BEE NEWS & VIEWS

The Mississippi Beekeepers Association Newsletter

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September-October 2015

BugFest 2015 at the MSU Crosby Arboretum: Getting Better All the Time

By John Guyton

There is always something new at MSU's BugFest and this was a banner year! It was great having Mississippi Environmental Education Alliance members including Harold Anderson, and Jennifer Buchanan from the Grand Bay National Estuarine Research Reserve with us this year. Of course our Arthropod Adventures crew, graduate students, and bug campers Brady Dunaway, Matthew Thorn, and Breanna Lyle were outstanding as usual, making BugFest what it has become.

In an attempt to relieve the intense collection pressure, we have added a number of new education stations around the lake and it seems to be working. Dr. Daniel Fleming ran the event; Matthew Thorn gave the introductions and instructions on collecting, and Brady Dunaway handled the aquatic insect station. Breanna, aka Spider Woman, wrangled spiders and pinned insects while Dr. John gave trail talks, cooked insects, and officiated the cricket spitting contest. Paige Fleming jumped in and ran an art booth and the carnivorous plant station.

Peggy Guyton's honey snacks, insect snacks, and butterfly release were popular. Everyone enjoyed seeing Mary and Terry Cordray, whom we knew from the Lynn Meadows Discovery Center in Gulfport, as they ran an art station. Dr. Jeff Harris was a hit with bees, arthropod antics, and the most currently available answers to bee questions. Kay Williams with the Mississippi Geographic Alliance was the resident monarch authority. The beautiful banners hanging on the front of Pinecote Pavilion were designed by MSU art student Kimberlin Singletary.

Addendum from Jeff Harris: Our very own Mr. D. L. Wesley of the Marion Beekeepers Association provided an entire hive of free-flying honey bees to the Crosby Arboretum for use in their educational programs. I positioned my educational displays about beekeeping and honey bees near this hive, and everyone that visited my location enjoyed seeing honey bees and hearing about their importance to agriculture and natural systems. The Crosby Arboretum asked me to relay their sincere thanks to Mr. D. L. Wesley for his generous gift.

Queen Rearing Workshop

By Jeff Harris

While I was at BugFest, Audrey Sheridan (Research Associate), Heather Blackwell (Master's student) and Kelly Gillette (student worker) conducted a half-day workshop about queen rearing at the Clay Lyle Building on the MSU Campus in Starkville, MS. It is nice to have such a capable crew to fill the void when I am away! They tell me that the event was extremely well attended with nearly 40 participants. The women kept the course relatively simple – concentrating on the simplest types of cell builders to use for queen rearing. Additionally, they only demonstrated the grafting technique as a method for obtaining young larvae for queen production. Audrey felt like the attendees learned new things and

enjoyed the social interactions with other beekeepers during the event.

Queen rearing is one of our most frequently demanded topics for beekeeping workshops, and we will probably conduct at least one workshop on the topic each year. During the last two seasons we scheduled the workshops in September, but we now wonder if the spring months of April and May might be a better choice next year. This is the time when flower nutrition may be best for raising the best quality queens. We will ponder it some more this winter and try to announce the workshop as soon as we schedule it next year.

Beginning Beekeeping Series

By Jeff Harris

The Mississippi State Extension Service is encouraging that more programs should be delivered to clients at the county level. In that spirit, Randall Nevins of the Monroe County Extension Office in Aberdeen, MS (517 HWY 145 N., Suite 1) organized the *"Beginner Beekeeping Series: Getting Started"*. This program was hosted during three separate sessions on August 27, September 22 and October 20. Speakers included yours truly, Keith Williams, Brad Mobley, Randall Nevins and Reid Nevins. The three-part series provided a comprehensive overview of just about everything that a new beekeeper needs to know to keep bees alive through their first season. Each of the meetings was well attended, and the hospitality of the Monroe County Extension office personnel was greatly appreciated. The success of this inaugural series will likely trigger a repeat of the series next year. So, keep your eyes open for an announcement in the near future.

IPM Workshop in Poplarville

By USDA and Jeff Harris

On September 26, 2015, in partnership with Mississippi State University Extension Service and the Red Creek Beekeepers Association, the **Thad Cochran Southern Horticultural Research Laboratory** hosted an inaugural honey bee workshop in Poplarville, MS. Over 70 local beekeepers were given a tour of new honey bee-related research projects and shown new laboratory space, including a honey-extraction facility. Attendees received hands-on training in management and control of *Varroa* mites and small hive beetles using actual honey bee hives.

