

Illinois Fruit and Vegetable News

Vol. 11, No. 11, July 6, 2005

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, 217-333-6651, weinzier@uiuc.edu. The *Illinois Fruit and Vegetable News* is available on the web at: <http://www.ipm.uiuc.edu/ifvn/index.html>. To receive email notification of new postings of this newsletter, call or write Rick Weinzierl at the number or address above.

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University of Illinois Extension Specialists in Fruit & Vegetable Production & Pest Management

Crop and Regional Reports

In the south and southwest, much of the region had rain on the 4th of July, but growers weren't complaining, especially with the drought we have been having. Growers in the Carbondale area reported 1.5 inches, the Dixon Springs area received 0.75 inches, the Carlinville area received 1.4 inches, and in the Edwardsville area I received 0.4 inches. The Alto Pass area reported a slushy hail that caused no injury. Calhoun growers received minor amounts of rainfall as did more northern growers in the Champaign, Peoria, and Rockford area.

Peach taste and size are excellent this year. I sampled a 'Garnet Beauty' peach from a Calhoun orchard, and about the only thing to improve it would be if it were freestone. In addition to Garnet Beauty, PF5, PF7, EarlyGlo, and Summerprince are also reported in harvest. Harvest of early type 'Redhaven' just got started, and standard types will start the following week. I have seen a fair amount of split pit on early varieties this season, but hopefully with the dry weather, most of those have been harvested without disease incidence. Tart cherries are in harvest at this time as well, and blueberry harvest is into the later varieties. Still to go are blueberry varieties like Late Blue, Elliott, and Patriot.



PF5 peaches ready for harvest

Grape growers are in the midst of canopy management, which includes vine combing, cluster thinning, and leaf removal. For the most part, disease has been at a minimum with all the hot dry weather. But with the rain recently, potential for disease development has increased and vineyards should be monitored closely. Black rot has already started showing up in some vineyards that have had minimal sprays. The hot dry weather has resulted in good conditions for mite development in many crops, and several growers have reported the need to spray for mites.

Dr. Richard Smart, a world renowned viticulturist will be visiting Illinois the last week of July. He will be conducting two open seminars, one in Galena, and one at Southern Illinois University in Carbondale. The cost of the seminar is \$35.00 and includes wine tasting and dinner for those preregistered by July 22. In addition, Dr. Smart will be available for private consultations for vineyard owners and managers for a fee. For more information, go to <http://web.extension.uiuc.edu/regions/hort/>, or contact Elizabeth Wahle (618-692-9435; wahle@uiuc.edu) or Bill Shoemaker (630/584-7254; , wshoemak@inil.com).

McNitt Gardens & Greenhouse, LLC in Carbondale started out growing 20,000 strawberry tips for plasticulture production three years ago, and expects to produce 125,000 plugs this year for local strawberry growers. Ordering for this year has already closed out, but for those looking for a source locally for next year's planting season contact McNitt's at 618-687-3497 for ordering deadlines, variety selection, and charges.

Southern FS contacted me to report a new shipment of Sonata (*Bacillus pumilis*) and Serenade (*Bacillus subtilis*). Both Sonata and Serenade are a broad spectrum, preventative products for the control or suppression of many plant diseases in a multitude of horticultural crops. Both offer 0-day pre-harvest intervals and are OMRI listed (OK to use in organic production systems). To see a full label on both products, go to www.cdms.net. For product availability and cost, contact Tom Schwartz at 618-322-7027 or Jim (Rabbit) Shannon at 1-800-468-0649.

Sweet corn harvest got started in plenty of time for the traditional July 4 target date. Local tomatoes are just coming in, and should be replacing Arkansas tomatoes on the stands. Bell peppers are just coming on. Pumpkins are looking good, and most growers should be at tip stage with vines beginning to run. This is a good time to evaluate your weed pressure in pumpkins if you plan to use Sandea postemergence. The target window for application is between the 3-5 leaf stage and flowering.

The Dixon Springs Agricultural Center is hosting its Summer Field Day August 4. Tours will start at 8:00 a.m. and run to noon. The walking tour of the horticultural facilities will last 1¼ hours and will include talks on weed control in blueberries and brambles, ideas and options for marketing fresh produce, growing produce in a plasticulture system, and IPM and organic management of apple insects. In addition to the horticultural tour, tours will be available for animal science, crop science, and veterinary medicine. Lunch will be provided, and there is no registration fee. For additional information, contact Bronwyn Aly at 618-695-2444 or baly@uiuc.edu.

