

Kentucky Fruit Facts

May-June Newsletter 2020

<http://www.uky.edu/hort/documents-list-fruit-facts>

John Strang, Extension Fruit Specialist, Editor
Daniel Becker, Editor
Denise Stephens, Newsletter Designer

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Note: We have ceased publishing Fruit Facts as a hard copy or mailed newsletter. If you would like to continue receiving Fruit Facts, please sign up for email delivery as described at the end of this newsletter or contact your County Extension Office to have them print a copy for you.

Fruit Crop News

John Strang, U.K. Extension Horticulturist, Daniel Becker, Extension Associate, and Matt Dixon, U.K. Ag Meteorologist

This has been a very difficult spring for fruit growers! Not only have multiple frosts been devastating for many growers, but persistent rainfall



University of Kentucky
College of Agriculture,
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Cooperative Extension Service
University of Kentucky
Horticulture Department
N-318 Ag. Science Ctr. No.
Lexington KY 40546-0091

has made it difficult to get new plantings in the ground. The cool spring prolonged bloom, but fortunately the fire blight infection incidence on apples and pears has been minimal. However, cedar apple rust has been a problem on unsprayed apple trees. It is too late for control this season, but plant pathology has an excellent short video on this disease if you want to brush up. *Apple Rust* -2:49 minutes (<http://plantpathology.ca.uky.edu/files/ppfs-fr-t-05.pdf>)

After a wet spring Matt Dixon notes that the coming weeks are liable to be dry ones. The National Weather Service predicts with a high confidence level that Kentucky will experience drought conditions at least up through June 22. Growers should work on getting irrigation systems up and running. Plants extract water first from upper soil levels and as a drought persists begin removing water from deeper soil reserves. It is best to avoid deep soil level moisture depletion as this is the reserve for extended dry periods. Deep depletion increases the potential for water stress during the summer and early fall when fruit is ripening and can reduce size and yield at harvest. Severe stress will negatively affect vegetative growth when it occurs and fruit development the following year. When coupled with hot weather, abnormal flower buds can develop, leading to such disorders as fruit doubles in apples and deep sutures in peaches. Early ripening cultivars seem particularly susceptible to increased fruit defects in response to stress.

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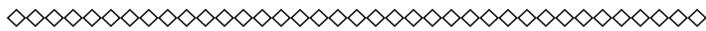
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LEXINGTON, KY 40546



Disabilities
accommodated
with prior notification.

Cindy Finneseth has developed and kept a COVID-19 page updated on the Kentucky Horticulture Council website. It contains a multitude of links that cover everything from funding to CDC recommendations for protecting yourself. <https://kyhortcouncil.org/covid-19-coronavirus-information-and-resources/> Please pay special attention to the KDA, “Minimum Requirements and Guidance for Kentucky Direct Farm Marketing Operations” also at this link.



Upcoming Meetings & Deadlines

Many meetings have been cancelled due to COVID-19
All times EST unless noted

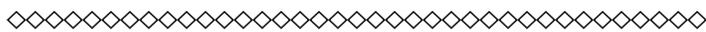
Jun. Viticulture and Enology Field Day, Horticulture Research Farm, 4321 Emmert Farm Ln., Lexington, KY. Postponed until early-Mid August. See future Fruit Facts for details.

Sept. 14 Early Apple Tasting, Bullitt County Extension Office, 384 Halls Lane, Shepherdsville, KY 40165. 6:00 p.m. Contact 502-543-2257.

Oct. 19 Late Apple Tasting, Bullitt County Extension Office, 384 Halls Lane, Shepherdsville, KY 40165. 6:00 p.m. Contact 502-543-2257.

Jan. 4-5, 2021 Kentucky Fruit and Vegetable Conference, Slone Convention Center, 1021 Wilkinson Trace, Bowling Green, KY 42103. Contact Cindy Finneseth 859-490-0889, info@kyhortcouncil.org

Jan. 6, 2021 Direct Marketing Summit, Slone Convention Center, 1021 Wilkinson Trace, Bowling Green, KY 42103. Contact Cindy Finneseth 859-490-0889, info@kyhortcouncil.org



Welcome W. Garrett Owen

It is a pleasure to welcome Garrett Owen into the U. K. Department of Horticulture as an Assistant Professor and Extension Specialist of Floriculture, Greenhouse and Controlled Environments. He began work on May 1 and his appointment is split between Extension, research, teaching and service. His office is located on campus in Lexington.