Ales Gregorc (center), a visiting scientist from Slovenia, demonstrates beekeeping tips at a honey bee workshop in Poplarville, MS.

Speakers included Dr. John Adamczyk (Research Leader of the USDA Lab), Dr. Patricia Knight (Leader of the MSU Coastal Research and Extension Center), Ales Gregorc (visiting bee scientist from Slovenia) and Dr. Jeff Harris (who discussed *Varroa* and Small Hive Beetle biology). John and Patricia gave the welcome and formal introductions to attendees. This was followed by John and Ales, who described the research that they are conducting in regard to pesticides and bee health as a preamble to the hands-on portion of the workshop.

Dr. John Adamczyk
Research Leader

This was a wonderful event, and this facility was excellent for conducting such an event. I would be remiss if I did not thank Dr. Adamczyk's staff who helped run things smoothly and Dr. Judith Breland of the Stone County Extension Office for supplying coffee and treats to eat during the workshop. I am looking forward to doing it again next year!

Thad Cochran Southern Horticultural Research Laboratory

On My Way Home from Poplarville, I Spoke to the Southeastern Beekeepers

By Jeff Harris

Whenever I get the chance, I like to visit multiple venues during a single trip. It seems like a reasonable idea to try and meet the needs of more than one beekeeping group during a single trip; however, it can be quite tiring. This is especially true if I elect to drive back to Starkville afterwards – which is what I usually do. I like sleeping in my own bed and not those of hotel rooms. Nonetheless, Curtis Waites, then President of the Southeastern Beekeepers Association in Laurel, MS, had asked me to speak to his group on the same night as the Poplarville workshop. It made sense to do it on my way home.

Curtis asked me to repeat a presentation that I had given to the Pine Belt Beekeepers Association during the previous month. The talk was about "Seasonal Management" of honey bees, and it is a talk that I have used several times during the last year or so to emphasize different aspects of bee biology. When one gives the same presentation on multiple occasions, he or she runs the risk of becoming stale. I know that a new presentation with fresher information or a different emphasis will need to be developed as time goes onward.

Anyway, the talk was well attended, and I greatly enjoyed meeting the folks of this group again. I was slightly surprised to have a couple of commercial beekeepers in the audience, and it was gratifying to have one of them tell me that he enjoyed the talk. They are usually a tough crowd to please!

Sampling *Varroa* Mites with the Northeast Beekeepers

By Jeff Harris

A quarterly meeting of the Northeast Beekeepers Association was held on October 13, 2015 at the Itawamba County Extension Office in Fulton, MS. Dr. Ben Kilman, a physician and beekeeping enthusiast from Tupelo, and I conducted a hands-on demonstration of sampling adult worker bees for *Varroa* mites. Ben had asked participants to bring fresh bee samples to the meeting so that we could measure the mite loads on the workers. Worker bees were collected from brood frames and placed into either jars or Ziploc bags for transport to the meeting.

Ben demonstrated the use of powdered sugar as a way to dislodge mites from adult bees during sampling (details of sampling method found in http://msucares.com/pubs/publications/p2826.pdf). He then washed some of the samples that had been treated with sugar with alcohol to see if additional mites could be found.

All beekeepers had mites in their colonies, and some were close to a critically high level. One interesting point that came from the exercise was the variability of using sugar to measure mite loads. With fresh samples and no moisture, the sugar seemed to dislodge almost all of the mites. However, at least one or two of the samples yielded high numbers of mites after wash with the alcohol. This indicated that the sugar did not remove all mites from the bees during the original sampling attempt with the powdered sugar. I do not remember all of the numbers, but the one sample that stood out had yielded 9-12 mites from the powdered sugar and then another 15-18 mites with the alcohol. Clearly, the sugar method would have underestimated the actual mite load in the colony.

The primary lesson learned is that sampling is important for making treatment decisions. These mites are difficult to see while working bees. The only sure way to know the extent of an infestation is to systematically sample your bees. Ben did a wonderful job is conveying that important message.