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In northern Illinois, day temperatures have been in the 70s to 90s and night temperatures in the 40s to 70s. It has been a

very dry summer, and soil moisture is extremely low. The area received less than 1 inch of rainfall between June 28 and July 4, and negligible amounts of rainfall in the month of June. Plants are showing water stress symptoms in unirrigated fields throughout the area. Growers with irrigation equipment are irrigating their fields and orchards.

Orchardists are continuing with summer spray programs, and peach and apple fruits are sizing well. Grapes are sizing well too, and sour cherry picking is almost done in many orchards. Japanese beetle has been reported on grapes, and other reports of insect pests include cucumber beetles on cucurbits, flea beetles on eggplants, and imported cabbage worm adults flying in cabbage and broccoli patches. Diseases such as early blight were observed on tomato plants, late blight on potatoes, and leaf blotch on onions. Some earlier planted sweet corn is ready for harvesting.

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Upcoming Meetings and Programs

Here are dates for upcoming programs. Additional details for programs in the southern region will be posted as they become available at <http://web.extension.uiuc.edu/regions/hort/>.

July 13, 2005. Organics from the Ground Up

Growing Home Farm, Marseilles, Illinois. See <http://www.aces.uiuc.edu/asap/topics/tours.html>; contact Deborah Cavanaugh-Grant at (217) 968-5512 or cvnghgrn@uiuc.edu.

July 21, 2005. Illinois Vegetable Growers Association annual Twilight Meeting, St. Charles Research Center

St. Charles, IL. Contact Bill Shoemaker at 630-584-7254 or wshoemak@inil.com.

July 26, 2005. Grape-growing seminar by Dr. Richard Smart

Galena Cellars, Galena, IL. Contact Bill Shoemaker at 630-584-7254 or wshoemak@inil.com.

July 29, 2005. Grape-growing seminar by Dr. Richard Smart

S. Ill. Univ. Horticultural Research Center, Carbondale, IL. Contact Elizabeth Wahle at 618-692-9434 or wahle@uiuc.edu.

August 4, 2005. Dixon Springs Agricultural Center Field Day

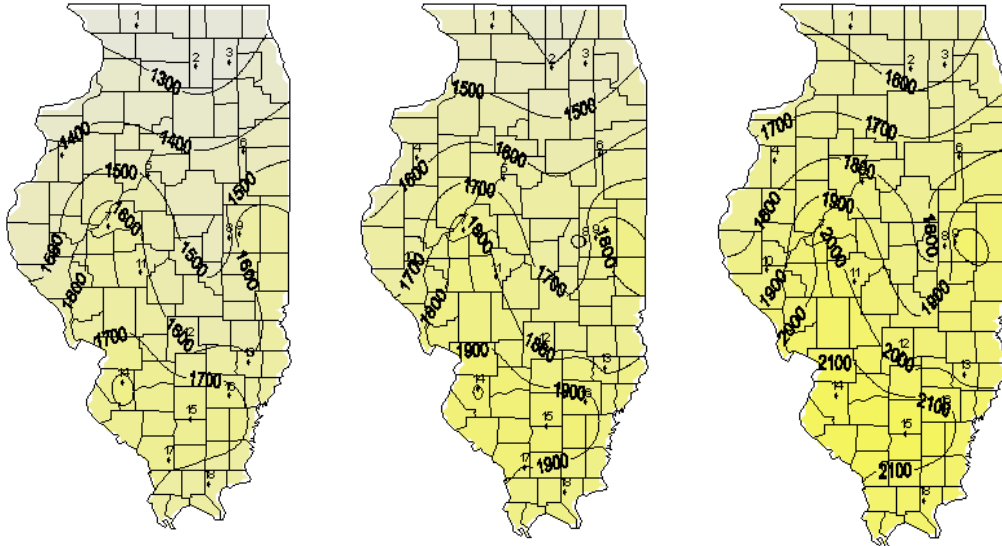
University of Illinois DSAC, Simpson, IL. Contact Bronwyn Aly at 619-695-2444 or baly@uiuc.edu.

September 8, 2005, Illinois Pumpkin Field Day

SIU Belleville Research and Education Laboratory, Belleville, Illinois. 10:00 a.m. -2:30 p.m.

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Degree-Day Accumulations



Degree-day accumulations, base 50 F, from January 1 through July 5 (left) and projected through July 12 (center) and July 19 (right), 2005.

Degree-day accumulations, base 50 F, January 1 through July 5, and projections through July 19, 2005.

