

College of Agricultural, Consumer, and Environmental Sciences

Illinois Fruit and Vegetable News

Vol. 19, No. 6, June 6, 2013

A newsletter for commercial growers of fruit and vegetable crops

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." Aristotle

Address any questions or comments regarding this newsletter to the individual authors listed after each article or to its editor, Rick Weinzierl, 217-244-2126, weinzier@illinois.edu. The *Illinois Fruit and Vegetable News* is available on the web at: http://ipm.illinois.edu/ifvn/. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or email address above.

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Upcoming Programs

Check the Illinois SARE calendar for a full list of programs and links for registration. http://illinoissare.org/ and http://illinoissare.org/calendar.php

- Illinois Summer Horticulture Day, June 13, 2013 ... the morning program will be at Curtis Orchard in Champaign, IL, followed by an afternoon tour of the University of Illinois Fruit Research Farm in Urbana and Vegetable Crops Research Farm in Champaign. Details below ...
- Grape Workshops, June 14 and 15, 2013 ... 9:00 a.m. 12:30 p.m., June 14 at August Hill Winery, 21N 2551 Road, Peru, IL, and June 15 at Heimann Vineyard, 7438 E. Grant Road, Walnut Hill, IL. Workshops focus on achieving vine balance crop estimation, cluster thinning, vineyard floor and fertility management, field calculations. Registration on-site is \$15 for IGGVA members and \$20 for non-members. For more information, contact Elizabeth Wahle at wahle@illinois.edu or 618-344-4230.
- Food Safety Webinar, June 17, 2013, 3:00-4:30 p.m. A training webinar for farmers market managers and other interested persons to learn about the changes to the Illinois Department of Public Health Technical Information Bulletin #30 Sanitation Guidelines for Farmers Markets. Register at https://webs.extension.uiuc.edu/registration/?RegistrationID=8442
- Good Agricultural Practices (GAPS) Workshop, June 28, 2013, 9:30 a.m. 4:00 p.m. at the University of Illinois Boone County Extension Office, 205 Cadillac Ct., Unit 5, Belvidere, IL. This program will provide an overview of GAPs, a vegetable retailer presentation on concerns about food safety, good handling practices, food defense protocols in the food chain, self-auditing farms for food safety, crisis and risk management, and writing a food safety plan. Cost per participant is \$10 (one set of curriculum per farm). Pre-registration is required by June 25, 2013. Lunch and light refreshments will be provided. For more information, call 815-544-3710, or you may register online at http://web.extension.illinois.edu/bdo/.
- Good Agricultural Practices (GAPS) Webinar Series, July 1,8,15, and 22, 6:00-8:00 p.m. Online program. Sessions cover soil and manure management, water quality and testing, record-keeping, traceback, writing a food safety plan, and being audited. For more information contact James Theuri at 815-993-8337 or jtheu50@illinois.edu. Register online at https://webs.extension.uiuc.edu/registration/?RegistrationID=8407.



The Illinois State Horticultural Society

Horticulture Field Day

Thursday, June 13, 2013
Curtis Orchard and Pumpkin Patch (Champaign)
University of Illinois Fruit Research and Education Center (Urbana)

Hosts for this year are Paul and Joyce Curtis, Randy and Debbie Graham, and several family members.

Curtis Orchard is open July 20 through December 20 and offers many activities for the visitor. It includes a pick-your-own and pre-pick orchard with 25 acres of apples and peaches (some new plantings and varieties), a 20 acre pumpkin patch. The Flying Monkey Café is open daily for lunch, and the country store offers a variety of products including preserves, honey, apple butter salad dressings, popcorn, gift baskets, and unique kids' toys that are favorites. Visitors to the bakery will find donuts, fritters, pies and cobbler. Fun activities include: a petting zoo, giant slide, putt and play, a toddler area, live music, private parties and cider making, apple grading tours and presentations about honey bees.

The new 100 acre University of Illinois Fruit Research and Education Center was established in 2008 south of campus is used for teaching, research, outreach/extension education programs relating to fruits and vegetables. The perennial plants at the farm consist of 15 acres of apples, 3 acres of peaches, Asian pears, grapes, and small fruits. The research focus includes disease resistant cultivars, root stock compatibility, applied entomology and plant pathology. In addition, a genetic-source orchard is maintained for germplasm to be used for future genome mapping. Plans also include developing demonstration plots that will serve farmers and the general public on such topics as sustainable fruit production, nutritional components, integrated pest management, and impact of production on consumer health. The Sustainable Student Farm is also located at this site.