Garrett’s area of expertise is controlled environment ornamental, specialty and food crop production; plant nutrition; production problem diagnostics; and young herbaceous perennial plant propagation. His undergraduate course will involve greenhouse and controlled environment structures, management and production.

Dr. Owen received his B.S. in Horticultural Science from North Carolina State University and M.S. in Horticultural Science also from North Carolina State University working on, Pine Wood Chips as an Alternative to Perlite in Greenhouse Substrates: Cultural Parameters to Consider. His Ph.D. is from Purdue University where his dissertation involved Supplemental and Sole-source Light and Root-zone Temperature Influence on Cutting Physiology, Morphology, and Rhizogenesis of Herbaceous Perennials.

Following completion of his Ph.D. in 2017, Garrett was employed as an Eastern Michigan Floriculture and Greenhouse Outreach Specialist for Michigan State University. He has an impressive record of cutting-edge greenhouse research and publications as well as professional and extension presentations to his credit. Dr. Owen’s early years were spent in Mt. Ulla, North Carolina where he grew up on a 1,000-acre produce farm.

Please welcome Dr. Owen to Kentucky and wish him well.



Figure 1. Dr. W. Garrett Owen
Contact: email: wgowen@uky.edu;
Office phone: 859-257-4721



Spring Freeze Impact on Kentucky Fruit Crops

By John Strang, U.K. Extension Fruit & Vegetable Specialist and Matt Dixon, U.K. Ag Meteorologist

The combination of freezes and COVID 19 are making the 2020 season an extremely challenging one for Kentucky fruit growers. Additionally, the prolonged wet cool weather made it difficult for bees to fly and pollinate. Examination of this year's growing degree accumulations (Figure 2) shows that the season started off as a normal one, but cool weather delayed crop development by as much as two weeks as the season progressed. In fact, plant development was two weeks later than the 2007 season where we experienced the devastating Easter freeze. A series of record-breaking late freezes primarily on the mornings of April 15, 16 and May 9 served to progressively compound injury on Kentucky fruit crops. Crop freeze losses were severe on all of our fruit crops in the northern, central, southern and eastern portions of the state. Some growers have fruit on selected varieties, generally on later blooming varieties, but losses are extensive on tree and small fruit crops. It looks like growers at lower elevations in far Southeast Kentucky have some surviving fruit, but at the higher elevations it was extremely cold.

Southern areas from Bardstown west through Bowling Green, Princeton, Paducah and points west generally fared well, depending on the site. Growers on high sites in these areas have full crops of apples, peaches and other fruit types. Some on lower sites did not fare so well and reported losses of peaches and early blooming apples.

Inspection of surviving apple fruit in our university orchard in Lexington shows that many have only a few seeds primarily due to poor pollination. A few surviving peaches are sizing well and look good, but there are not enough on the trees to justify spraying. Peaches that have had their seeds killed are dropping from the tree, but some are hanging on and will fail to size. I haven't talked with any growers in colder areas that have plums or cherries.

In the light of severe losses in parts of the state, most apple and peach growers will source fruit from areas where the crops are good.

Plasticulture strawberry growers had to protect their crops from frost as they normally do every year. Those that had adequate protection, in some cases

the use of a double layer of floating row covers have generally done well.

It is difficult for me to assess blueberry crop damage immediately after a freeze. Again, like strawberries earlier maturing varieties bloom earlier and are more prone to losses. Initially many growers thought that they had weathered the freeze successfully, but berries have continued to drop. The blueberries that are sizing normally are undamaged. Some of the smaller ones that are turning blue early and often dropping are freeze damaged. If a smaller fruit is cut in half, browning is evident where the seeds have been injured. Undamaged larger fruit will be light green inside, and the seeds will be white. Seeds are important in mobilizing carbohydrates and resources into the fruit to help it size.

Blackberry growers will also have lighter crops as many flowers even in the bud stage were killed, but these continued to open and look normal except for the black centers. Flower buds that were less mature at the time of the freeze are producing fruit now.