Site No.	Station	County	DD, Base 50 Jan 1 - July 5 11-yr historic average	DD, Base 50 Jan 1 - July 5 2005	Projected DD, Base 50 Jan 1 - July 12 2005	Projected DD, Base 50 Jan 1 - July 19 2005
1	Freeport	Stephenson		1263	1417	1578
2	Dekalb	Dekalb		1247	1401	1557
3	St. Charles	Kane		1272	1420	1573
4	Monmouth	Warren		1410	1568	1732
5	Peoria	Tazewell		1494	1665	1840
6	Stelle	Ford		1428	1595	1764
7	Kilbourne	Mason		1687	1858	2032
8	Bondville	Champaign		1409	1577	1745
9	Champaign	Champaign		1706	1881	2060
10	Perry	Pike		1475	1646	1822
11	Springfield	Sangamon		1617	1803	1991
12	Brownstown	Fayette		1558	1747	1936
13	Olney	Richland		1602	1786	1970
14	Belleville	St. Clair		1821	2010	2199
15	Rend Lake	Jefferson		1805	1999	2195
16	Fairfield	Wayne		1743	1935	2130
17	Carbondale	Jackson		1710	1895	2082
18	Dixon Springs	Pope		1641	1829	2019

Degree-day data are summarized from records provided by the Midwestern Climate Network, Illinois State Water Survey, Champaign, IL. For more information, consult the Midwestern Climate Center at <http://sisyphus.sws.uiuc.edu/index.html> and the Degree-Day Calculator at <http://www.sws.uiuc.edu/warm/pestdata/>.

Kelly Cook (217-333-4424; kcook8@uiuc.edu) and Rick Weinzierl (217-333-6651; weinzier@uiuc.edu)

Notes from Chris Doll

Summer continues with more heat and drought, and almost everyone in the Midwest is in the same situation. Irrigation should really pay off for growers with access to water. A conversation with some Calhoun County growers last week about water availability brought to mind the drought of 1954 when I was complaining about no water to an Israeli visitor. He asked me how far the Missouri River was from my farm in Western Iowa, and when I told him 10 miles, he commented that that was only a short distance to move water for orcharding in his country. Maybe we don't utilize the rivers in the Midwest as they do in Israel or the western states.

The effects of water shortage can be seen and felt in most plantings. Where ample water has been applied to both a peach and apple orchard, the growth, color and atmosphere is totally different. Time will tell how the tree fruit crops make out. Peaches benefit greatly from ample water as fruits enter the final swell. Apples have the continuous growth curve that is not as graphic as the final swell of the peach, and the effects take longer to develop. All small fruit crops except grapes benefit from ample water through harvest. Grape growers tend to like the dryness for easier disease control and better quality for wine. Grapes also have a fairly extensive root system, as evidenced by the vines I excavated about 50 years ago in western Iowa. There, seven-year Concord grape roots had grown 14 feet deep and extended horizontally 12-15 feet. My irrigation application of eight inches of water that year did not prove beneficial.

Weather effects that I have seen so far this year include some leaf drop from peach trees, white drupelets on blackberry fruits, and sunburned raspberries and apples. My 2000 horseradish seedlings show some wilting too.

Pest-wise, Japanese beetles are the talk of the area. They just keep coming! It appears that Honeycrisp apple is the favorite food after roses and grapes. While scouting for other insects in a Honeycrisp block last week, I found a set of paired apples with 1/2-inch holes in each from beetle feeding. In the Back 40, they can find each limb of Honeycrisp that I have added to multiple-variety trees.

Codling moth control continues after what appears to be pretty good first generation results. Some mite sprays have been applied to apples, and due to all the hot weather, I expect to find some in peaches this week also. The potato leaf hopper migration that I mentioned last time caused more terminal distortion than I thought, but they have been controlled in blocks receiving regular insecticide sprays.

Raspberry harvest is completed in the area, and it is a good time to prune out the expired fruiting canes to allow better aeration for disease control in next year's floricanes. A postharvest fungicidal spray may help hold down some of the leaf and cane diseases too.

July 1 or thereabouts is the usual suggested cut-off date for glyphosate application in apple orchards where basal sprouts are present or where low-hanging shoots may be contacted by the spray. The reason is that the glyphosate may be translocated to the roots and affect shoot growth in the next growing season. The date also is the time to consider collecting leaves for nutrient analysis. The usual time for collections in Illinois is from July 1 through August 15. Once the leaves are collected and dried, they can be set the laboratories at any time.