8:00 a.m. - 1:30 p.m. at Curtis Orchard

8:00 A.M. Registration 8:30 A.M. Welcome

8:45-11:30 A.M. Field Tours (Walking-Wagon Tours)

Speakers during the field tours:

Curtis Orchard: Paul Curtis and Randy Graham

Univ of Illinois: Horticulture: Mosbah Kushad

Entomology: Richard Weinzierl
Plant Pathology: Mohammad Babadoost

Weed Sciences: Elizabeth Wahle

Indoor Presentations

Café Management, Keeping it Simple with Comfort Food: Debbie Graham, Café Manager

Curtis Orchard and Pumpkin Patch: A Growing Legacy; Sarah Graham

Effectively Managing and Retaining a Young Workforce: Rachel Coventry, Store Manager

Herbal Teas: Ellen's Herbal Teas, Ellen Wilson

12:00 – 1:30 p.m. Lunch and Lunch-Time Presentations

Exhibitor Introductions- **Don Naylor** President's Comments- **Chris Eckert** Additional Presentations- TBA

2:00 – 4:30 at the University of Illinois Fruit Research and Education Center

Field Tours (Walking-Wagon Tours)

Apple and peach root stocks:

Disease resistant apple cultivars:

Weed control in orchards:

Insect pest management in orchards:

Mosbah Kushad
Schuyler Korban
John Masiunas
Rick Weinzierl

Disease management in orchards: Mohammad Babadoost

High-tunnel vegetable production: Zach Grant

Sponsored by: Illinois State Horticultural Society, University of Illinois, Illinois Specialty Growers Association

Regional Observations

In western Illinois ... Remember the Morton Salt motto "When it rains, it pours"? That certainly describes the weather the last two weeks of May in the Quincy area. I recorded over 10.5" of rain during that period and almost 14" for the month. The last time anyone got into the fields was May 20, so succession plantings have been difficult if not impossible. And the incessant rains didn't help those crops and transplants that are in the ground. Low lying areas of fields and creek bottoms were especially vulnerable to frequent ponding of water. Saturated soil conditions lead to lack of oxygen as well as nitrogen loss. Plants require oxygen to survive and thrive, and growth has been compromised of late. We need some dry soils to enable them to recuperate and grow. The saturated soils also can be responsible for nitrogen loss, either through tile lines or in saturated soils, via denitrification. Nitrate is the only form of nitrogen that can be lost, and how much of the applied nitrogen has converted to nitrate is an educated guess.

Work from several years back found that for each day soil was saturated, between 2-4% of nitrate nitrogen could be lost. The warmer the soil, the higher the loss (65-75 degree soil equaled 3-4% nitrate loss). Urea and UAN can be converted within several weeks of application, while anhydrous takes longer, especially if an inhibitor was used. An estimate would be to expect 80% of fall applied anhydrous (w/ N-Serve) to be converted to nitrate. High-use nitrogen crops such as sweet corn, tomatoes, potatoes and vine crops could be vulnerable to nitrogen shortages, so plan accordingly.

Plasticulture strawberry harvest started around Memorial Day; high-tunnel strawberries were 10 days or so ahead. Matted row Earliglo strawberries are very close to harvest. It has been difficult to get all the necessary fungicide applications made for many of the fruit crops due to the rains.

Asparagus harvest is winding down. A rule of thumb is to discontinue harvest when the majority of spears are pencil size or smaller in diameter. I've noticed this year the absence of asparagus beetles ... not sure if it is localized or not. Keeping the field clean of weeds the remainder of the year can be frustrating. Gramoxone is labeled for application after the last harvest, and will help control emerged annuals. Gramoxone will also burn down any existing asparagus ferns, but will not kill the plant since this herbicide does not translocate. Combining it with a residual herbicide such as Diuron, Lorox, Sandea, Savage or Sencor can provide for longer weed control. Post-emergent grass control products include Poast, Fusillade, and Select Max.

Early planted sweet corn is at the V-5 stage. As stated above, succession plantings have been difficult to get into the ground. The saturated soil conditions have many corn fields appearing very light green in color with uneven growth. This is due to low oxygen in the soil. Weeds are growing well though, and with all this rain, the soil is very loose and it has been very easy to pull some tough weeds such as curled dock.