Fall bearing raspberries had some primocane injury in colder areas, but this will not affect the fall crop. June bearing raspberries generally lost some flowers in these areas, but still have a partial crop.

Patsy Wilson addresses the grape crop situation below.

Persimmons, pawpaws, pecans, chestnuts, hickories, black walnuts and many trees in the woods had their leaves frozen back once or twice which eliminated all or just about all of their flowers in colder areas. This has substantially reduced food for

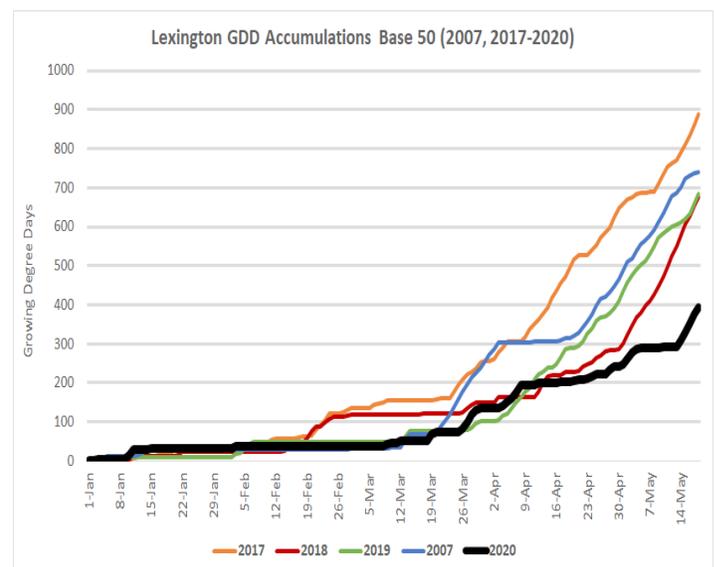
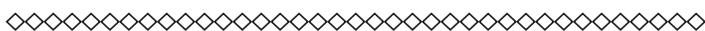


Figure 2.. Growing degree day accumulations (base 50°F) for 2020 and past years.

wildlife and growers should expect intensified wildlife problems on surviving fruit crops.

Fruit growers in Indiana and Ohio and states east of Kentucky also have severe fruit crop losses. Most southern Illinois growers have crops.



Insecticide and Calcium Program for 2020 if the Crop is Lost

By Ric Bessin, UK Extension Entomologist and John Strang, UK Extension Horticulturist

There are a few insects that don't mind that there isn't a crop and these should be of prime concern this season. There is a tendency to forget about spraying the orchard if there isn't a crop, but there are several insect pests that can seriously affect next year's crop. Japanese beetles can be a problem in just about all of our fruit crops. If these build up and cause serious defoliation, control will be necessary.

In apples, San Jose scale is a pest at the top of the must be controlled list. It is important to keep up with the development of this pest and keep the numbers down. Crawlers are normally controlled during the latter part of May in Kentucky. However, with the cool 2020 spring, emergence is likely closer to end of the first week in June. Another pest that can affect next year's crop is the woolly apple aphid. Watch for the white snowy signs of this pest on the limbs and don't let it build up in the orchard.

If an apple block has a light crop and is receiving a full season spray program, try to include calcium chloride in as many cover sprays as possible. Trees with a light crop undergo very vigorous growth and available plant calcium is mobilized to the shoot tips. This leads to fruit calcium deficiency and serious cork spot and bitter pit problems.

Peach trees should also be watched for San Jose scale development and controls applied. Peach tree borers find a tree without a crop just as enticing as one with a crop. Make sure that peach tree and lesser peach tree borer sprays are applied at the appropriate times. This might be a good year to get controls up into the upper portion of the tree for lesser peach tree borer, since there won't be crop residue problems. Even without fruit, Oriental fruit moth will attack terminal growth and cause dieback on peaches. This can be a serious problem on smaller trees. Growers

should treat at 75 to 175 DD (base 45) after peak flight when using pheromone traps.

Plum trees should also have peach tree borer controls applied.

On blackberries and raspberries, check the crowns for raspberry crown borer. Treat crowns in late fall or early spring if the population warrants this.