I happened to see a copy of the 2002 US Census figures for Illinois recently. Rightly or wrongly (and historically these estimates have not been known for their accuracy), here are some of the acreage figures for fruit crops in Illinois:

apricots	10 acres	nectarines	27 acres
grapes	889 (345 bearing)	strawberry	262
apples	3924	plums	65
blackberry	216	pecans	295
peaches	2496	pears	68
raspberry	98	tart cherries	9

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Vegetable Production and Pest Management

Managing Moisture for Vegetable Crops

Vegetable growers are rewarded by the weight of produce that is harvested. While quality is critical, weight is really the determiner of gross revenue for the crop. And for vegetable crops, weight is determined by moisture availability. As moisture becomes less available, the crop becomes less available to the grower. So it is critical that the grower optimize the availability of moisture to the crop by managing water. Certainly it is expensive to manage water, but there is a threshold at which the cost of water is less than the loss of crop potential due to lack of water. Following are some considerations in understanding management of water for vegetable crops.

As crops close up their canopies, they work as a population to withdraw water from the soil. If you can imagine their root systems as being rough mirror images of their shoot systems, the soil profile will be relatively full of functioning roots to the soil depth of the crop. That soil depth can be 6' in the case of pumpkins or as shallow as 1' in the case of onions. Environmental influences on water withdrawal by the plant include temperature, sun exposure and wind speed. As each of these increases, so does soil moisture withdrawal by the crop. When maximized together, they can influence the crop to withdraw from 0.25" to 0.33" of water from the soil profile each day. This is common in the midsummer months of July and August. While moisture is still largely available in the crop's soil profile, the crop makes sufficient withdrawals and makes steady production progress. But as the soil moisture becomes depleted, the crop struggles to adequately withdraw sufficient moisture and fails to make steady progress, unless soil moisture is recharged by rain or irrigation. This can happen even before visual symptoms of moisture stress appear in the crop.

How much rainfall does it take to make up for shortfalls in soil moisture? One inch of rain will provide 27,000 gallons of water per acre. While that sounds like an enormous figure, if the crop uses 1/3 of an inch each day during the following 3 days, that rainfall doesn't last long. It used 9000 gallons each of those days to make steady production progress. So if rainfall isn't adequate and soil moisture reserves are becoming depleted, growers will need to use the "I" word, irrigation. For those familiar and comfortable with irrigation, it can be a moneymaker rather than just an expense. Irrigation ensures that the crop will continue to grow and add weight to the harvest. The key is to use the minimum amount to maintain steady production progress.

Managing irrigation to optimize crop production means using the irrigation system to avoid moisture stress in the crop. Inevitably this means accounting for soil moisture supplies and crop needs. The irrigation manager must know what resources are already available to the crop and be prepared to make up the difference between what nature provides and what the crop needs. Some simply use a checkbook method to track estimates of crop usage, soil moisture reserve status and replenishment through rainfall or irrigation. A simple chart can be drawn up that has daily entries to reveal the soil moisture remaining for the crop. As the account becomes depleted, the grower provides water through irrigation if nature does not. Remember though, as soil types differ, a different account needs to be maintained for different soils, such as sands or loams. Also, different crops have different rooting depths, stages of development, and consumption patterns and may require different accounts for the checkbook method to work.

Lastly there are different tools for tracking actual soil moisture, such as tensiometers, gypsum blocks, neutron probes, even a hand-feel method. Each uses a different technique or technology to give an indirect measurement of the moisture available in the soil. Each has its value and can perform well when used correctly. But they should be used to serve as a guide to irrigation management, along with the checkbook method and grower observations of crop status. All are useful tools to help the grower manage the most critical element for crop development, moisture availability.

Next issue I'll look at drip irrigation and how to use this tool for water delivery.

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Vegetable Insects

Cucumber Beetles and Similar Species ... Again

Yesterday in volunteer pumpkins in east-central Illinois, striped cucumber beetles, spotted cucumber beetles, and western corn rootworm beetles were all present within a single flower. Earlier this year (in [Issue 5, dated April 12, 2005](#)) I published a note about these and other similar beetles that infest various vegetable crops. Since most are present in fields now, perhaps it's a good time to cover their identification again (briefly).

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). Again, here are the key characters that help in identifying these species.

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 elytra. 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 elytra, and the stripes run all the way to the ends of the elytra. 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. Two summer generations of adults of these species emerge and feed, mate, and lay eggs; adults of the latter of these summer generations overwinter. As spring adults of the striped cucumber beetle began to disappear in recent weeks in central Illinois, the first generation of summer adults has begun to build.