Orchardists have been staking young trees to reduce "wallowing" of the trunks in the wet soil. There are just a few flowers left open on blackberries and raspberries, and fruit seems to be sizing well. Peaches are at about 30 mm and apples are up to 20mm in size.

A summary of high-tunnel crops ... Most continue to do well. Tomatoes have two sets (or more) of fruit and are blooming well. Some of the earliest peppers have fruit. Cole crops have been harvested. Green beans are just beginning to be harvested. Harvest of greens (lettuce, spinach, arugula, etc.) is close to completion. Cucumber harvest has been ongoing for 2 weeks. This year, placement of high tunnels on well drained soils has shown tremendous benefits. If the tunnels are on the same level as the surrounding soil, water seeps in and fills up the low areas and severely inhibits growth. I've also noted the presence of leaf mold on tomatoes in some of these tunnels, which is very early in the year.

Cabbage worms and loopers seem to be absent this year. We have most of our cole crops covered up with light weight row covers to prevent insect infestations, but there are some that aren't covered. These unprotected plants have no sign of injury.

Mike Roegge (217-223-8380; roeggem@illinois.edu)

In northern Illinois ... Weather continues to present challenges here too. A late season light frost a week ago caught some tomatoes and other crops if they were not under row covers. Several heavy rainfalls have challenged most farmers in planting and weeding, and we are now experiencing cool weather in the 60's F.

Flea beetles have been the most prevalent insect problems. Cole crop insects are active, with some cabbage maggot damage reported. Early peas have flowered, and early kale harvest is in progress.

Ellen Phillips (815-732-2191; ephillps@illinois.edu)

Notes from Chris Doll

The year continues with lots of weather discussions. Locally winds of up to 90 mph on May 31 caused a couple of days of lost power and lots of shade tree damage, including mine. In the Back 40, the losses could have been worse, but in the limited small plantings, 4 of 5 plum trees went over, as did 10 of 27 apples on Bud 9 and one on M9, plus some broken limbs on peaches and a good thinning of peach fruit. The Bud 9 tree loss (mostly 5th leaf) was due to having only a light wire for training remaining instead of something stronger. A couple of Pennsylvania tree stakes did not hold up 8- to 10-foot plum trees either. Luckily, only two inches of rain fell during and after the wind, so that water damage is not much worse than before. But a little hail was included.

Locally, the May rainfall was 8.3 inches, and the year total is about 6 inches above normal. Numerous reports of 4- to 6-inch rains in southern and southwestern Illinois have the soils at near saturation and not conducive for doing anything but preventing disease infections and keeping insecticides on the trees. In addition to all the rutting and maybe erosion, the imbalance of air and water can aid in the decrease in calcium uptake. So, a full rate of calcium in sprays is advisable in such soils as well as most others.

Thinning season is past for apples except for hand thinning, which is reported as needed on varieties that cluster like Gala and Fuji, and maybe others, for load reduction where needed, and also for insect- or hail-damaged fruits. Peaches are in the thinning mode. I mentioned that the wind thinned quite a few peaches, but not the donut varieties which are still there.

Local fruit crop reports are similar to what I read from other areas. Apple set was variable, thinning was variable, but in general the crop looks good. The peach set was variable, but usually adequate or better, with fruit sizing well, but tree growth in some blocks shows carryover environmental stress from last year. Strawberry harvest, even matted-row, is nearing the end. Thornless blackberries are sailing into or beyond full bloom, as are grapes.

Grower reports of codling moth trapping say that the counts are up and down, and now trending down. Curculio damage is prevalent where early sprays were poorly programmed, and the same holds true for some apple scab. A little fireblight has been reported, but not severe as yet. Bacterial spot on peaches varies some by orchard and varieties, including mine. It is all leaf infection so far, but for susceptible varieties I've seen dodine in some cover sprays help against the fruit infections.

Summer Orchard Day on June 13 near Champaign at Curtis Orchard and the University of Illinois Fruit Research Farm should be a great experience for all new and old growers of fruit. I hope to see many of you there.

Chris Doll

Fruit Production and Pest Management

Does summer pruning benefit apple and peach trees?