Spotlight on Sylvia Plath

By Audrey Sheridan

The late American author and poetess Sylvia Plath (1932—1963) was the daughter of German entomologist, Otto Plath, who taught at Boston University in the 1920's and 30's. Otto authored a popular book on native bees, *Bumblebees and Their Ways* (1934), but also kept honey bees as a hobby. Although he died when Sylvia was only eight, a "bee" theme is present throughout Sylvia's literary works, presumably as a result of her father's early influence. She even dabbled in beekeeping herself after moving to England on a Fulbright scholarship. Although Plath was a brilliant student and prolific writer, she was deeply affected by depression and fatalism, which was further amplified by an ongoing affair between her husband and a family friend. After separating from her husband, Plath began to write furiously, venting her anger in feminist prose. The "bee poems" that came out of this period represented Plath's identification with hard-working, underappreciated female bees who live at the mercy of their human keepers. At times she describes her plight in terms of a queen bee; other times she is a passive human exposed to angry stinging creatures. While her narrative perspective switches between insect and woman throughout the bee poems, the theme is consistently one of female vulnerability. The bee poems appeared towards the end of Plath's relatively brief writing career, and were included in what became her most popular book of poems, *Ariel*, published posthumously in 1965. *Wintering* is one of five poems from Plath's bee series:

Wintering

By Sylvia Plath

This is the easy time, there is nothing doing.
I have whirled the midwife's extractor,
I have my honey,
Six jars of it,
Six cat's eyes in the wine cellar,

Wintering in a dark without window
At the heart of the house
Next to the last tenant's rancid jam
and the bottles of empty glitters--
Sir So-and-so's gin.

This is the room I have never been in
This is the room I could never breathe in.
The black bunched in there like a bat,
No light
But the torch and its faint

Chinese yellow on appalling objects--
Black asininity. Decay.
Possession.
It is they who own me.
Neither cruel nor indifferent,

Only ignorant.
This is the time of hanging on for the bees--the bees
So slow I hardly know them,
Filing like soldiers
To the syrup tin

To make up for the honey I've taken.
Tate and Lyle keeps them going,
The refined snow.
It is Tate and Lyle they live on, instead of flowers.
They take it. The cold sets in.

Now they ball in a mass,
Black
Mind against all that white.
The smile of the snow is white.
It spreads itself out, a mile-long body of Meissen,

Into which, on warm days,
They can only carry their dead.
The bees are all women,
Maids and the long royal lady.
They have got rid of the men,

The blunt, clumsy stumblers, the boors.
Winter is for women--
The woman, still at her knitting,
At the cradle of Spanish walnut,
Her body a bulb in the cold and too dumb to think.

Will the hive survive, will the gladiolas
Succeed in banking their fires
To enter another year?
What will they taste of, the Christmas roses?
The bees are flying. They taste the spring.

Crisis shift? Bees may not be facing apocalypse but what about beekeepers?

By Jon Entine

Beekeeping tends to be more on the commercial side.

Scientists are now in agreement that we are not facing a beepocalypse as many in the media, environmental activists and journalists have been predicting. Bee populations aren't declining; they're rising. According to statistics kept by the U.S. Department of Agriculture and the Food and Agriculture Organization of the United Nations, honeybee populations in the United States, Canada and Europe have been stable or growing for the two decades.

But the latest statistics have not stemmed the tide of dire warnings. The focus has shifted from the pollinators themselves to beekeepers. Tim Tucker, president of the American Beekeeping Federation recently said: "It's not the bees that are in jeopardy. …. I believe we'll always have bees. … [But] unless things change, what's in jeopardy is the commercial beekeeping industry."

University of Maryland bee researcher Dennis van Englesdorp echoed the sentiment: "We're not worried about the bees going extinct …. We're worried about the beekeepers going extinct."

Beekeeping is Challenging

"Beekeepers are indeed "working nearly twice as hard as ever," as Tucker has said. Beekeepers report having to split their hives more often to make up for losses, entailing more work than in previous decades. And for commercial beekeepers maintaining thousands of bee hives, all of this additional work means more employees, more salaries, and more expenses.

The major driver of these challenges is the near-global spread of parasites like the *Varroa* mite and the dozens of other diseases that beset commercial honey bees, which require a great deal more work and expense for both commercial and hobbyist beekeepers. *Varroa* mite counts must be carefully monitored, and mite control preparations applied at precisely the right times. Otherwise, mite infestations can get ahead of beekeepers, propagate and devastate the hives.