Disease Management for Non-Bearing Orchards: Spray Considerations after Freeze Losses

By Nicole Gauthier, UK Extension Plant Pathologist

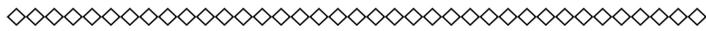
Apple:

- Fire Blight – monitor for secondary and rat tail blooms; use streptomycin to protect blossoms against fire blight; typically through April. Apogee at petal fall is effective for management of shoot blight.
- Cedar Apple Rust – maintain fungicide schedule for rust; typically through May.
- Bitter Rot, Black Rot, White Rot – fruit rot fungi can infect and survive in twigs and stems; use mancozeb and captan through the first or second cover to manage spore load in the orchard, typically through June or longer if weather is rainy.
- Powdery Mildew and Scab – these diseases are usually not major concerns for KY growers; monitor orchards and spray if disease is present.

Peach:

- Peach Leaf Curl – manage peach leaf curl during dormancy.
- Blossom Blight & Brown Rot – use captan through shuck split for blossom blight.
- Peach Scab & Cherry Leaf Spot – maintain a regular spray schedule (7 to 14 day intervals) with lower rates of fungicide; use higher/regular rates if weather is rainy; captan is effective for fungal leaf spots.
- Bacterial Spot – maintain a regular spray schedule for bacterial spot; use oxytetracycline at petal fall and shuck split; low rates of fixed copper may be used for early cover sprays if disease pressure is high or if weather is rainy.
- Powdery Mildew – monitor for powdery mildew;

use sulfur if needed or if orchard has a history of powdery mildew.



Grapes and Frost

By Patsy Wilson, U.K. Extension Viticulture Specialist

After multiple freeze events it looks like we are headed into some rainy, but consistently warm temperatures. As expected, many of you have had numerous questions about what to do and what to expect after these cold events. Right now, vines are pushing new shoots from secondary, tertiary, latent, or basal buds if the primary shoots/buds were killed in either of the freezes. In most cases there will be varying stages of shoot development due to the frost damage. Historically, bloom time for the majority of cultivars in Kentucky averages around the third week in May. However, based on post-freeze development at the research vineyard we are about two weeks behind and anticipating staggered bloom time even within the same cultivar.

What should I expect from frost-damaged vines?

Immediately following a late freeze event(s) the vines always look pretty bad. In some cases, however not all is lost!! Return fruitfulness can be drastically different based on numerous factors. Generally speaking return fruitfulness will be best for:

- *Large-clustered cultivars
- *Cultivars with fruitful basal and/or fruitful non-count shoots
- *Vines older than 1-2 years
- *Spur pruned vines (they tend to have more one-year old buds after dormant pruning than can be pruned vines)
- *Vines that maintained a healthy open canopy the previous season (shoot density 3-5 shoots per foot of row)
- *Vines that maintained an appropriate balance of crop vs. leaf area in the previous season (balanced not over-cropped vines)

For vines with 100% primary shoot damage from frost: (this means all actively growing shoots were damaged by frost/freeze)

- *Retain basal shoots that had not yet pushed (these can be highly fruitful)
- *Watch for more than normal amounts of non-count shoots. These can quickly lead to over-crowded shoot density and unnecessary canopy shading with little reward of fruit. Adjust shoot density if necessary.

For vines with less than 100% primary shoot damage from frost: (this means some but not all growing shoots were damaged by frost/freeze)

- *Assess the number of fruitful shoots that remain, while also keeping an eye on the number of fruitful basal shoots that emerge after the frost.
- *Basal shoots can take 2-3 weeks to begin to grow. This can lead to uneven cluster development and ripening. This delay in cluster development may require multiple harvest times to carefully select clusters from the first set of shoots (that were not frosted) followed by fruitful basal shoots that emerged much later than the first set of clusters.

So, what does this mean? Pre and post bloom are the critical windows for disease management. In a season like this, timing of those sprays can be a little challenging since bloom time can be variable. Maintain your disease management program! Even if the emerging shoots are not fruitful it is essential to continue your spray program. The most critical window to spray for diseases is 2 weeks pre bloom and 4-6 weeks post bloom. Maintaining shoot health even in years with little fruit is critical to the vines overwintering survival and fruitfulness in the following year.