For more than a century pomologists have been evaluating summer pruning, but there is no consistent agreement about its benefits. Some experiments have reported that summer pruning reduced tree vigor, increased flower bud initiation, and improved fruit color, while others showed it had minimal or opposite effects. Some of the discrepancies in results relate to when and how summer pruning was done. Several reviews were published on the subject in the mid 1980s, but very little have been published since then. Here are a few suggestions about summer pruning.

There is a general agreement that removal of shading branches by winter and summer pruning increases light penetration into the canopy. It is also known that an adequate amount of light reaching fruiting wood is critical for new

flower buds formation. By increasing the amount of light in the canopy, early summer pruning of peaches and apples has been suggested to increase flower bud initiation in the following year and maintain fruiting wood, but the results are not consistent. Because of this, my suggestion to those that wish to summer prune their trees, especially peaches, is to remove only vigorous upright shoots (water-sprouts) in the middle of the canopy and some of the non-fruiting shoots that are causing shading. It is better to pull them out by hand or thin them out, because there will be very little regrowth in the same area. Also, do not prune the trees very severely because it can reduces the reserve carbohydrates in the tree which can impact fruit size and sugars. It can also increase the trees' susceptibility to early winter injury and formation of nonproductive lateral branches.

Timing of summer pruning is also important. Very early summer pruning will affect the vegetative growth while very late summer pruning will add little benefit to the trees or the fruits and in worst situations it may reduce winter hardiness. The preferred time for summer pruning is about 40 to 50 days after bloom for peaches and 50 to 60 days after bloom for apples. The idea is to get rid of a few vigorous upright shoots in order to increase light penetration into the canopy, but it is not a replacement for dormant pruning.

In general, a well pruned and trained apple or peach tree with good light distribution in the canopy will not gain much benefit from summer pruning, so spending too much time on it is not economical.

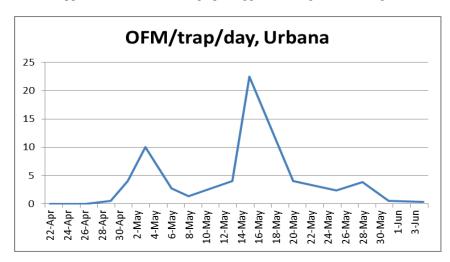
Mosbah Kushad (217-244-5691; kushad@illinois.edu)

Updates on Codling Moth and Oriental Fruit Moth

Oriental fruit moth: Based on biofix dates of April 18 near Batchtown in Calhoun County and April 29 at Urbana, degree-day accumulations (base 45F) since biofix for each location are ...

Location	Biofix Date	Degree-Days base 45F, through June 4	Degree-Days base 45F, projected through June 11	Degree-Days base 45F, projected through June 18
Calhoun County	April 18	775	939	1131
Urbana	April 29	782	957	1158

For a quick summary of the relationship between degree-day accumulations and key events in oriental fruit moth development, see http://www.isws.illinois.edu/warm/pestdata/table.asp?plc. Here's what the flight looks like so far in the unmanaged block of old apples at Urbana. As the graph suggests, first-generation flight has almost ended here.

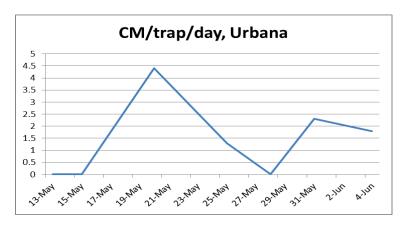


Key sprays for second generation control should be timed to correspond with accumulations of 1,175 degree-days (base 45 F) and 1,475 degree-days after first generation biofix ... but always keep monitoring traps to observe flights in individual orchards. Effective insecticides for oriental fruit moth control include Altacor, Assail, Belt, Delegate, Imidan, and Rimon; Entrust is effective in organic production.

<u>Codling moth:</u> Based on biofix dates of May 15 near Centralia and May 17 at Urbana, degree-day accumulations (base 50F) since biofix for each location are ...

Location	Biofix Date	Degree-Days base 50F, through June 4	Degree-Days base 50F, projected through June 11	Degree-Days base 50F, projected through June 18
Centralia	May 15	411	561	733
Urbana	May 17	310	440	597

Degree-day accumulations for Centralia suggest that about 80 percent of first-generation moths have emerged there and that first-generation egg hatch is about 30 percent complete. For Urbana, degree-day accumulations suggest that that about 60 percent of first-generation moths have emerged there and that first-generation egg hatch is about 10 percent complete. Here's what codling moth flight has looked like so far in the unmanaged block of old apples at Urbana ... we will still see more moths before first generation flight ends.