But the hard work and increased challenges of beekeeping today don't necessarily translate into economic calamity — especially for the more sophisticated beekeepers who have modernized their operations and kept abreast of changing conditions.

As beekeeper and independent researcher Randy Oliver, who runs the well regarded Scientific Beekeeping blog, points out, "In beekeeping today, many progressive beekeepers are finding beekeeping to be more profitable than ever." The U.S. Department of Agriculture's economic statistics bear this out. Demand for honey has almost doubled over the past quarter century to 468.3 million pounds by 2013. Per capita honey consumption in the U.S. is up nearly 50 percent over the same period.

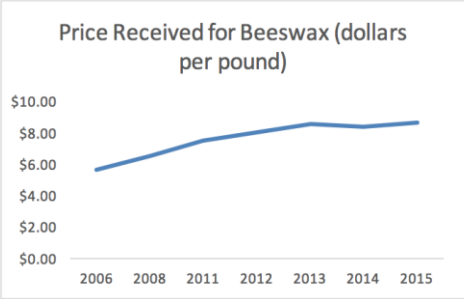
When demand is high, prices go up. The retail price of honey has risen more than 50 percent in the last decade, (about the same as beeswax), with total revenue from honey production reaching $2.835 billion in 2012.

Commercial beekeepers have also prospered from a parallel boom in the market for almonds, which is critically dependent on bees for pollination. In fact, as much as 75 percent of all U.S. commercial beehives are committed to almond growing, the bees trucked into California in the first quarter of each year to pollinate the 870,000 acres of almond groves (which have more than doubled in size since the mid-1980s).

***Farm gate and retail honey prices and total value,* 2006-12**

Year	Honey farm gate prices	Average retail price	Value of production (retail)
	---$/Pound---	---$/Pound---	---$1,000---
2006	1.005	3.85	596,662
2007	1.077	4.09	606,591
2008	1.421	4.33	709,479
2009	1.473	4.65	681,200
2010	1.619	4.85	856,135
2011	1.765	5.15	764,533
2012	1.951	5.55	816,483
2013	2.121	5.86	861,837

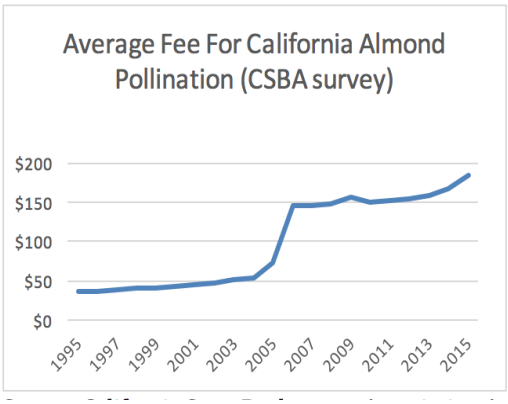
1/Retail prices are a simple average of monthly retail prices.
Sources: USDA-NASS QuickStats (Production and Farm Gate Prices); *Bee Culture Magazine* (retail prices).



Source: USDA-NASS QuickStats

2015 Almond Forecast

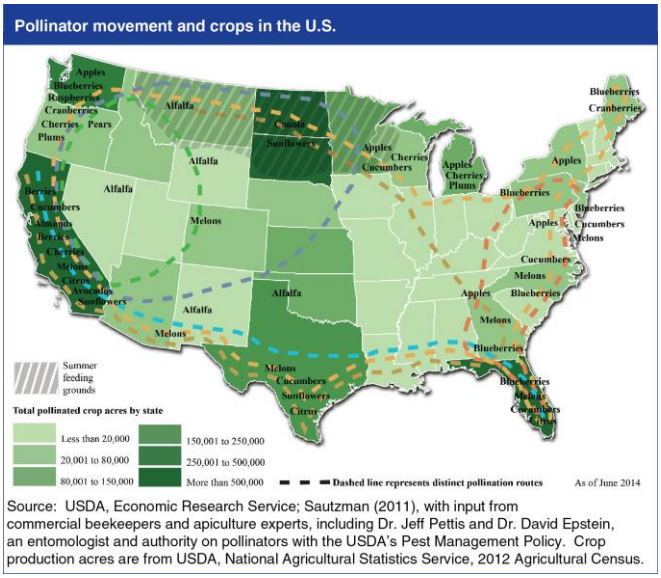
With rising pollination services demand, hive rental fees for almond pollination have risen to record levels, with prices up a staggering 428% (or about $150 extra per colony) since the 1990s. Together with other pollinated crops, including sunflowers, canola, grapes, apples, cherries, watermelons, and blueberries, total revenue for pollination services added up to $655.6 million in 2012, the most recently available data.