Below is a survey created to collect information on state-wide vine damage from the April and May freeze events. It should only take a few minutes and would be extremely helpful if you could fill it out. There are also helpful links related to grape phenology and pest management. Questions? Contact Patsy at email: patsy.wilson@uky.edu Phone: 859-494-1657 2020 Kentucky Frost Survey- <https://docs.google.com/forms/d/e/1FAIpQLSfK5u5vBmFQNBWBvGLP-HtqHmGehGsyUYqOOTq2g1n3mIs0jw/viewform>

Cultural calendar for commercial grape production- <https://plantpathology.ca.uky.edu/files/ppfs-fr-s-27.pdf>
Midwest fruit pest management guide- <https://plantpathology.ca.uky.edu/files/ppfs-fr-s-23.pdf>
[Home grape grower spray guide](#)
Spray worksheet and sample spray guides- <https://plantpathology.ca.uky.edu/files/ppfs-fr-s-23.pdf>



Woolly Apple Aphids Flaring in Some Orchards

By Ric Bessin, U.K. Extension Entomologist

While I have not received reports yet of woolly apple aphid activity on apple trees, there were several commercial orchards last year with serious infestations. In some years, this can be attributed to wounds caused by periodical cicada, but it has been several years since these have emerged. This may be due to the increasing use of pyrethroids insecticides to manage other pests. Pyrethroid insecticides (IRAC group 3A) are highly toxic to natural enemies, and it is those natural enemies that keep woolly apple aphid numbers low.



Figure 3. Woolly apple aphid colonies form where the bark is thin, often on new growth or near wounds to the bark. (Photo: Ric Bessin, UKY)

Woolly apple aphid is a serious pest of apples, particularly young trees. Mature trees usually suffer little damage from root infestations. Above-ground colonies form at wound sites on trunks, limbs, and twigs, where they feed through tender bark (Figure 3). Besides cicada egg-laying wounds, pruning and hail damage can create the wound sites for attack by this pest. As populations grow, aphids are commonly found on water sprouts in the center of the tree. The tree will begin to swell and form galls at the feeding sites. Even after they are controlled, these swollen nodes that remain are signs of previous infestations.

The woolly apple aphid differs from other apple aphids in appearance, life cycle, and the type of damage inflicted. A colony appears as a cottony mass generally clustered in wounds and pruning scars on the trunk and branches of the tree. The aphids themselves are purplish in color surrounded by white, cottony secretions. Woolly apple aphid is a sucking insect pest that weakens the tree by feeding on limbs and roots and produces honeydew. Long strands of white wax are produced that help to protect the colony of purple aphids from predators and pesticide sprays. As the number of aphids on the above ground portion of the tree increase, many work their way down to the roots below ground surface. It is the feeding on the roots that produces the greatest damage. Control of these aphids is very difficult when they attack the roots.



Figure 4. Yellowed leaves can be a sign of woolly apple aphid infestations. (Photo: Ric Bessin, UKY)

Table 1. 2019 Ky Grower NAP Tree Fruit Retail Prices

Crop	Sales Unit	2019 Avg.	Highest	Lowest	Per lb highest	Per lb lowest
Apple	bu	66.00	168.00	27.00	4.00	.64
Pear	bu	90.00	100.00	60.00	2.00	1.20
Peach	bu	97.00	192.00	60.00	3.84	1.20
Pawpaw	lb	2.25	-	-	2.50	2.00
Plum	½ bu	50.60	72.00	29.00	2.49	1.00

Table 2. 2017-2019 Ky Grower NAP Tree Fruit Retail Prices

Crop	Sales Unit	2019 Avg.	2018 Avg.	2017 Avg.	2019 Per lb. Avg.	2018 Per lb. Avg.	2017 Per lb. Avg.
Apple	bu	66.00	56.70	64.30	1.57	1.35	1.55
Pear	bu	90.00	95.40	84.60	1.80	1.90	1.69
Peach	bu	97.00	88.50	97.75	1.94	1.75	1.95
Pawpaw	lb	2.25	2.65	2.00	2.25	2.65	2.00
Nectarine	bu	-	-	75.75	-	-	1.50
Plum	½ bu	50.60	58.00	66.70	1.75	2.00	2.30