See the <u>2013 Midwest Tree Fruit Spray Guide</u> for listings of effective insecticides for codling moth control; they include Assail, Calypso, Altacor, Belt, Delegate, and Rimon. Entrust and codling moth virus products are available for organic growers. Again, see the *Spray Guide* for listings.

If anyone has biofix dates for oriental fruit moth or codling moth, please send them to me, and I'll include additional locations in updates on the status of these insects around the state.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu)

Potato Leafhopper

Potato leafhoppers are present and are damaging apples (and other plants) throughout the state. Usually the infestations develop in nonbearing blocks where no insecticides are otherwise needed (no fruit to protect), and the result is curling and cupping of new foliage and a reduction in new shoot growth. The same damage can occur in bearing trees where narrow-spectrum insecticides such as Rimon, Altacor, Belt, or Delegate are used in cover sprays; these compounds do not control leafhoppers. Depending on the crop (and registration status of specific insecticides), Assail, Calypso, Clutch, Imidan, Sevin, and the pyrethroids are among the insecticides that are effective.



Cupping of apple leaves as a result of potato leafhopper feeding.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu)

Vegetable Production and Pest management

More on Weather and Nitrogen Loss

Rainfall during the last two weeks of May varied across IL, from just a few inches in some locations to over 10 inches in the Quincy area. These higher amounts of moisture have saturated the soils, and there are several concerns we can discuss. First is nitrogen fate. Nitrogen can be lost in two different ways, but it has to be in the nitrate form to be lost. Nitrate is lost via tile lines (as water flows out so does nitrate); or in oxygen limited environments (saturated soils) it is converted to a gas and lost.

Nitrogen is converted to nitrate by soil bacteria, and several factors contribute to nitrate conversion. Time and temperature are the most critical ... the warmer the soil temperature, the quicker that conversion occurs. And the longer the nitrogen is out there, the more concern we have. Anhydrous ammonia converts to nitrate more slowly than urea or UAN. These last two N sources can convert as quickly as a couple of weeks after application.

Four-inch bare soil temperatures from the Orr Center in Pike County show temperatures ranging from the high 50s to the low 70s for the last 10 days in May. At these soil temperatures, research has shown that up to 3-4% of soil nitrate can be lost per day under oxygen limiting environments (saturated soils).

These losses only occur to nitrate, not the total amount of nitrogen. So to know loss, you need to know how much nitrogen is in the nitrate form. And that depends upon what form of nitrogen was used, when it was applied and if a stabilizer was used. Fall-applied is at more risk than spring-applied. Using a nitrogen stabilizer offers more protection than not using one.

All we can do is offer a best guess as to how much nitrogen is converted over to nitrate. Dr. Emerson Nafziger provided information on a field in eastern IL that had fall-applied anhydrous ammonia (November) using N-Serve. Approximately 80% of the nitrogen had been converted to nitrate. If we used that as an example, and assume that in those areas that had heavy rains since May 20 (the soils have been saturated at least 8 days) and that we're losing 3% of our nitrate per day of saturation, we could have potentially lost about 20% of our total nitrogen applied on those soils.

This is an educated guess. It will be higher from fall-applied without N-Serve and lower for spring-applied. Urea and UAN convert much more quickly to nitrate as compared to anhydrous ammonia.

The other concern with heavy rain on saturated soils is the compaction of these soils. We're already seeing that impact on emerged field corn. These fields are a light green color and very irregular in growth. The roots of those plants are suffering from a lack of oxygen.

Mike Roegge (217-223-8380; roeggem@illinois.edu)

Potato Leafhopper

Potato leafhoppers are abundant on lots of different plants, apparently from the far south all the way through northern counties. This insect migrates into the region on weather systems from the south each spring, and its arrival in late May and June is very common. In Illinois vegetable crops, potato leafhopper is particularly damaging to potatoes and green beans. As it feeds by inserting its stylet into leaves and sucking out plant fluids, it also injects its saliva into the plant. The saliva is toxic to plants, and leaves typically yellow and curl and plant growth is stunted. See the 2013 Midwest Vegetable Production Guide for listings of insecticides registered for use against potato leafhopper on specific crops.



