What can you learn from the pesticide label?**

The product label defines the legal use and disposal of the specific pesticide.

To the right is an example of the disposal instructions found on the label for Aprovia™ fungicide by Syngenta Crop Protection LLC:

Note the detailed instructions for rinsing. While these container handling instructions may well be appropriate for many other pesticides, please read each pesticide label for specific instructions. Instructions for the final disposition of the cleaned container are rather vague, hence “local” knowledge is essential in order to properly complete the disposal process and comply with state and local best practices and regulations. A complete label database of all pesticides registered for use in New York State can be found on the NYS DEC website, just follow this link <http://www.dec.ny.gov/nyspad/?0>.

### **How to dispose of empty pesticide containers in a manner that’s both legal and environmentally friendly.**

1. Triple-rinse all emptied pesticide containers with clean water, dumping the rinsate back into the spray tank at the time of your application. This way, the small amounts of pesticide in the rinse water will be properly applied to the crop as it was intended. If you wait until the end of your spray session, what will you do with the contaminated rinsate? Proper disposal then becomes more complicated and expensive.
2. During the triple-rinse process, also remove the traces of pesticide residue that may have accumulated on the outsides of the container or bag. It is not necessary to remove stains, only the physical pesticide residue.
3. Once rinsing and exterior cleaning is complete, remove the paper labels from plastic containers destined for recycling. It is not necessary to remove the glue, only the paper.
4. **Paper bags** (including those that are plastic-lined): Compact the cleaned bags to save storage space, store them in large plastic (biodegradable) leaf bags, label as “cleaned pesticide bags” so that everyone who may come in contact knows what they are, and eventually deliver to the landfill.

### **Container Handling [less than or equal to 5 gallons]**

**Non-refillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.



5. **Plastic containers:** Once cleaned and de-labelled, punch holes in the bottom to prevent future use, and store in a safe and secure location until it's time to transport them to the pesticide container recycling location.

#### How to recycle used plastic pesticide containers

The [Agricultural Container Recycling Council](http://www.acrecycle.org/Where_and_How_to_Recycle) - ACRC, is an industry funded not-for-profit organization that safely collects and recycles agricultural crop protection, animal health and specialty pest control product containers. Thousands of farmers and pesticide applicators nationwide participate in ACRC recycling programs. ACRC is fully funded by member companies and affiliates that formulate, produce, package and distribute crop protection and other pesticide products. For more information on this program, visit the ACRC's website by following this link or typing it into your web browser [http://www.acrecycle.org/Where\\_and\\_How\\_to\\_Recycle](http://www.acrecycle.org/Where_and_How_to_Recycle).

Agricultural chemical distributors active in Eastern New York State who offer no-cost plastic pesticide container recycling services to their customers include Crop Production Services, Helena Chemical, and Winfield Solutions. Third-party specialty waste recycling companies are contracted once or twice per season to conduct the recycling. The plastic grinder and storage unit is often integrated into a semi-trailer rig, with either the ag distributor or the grower transporting the empty containers to the recycling location at the appropriate time.

#### Container Recycling Eligibility Requirements

Product containers that can be accepted for recycling through the Ag Container Recycling Council (ACRC) sponsored programs must meet these criteria:

#### Eligible:

Rigid high-density polyethylene (HDPE), 55 gallons and smaller, that previously held products utilized in the following markets:

- **Crop Protection** – Containers that held EPA registered crop protection products labeled for agricultural uses. Containers that previously held non-registered products such as adjuvants, crop oils and surfactants are also eligible for recycling.
- **Specialty Pesticides and Fertilizers** – Containers that held EPA registered products labeled for professional Structural Pest Control, Animal Health, Turf and Ornamental, Vegetation Management, Nursery and Greenhouse, Forestry, Aquatics, and Public Health uses are eligible for recycling. Containers that previously held non-registered products such as adjuvants, crop oils and surfactants are also eligible for pick up.
- **Pest Control Operators, Structural Pest Control** – Containers that held EPA registered products labeled for professional application.
- **Properly triple-rinsed** - Before containers (jugs and drums) can be accepted for recycling, they must be rinsed of all residues after use. Only dry, residue-free rinsed containers are accepted at collection sites.