Source: California State Beekeepers Association Annual Pollination Surveys

Stress Problems

While the cross-continent pollination treks made by beekeepers are highly profitable, the huge stresses imposed on the bees themselves helps explain the less than optimum health of many commercial bee colonies.



Source: USDA, Economic Research Service; Sautzman (2011), with input from commercial beekeepers and apiculture experts, including Dr. Jeff Pettis and Dr. David Epstein, an entomologist and authority on pollinators with the USDA's Pest Management Policy. Crop production acres are from USDA, National Agricultural Statistics Service, 2012 Agricultural Census.

One result is that despite the fact that we now have more bee colonies than we have had in 20 years, the volume of U.S. honey production and the per-colony honey yield — as opposed to the price per pound of honey — has been on a general decline. United States honey production in 2013 is about 35 percent lower than in 1989.

While a number of factors contribute to this trend, USDA notes, "With proportionally more colonies being sent to pollinate almond orchards—as opposed to crops that are more valuable for honey production — a lower average volume of useable honey per colony can be expected."
The downward trend in U.S. honey production means that U.S. beekeepers now satisfy less than 1/3 of total U.S. honey demand. The difference is made up from imports from other nations – chiefly Argentina, Vietnam, India, Brazil, Canada, Uruguay, Mexico, Ukraine, Turkey and Taiwan.

Despite all this foreign competition, however, high U.S. demand has continued to exert upward pressure on U.S. honey prices, which have more than doubled to $2.12 per pound since the Colony Collapse Disorder crisis of 2006.

All this is economics, not catastrophe. Consumers may not like the higher prices for honey, but higher prices are certainly sweet news for beekeepers. As beekeeper and researcher Randy Oliver has commented, "the market for honey is offering opportunity for those not involved in pollination. And the market for bee sales is ravenous."

Source: September 24 issue of the *Genetic Literacy Project*.

Superinfection Exclusion and the Long Term Survival of Honey Bees in *Varroa*-infested Colonies

By Gideon J. Mordecai[1,2], Laura E. Brettell[3], Stephen J. Martin[3], David Dixon[1], Ian M. Jones[2] and Declan C. Schroeder[1]

[1]Viral Ecology, Marine Biological Association, Plymouth, UK; [2]School of Biological Sciences, University of Reading, Reading, UK and [3]School of Environment and Life Sciences, The University of Salford, Manchester, UK

Over the past 50 years, many millions of European honey bee (*Apis mellifera*) colonies have died as the ectoparasitic mite, *Varroa destructor*, has spread around the world. Subsequent studies have indicated that the mite's association with a group of RNA viral pathogens (Deformed Wing Virus, DWV) correlates with colony death. Here, we propose a phenomenon known as superinfection exclusion that provides an explanation of how certain *A. mellifera* populations have survived, despite *Varroa* infestation and high DWV loads. Next-generation sequencing has shown that a non-lethal DWV variant 'type B' has become established in these colonies and that the lethal 'type A' DWV variant fails to persist in the bee population. We propose that this novel stable host-pathogen relationship prevents the accumulation of lethal variants, suggesting that this interaction could be exploited for the development of an effective treatment that minimizes colony losses in the future.

Source: The ISME Journal advance online publication, 27 October 2015; doi:10.1038/ismej.2015.186

Addendum by Jeff Harris: The excerpt shown above is an abstract of a scientific paper published at the end of October 2015 in the *International Society for Microbial Ecology Journal.* The paper suggests the possibility that hypovirulent forms of Deformed Wing Virus (DWV), which is a major killer of honey bees that are infested by *Varroa* mites, could be used to "vaccinate" honey bees from the deadlier forms of the virus. The idea is very interesting, but a lot of work will need to be done to prove that it could work in honey bees. The possibility excites the imagination. Similar strategies have worked with fungal (e.g. Chestnut blight) and viral (e.g. citrus greening) diseases in plants.