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

Western corn rootworm beetles resemble striped cucumber beetles because of the stripes on their elytra. 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 elytra. 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. These beetles feed on the silks of sweet corn and on the fruits of cucurbits.



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

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Twospotted Spider Mite

Infestations of twospotted spider mites have reported from tomatoes, eggplants, and watermelon. Among the miticides registered for use on tomatoes and eggplant are Acramite, Capture, and Danitol. Capture and Danitol are pyrethroids that also control certain insect pests while usually giving adequate mite control; Acramite is selective as a miticide. In tomatoes – but not eggplant – Agri-Mek and Kelthane also can be used. All of these insecticides/miticides are labeled for use on watermelons.

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Watermelon Mosaic Virus

Watermelon mosaic disease, caused by watermelon mosaic virus (WMV), is already in Illinois, severely infecting squash plants and fruit. WMV can infect more than 160 plant species, including most members of the Cucurbitaceae and many leguminous species.

Symptoms of watermelon mosaic vary considerably, depending on the cucurbit species, the cultivar, the viral strain, and environmental factors. Foliar symptoms include green mosaic, leaf rugosity, green vein-banding, chlorotic rings, and malformation. These symptoms often are very prominent in some winter and summer squashes, but affected leaves develop to nearly normal size. Fruits are not distorted, but some of their coloration is adversely affected by green spots, particularly on yellow fruit.

WMV overwinters mostly in wild legumes, but it can also survive in species in the Malvaceae and Chenopodiaceae. It is efficiently spread in a nonpersistent manner by more than 20 aphid species, including *Aphis craccivora*, *A. gossypii*, *A. spiraeicola*, *Aulacorthum solani*, *Macrosiphum euphorbiae*, *Myzus persicae*, and *Toxoptera citricida*, which acquire the virus after a few seconds of probing and retain it for a few hours. The virus is easily transmitted mechanically, but there is no evidence that it is seed-borne in cucurbits or legumes.

Use of resistant cultivars can effectively control WMV. Application of mineral oil sprays interferes with virus transmission. Use of insecticides to control aphid populations reduces virus spread from infected plants within a field.



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Fruit Production and Pest Management

European Red Mite

Red mite infestations have been reported from several orchards in Illinois, and populations that warranted control built up at University of Illinois orchards at Dixon Springs and Urbana at the end of June. At this time of the year, miticides that are effective in apples include Acramite, Pyramite/Nexter (same active ingredient), Fujimite, and Zeal. Agri-Mek, Apollo, and Savey are better suited for application earlier in the season. Vydate, Kelthane, or Vendex are options for growers who have these products on hand, but purchasing them for summer mite control in 2005 is not recommended. In peaches, Acramite and Pyramite/Nexter are labeled for red mite control at this time, as is Vendex. Apollo and Savey also are labeled, but just as for

apples, they generally are more effective as early-season than midsummer miticides. See the listing below for preharvest intervals for peach insecticides and miticides.

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Preharvest Intervals for Selected Peach Insecticides and Miticides

Pages 36-37 of the [2005 Midwest Commercial Tree Fruit Spray Guide](#) list preharvest intervals (PHIs) – the number of days that must elapse between final application of the pesticide and harvest of the crop – for insecticides and miticides labeled for use on tree fruit crops. For peaches, the PHIs include ...

Acramite	3 days	Lorsban	14 days (not to be applied to fruit)
Ambush/Pounce	14 days	Malathion	7 days
Apollo	21 days	Nexter/Pyramite	7 days
Asana	14 days	Proaxis	14 days
Diazinon	21 days	Savey	28 days
Esteem	14 days	Sevin	3 days
Guthion	21 days	Thiodan	21-30 days
Imidan	14 days	Vendex	14 days
Lannate	4 days	Warrior	14 days

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This issue's words of wisdom (well, not always wisdom) ...

Top Ten Signs that Your Family Suffers from Excess Stress ...

10. Conversations often begin with "Put the gun down, and then we can talk".
9. The school principal has your number on speed-dial.
8. The cat is on Valium.
7. People have trouble understanding your kids, because they learned to speak through clenched teeth.
6. You are trying to get your four-year-old to switch to decaffeinated.
5. The number of jobs held down by family members exceeds the number of people in the family.
4. No one has time to wait for microwave TV dinners.
3. "Family meetings" are often mediated by law enforcement officials.
2. You have to check your kid's day-timer to see if he can take out the trash.
1. Maxwell House gives you industrial rates.

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