Potato leafhoppers and injury to potato and green bean leaves. (Photos, L to R, are from Michigan State University, Penn State University, and the University of Massachusetts.)

All those Little Beetles

Among the many small beetles in gardens and fields around Illinois in the spring are the bean leaf beetle, striped cucumber beetle, and spotted cucumber beetle. Later in the summer they're joined by the adults of the western rootworm and northern corn rootworm. Although these beetles are somewhat similar in appearance, distinguishing among them is important. The cucumber beetles are vectors of the pathogen that causes bacterial wilt of cucumbers and muskmelons; the others are not. Bean leaf beetles are more likely to cause serious damage to beans than the other species (although spotted cucumber beetle will feed on bean foliage and pods). Here are the key characters that help in identifying these species.



Left to right: bean leaf beetles, spotted cucumber beetle, striped cucumber beetle.

Bean leaf beetles vary in color and marking, some with black spots or bars on the elytra (shell-like forewings), and some without these marks. All are marked with a black wedge immediately behind the prothorax. **Spotted cucumber beetles** resemble bean leaf beetles but always have 12 distinct spots on the wings. The front, center spots are distinct and do not form a triangle as they do on the bean leaf beetle. **Striped cucumber beetles** have distinct black stripes

along the inner and outer edges of the wings, and the stripes run all the way to the ends of the wings. The underside of the abdomen is black. All of these insects overwinter as adults and move into fields and gardens in April through May, as soon as temperatures warm up and their food plants become available. They lay eggs at the base of their host plants, and larvae develop below ground, feeding on the roots. One or two summer generations of adults of these species emerge and feed, mate, and lay eggs; adults of the latter of these summer generations overwinter.

Western corn rootworm beetles resemble striped cucumber beetles because of the stripes on their wings. The edges of these stripes tend blur or fade on the western corn rootworm, and they do not extend all the way to ends of the wings. The underside of the abdomen of the western corn rootworm is yellowish. Northern corn rootworm beetles have no stripes and no spots ... they're uniformly yellowish green. These two species overwinter as eggs in the soil. Larvae that hatch in the spring feed on the roots of corn, then eventually pupate and emerge as adults, usually beginning in July. Western and northern corn rootworm adults undergo just one generation per year. The adults present in later summer and fall mate, and females lay eggs in the soil; those eggs overwinter to start the cycle again the next spring.



Western (left) and northern (right) corn rootworm beetles.

Rick Weinzierl (217-244-2126; weinzier@illinois.edu)

Local Foods Issues

GAPs: Water Quality is Key

GAPs – Good Agricultural Practices – consists of best management practices to minimize microbial contamination of produce. Water can carry pathogens and contaminate crops at various steps from seed to market. Irrigation and pesticide applications are two of these steps.

If you are irrigating, testing water is a key step in GAPs. Most health departments do water testing. Contact your local health department for a test kit or list of labs to which you can send samples. Test the water close to the time it will come in contact with the crop. GAPs encourages that water be tested during the growing season. Potable water should be tested once a year. Well water should be tested quarterly, and surface water should be tested three times during the season.

When making pesticide applications, it is best to use potable water to minimize the potential for microbial contamination, since many applications are sprayed directly onto plant parts that will be harvested as food.

Ellen Phillips (815-732-2191; ephillps@illinois.edu)

Less seriously ...

This issue's words of wisdom ... Only in America ... (reprinted from a 2003 issue of this newsletter)

- Only in America.....can a pizza get to your house faster than an ambulance.
- Only in America.....are there handicap parking places in front of a skating rink.
- Only in America.....do drugstores make the sick walk all the way to the back of the store to get their prescriptions while healthy people can buy cigarettes at the front.
- Only in America.....do people order double cheese burgers, large fries, and a diet Coke.
- Only in America.....do banks leave both doors to the vault open and then chain the pens to the counters.
- Only in America.....do we leave cars worth thousands of dollars in the driveway and put our useless junk in the garage.
- Only in America.....do we use caller id to screen calls and then have call waiting so we won't miss a call from someone we didn't want to talk to in the first place.
- Only in America.....do we buy hot dogs in packages of ten and buns in packages of eight.
- Only in America.....do we use the word 'politics' to describe the process so well: Poli' in Latin meaning 'many' and 'tics' meaning 'bloodsucking creatures'.
- Only in America.....do we have drive-up ATM machines with Braille lettering.

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