#### Not Eligible:

- Any container constructed of anything other than HDPE, rotationally molded containers, mini-bulk, intermediate bulk containers (IBC), and totes.
- Consumer Home & Garden, Pest Control and Swimming Pool Maintenance – Containers that previously held products labeled for consumer use in households, lawn and garden, and swimming pool uses are not eligible for recycling in the ACRC program.
- Jugs and drums not properly prepared.

*Representatives from CPS, Helena, and Winfield all strongly emphasized the importance of delivering properly processed, clean containers with all labelling removed. The recycler is not obligated to accept improperly prepared containers*

*continued on next page*

## Container Preparation Checklist

Properly preparing containers for recycling is essential. Please be sure to follow this checklist before your ACRC Contractor arrives for pickup, or you deliver to the recycling site.

**Have questions? Please contact your regional Cornell Cooperative Extension specialist for more information.**

*Acknowledgements: Excerpts from the Agricultural Container Recycling Council and New York State Department of Environmental Conservation web sites were used in the preparation of this article.*



**TYPE:** Include containers made from high-density polyethylene (HDPE) only; embossed with the plastic resin code #2.



**PRIOR USE:** EPA registered crop protection products labeled for agriculture, animal health, forestry, vegetative management, and specialty pest control are acceptable. Also acceptable, are containers holding crop protection adjuvants, crop oils and surfactants.



**EXCLUSIVE PROFESSIONAL USE :** The ACRC accepts containers for products applied by Growers or Commercial Applicators only. Do not NOT include containers that held consumer or home & garden protection products. These are not acceptable for recycling in the ACRC program.



**SIZES:** All sizes up to and including 55-gallon capacity are routinely accepted.



**RESIDUES & CLEANING:** Containers must be empty and triple-rinsed or pressure-rinsed to remove all residue. Staining is acceptable. Caked-on residue is not. Be sure there is no residue that can be smeared or will flake off when touched with a glove. The interior surfaces of containers must be dry.



**STORAGE:** To keep container dry, store in a building, trailer, or under a plastic tarp.



**PARTS & CAPS:** NON-high-density polyethylene (HDPE) parts such as caps, metal handles and rubber linings cannot be recycled, and should be disposed of as normal solid waste. Do not put a cap back on a rinsed container.



**LABEL & BOOKLET REMOVAL:** Labels and booklets will interfere with the recycling process and should be removed. If you have trouble with label removal, check with your ACRC Contractor.



Containers that originally held consumer products, or home and garden pesticides are NOT ACCEPTABLE.



# 20 Minute Ag Manager

## *Summer 2018 Schedule*

20 minute lunchtime webinars will be held on Tuesdays this summer covering farm business management topics.

**All webinars run from 12:00 until 12:30.**

To register, go to <https://tinyurl.com/y9gfqbmj>.

Registering once gives you access to the series.

For more information, contact Liz Higgins at [emh56@cornell.edu](mailto:emh56@cornell.edu).

### May: Basic Farm Finances

- May 15—Setting Up Your Farm's Accounts in Your Financial System
- May 22—Understanding Depreciation
- May 29—Understanding Assets and Liabilities vs Income and Expenses

### June: Zoning and Land Use

- June 5—NYS Ag Assessment 101
- June 12—Local Zoning 101
- June 19—NYS Ag Districts 101
- June 26—Using On-line Data and Maps to Assess a Property Remotely

### July: Managerial Accounting

- July 3—Budgeting 101
- July 10—Assessing a Capital Investment
- July 17—Relevant Information and Sensitivity Analysis
- July 24—Pricing for Profit
- July 31—Know When to Hold'em, Know When to Fold'em (assessing performance)

### August: Insurance

- August 7—Crop Insurance 101
- August 14—Crop Insurance for Diverse Farms
- August 21—Flood Insurance and Other Disaster Programs

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