Table 3. Ky NAP Apple Cider Prices -2016-19

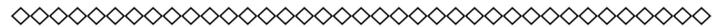
Cider	2019	2018	2017	2016
Avg./Gal	8.10	8.55	10.10	7.70
Highest Price	8.50	12.00	16.00	9.00
Lowest Price	7.50	6.85	6.85	6.00

Table 4. 2019 Ky Grower NAP Small Fruit Retail Prices

Crop	2019 Per Qt Avg.	Highest	Lowest	2019 Per lb. Avg.	Per lb highest	Per lb lowest
Blackberry	8.81	12.00	5.00	5.88	8.00	3.33
Blueberry	9.36	12.50	6.00	4.93	6.58	3.16
Raspberry (red/black)	12.00	16.00	10.00	8.00	10.67	6.67
Strawberry Matted Row	5.80	12.00	5.00	3.86	8.00	3.33
Strawberry Plasticulture	4.95	7.00	3.50	3.30	4.67	2.33

Table 5. Ky Grower NAP Small Fruit Retail Prices from 2017 - 2019

Crop	2019 Per Qt Avg.	2018 Per Qt Avg.	2017 Per Qt Avg.	2019 Per lb. Avg.	2018 Per lb. Avg.	2017 Per lb. Avg.
Blackberry	8.81	7.30	7.55	5.88	4.85	4.80
Blueberry	9.36	8.95	8.70	4.93	4.70	4.70
Raspberry (red/black)	12.00	10.45	8.35	8.00	6.95	5.55
Strawberry Matted Row	5.80	5.40	5.20	3.86	3.60	3.45
Strawberry Plasticulture	4.95	6.15	4.25	3.30	4.10	2.80

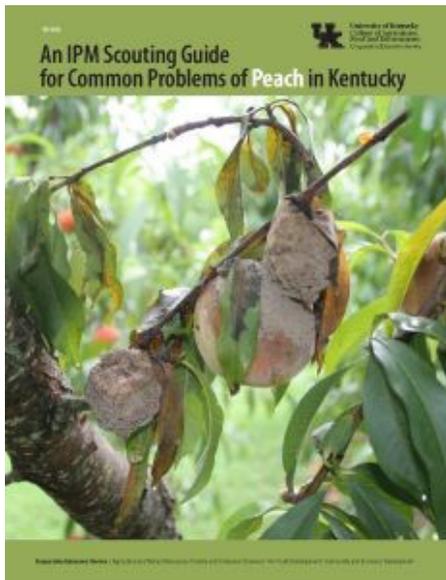


Association Grower Pricing Survey

Researchers at the North Carolina State University, in collaboration with the North American Raspberry & Blackberry Association (NARBA) and the University of Arkansas are conducting a survey to learn more about caneberry pricing and retail strategies for 2020, as well as the impacts of COVID-19. Information collected in the survey will be used to gain a better understanding of the marketing, pricing, and sales strategies currently being used by caneberry producers across the United States and Canada. Results will be published in the North American Raspberry and Blackberry Association's (NARBA) member newsletter. A report will also be emailed to all participants who request this option. The survey should only take around 10 minutes to complete. Your participation is completely voluntary. Your responses will be recorded anonymously and no identifying personal information will be collected within the survey. You are free to refuse to participate in the research and to stop completing the survey at any time. This survey closes Monday, June 22. Thank you for your participation!

To access the survey, please click here: https://ncsu.qualtrics.com/jfe/form/SV_cIVQbVyaGsI23BP

If you have any questions about the survey itself, please contact Dr. Daniel Tregagle by email at tregagle@ncsu.edu or by phone at 919-515-6091. In addition, you can contact the NC State IRB Office via email at irb-director@ncsu.edu or via phone at 919-515-8754. You may also contact NARBA by email at



This publication is the result of a collaborative effort between UK Extension Specialists in Plant Pathology, Entomology, Horticulture, and Forestry (wildlife).

An IPM Scouting Guide for Common Problems of Peach in Kentucky (ID-260 - <http://www2.ca.uky.edu/agcomm/pubs/ID/ID260/ID260.pdf>) is available online.

The peach scout website for use on your phone or tablet is available at <https://peachscout.ca.uky.edu/>.

Receiving Fruit Facts on the Internet

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THANK YOU!

**To All Essential Workers
for Everthing You Have
Done for Everyone!**



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