2016 4-H Beekeeping Essay Contest Entries Due by February 4

Mississippi entries for the 2016 4-H Beekeeping Essay Contest, sponsored by The Foundation for the Preservation of Honey Bees, Inc., will be due by close of business on February 4, 2016. Please send your essay and brief biographical sketch (see below) to Dr. Jeff Harris at JHarris@entomology.msstate.edu (Subject: 4-H Beekeeping Essay). ONLY ESSAYS SUBMITTED ELECTRONICALLY WILL BE ACCEPTED. The first place essay from the Mississippi level of competition will be sent to the national contest.

In 2014, the second place winner in the *national* contest was Mississippi's Garrett Smith from Oktibbeha County! Start your essay now, and let's submit another national award-winning essay from Mississippi. If you have questions or concerns as you prepare your essay, contact Lois Connington at lois.connington@msstate.edu or 662-325-0795.

AWARDS

State Winners •1st Place—$100 (this essay goes on to national competition) •2nd Place—$75 •3rd Place—$50 (prizes provided by Mississippi Beekeepers Association)

National Winners •1st Place—$750 •2nd Place—$500 •3rd Place—$250 (prizes provided by Foundation for the Preservation of Honey Bees). Each state winner, including the national winners, receives an appropriate book about honey bees, beekeeping, or honey from the Foundation for the Preservation of Honey Bees.

Note: The essay must be your work, in your own words. An important consideration in writing an essay is to avoid plagiarism (the act of repeating

information from a source word for word; failing to cite a source, even though you paraphrased the information; or using someone else's idea without giving them credit). It may be helpful to write a summary of each source you review, without quoting it and from memory, then outline your essay by pulling ideas from your summaries. Writing your essay from your outline will ensure your entry is your own work.

ESSAY TOPIC

"*Bees and Pollination. How Important Is It?*"
(Hint: Make your essay pop by adding a catchy title rather than using the topic as your title.)

Beekeeping has had is five minutes of fame for the past five years. Now more than ever, people are asking "What will happen if the bees are gone?" Your paper should research and help answer this question.

Survey your community to see what is being done. Include your state in your survey to see if there are any programs they are using for pollination or any other program that could aid the honey bee.

The scope of research is an essential judging criterion, accounting for 40% of your score. The number of sources consulted, the authority of sources, and the variety of the sources are all evaluated.

Personal interviews with beekeepers and others familiar with the subject are valued sources of information and should be documented. Sources that are not cited in the endnotes should be listed in a "Resources" or "Bibliography" list.

(Hint: Notice that "honey bee" is properly spelled as two words, even though many otherwise authoritative references spell it as one word.)

RULES

The contest is open to **active 4-H Club members only**. 4-H'ers who have previously placed first, second, or third at the national level are not eligible, but other state winners are eligible to re-enter.
Requirements (failure to meet any one requirement disqualifies the essay):

- Write on the designated subject only.
- All factual statements must be referenced with bibliographical-style endnotes.
- A **brief biographical sketch** of the essayist, including date of birth, gender, complete mailing address, and telephone number, must accompany the essay.
- Length—the essay proper: 750 to 1,000 words. The word count does not include the endnotes, the bibliography or references, nor the essayist's biographical sketch—which should be on a separate page.
- Preparation for national judging: ELECTRONIC SUBMISSIONS ONLY. Prepare your essays double spaced, 12-pt. Times or similar type style, following standard manuscript format. Submit as a Microsoft Word compatible document.

Essays will be judged on:

- scope of research—40%
- accuracy—30%
- creativity—10%
- conciseness—10%
- logical development of the topic—10%

The national winner will be announced by the second week of May, 2016. You can view winning essays from the 2015 contest by going to http://preservationofhoneybees.org/essays/2015-4h-essays and clicking on the name of each winner.

Upcoming Events

Beginners Workshop: The focus will be on (1) ordering the correct beekeeping equipment before the spring, and (2) basic bee biology for getting through your first season. The workshop will be held at Kenneth and Joan Thompson's home (14860 BIA 022, Philadelphia, MS 39350) from 9AM-3PM on December 12, 2015. Please call Johnny Thompson (601-562-0701) to pre-register. We only have room for 30 participants. Please bring a $10 fee to help pay for lunch and coffee during the day when you come to the workshop.

MSU Department of Biochemistry, Molecular Biology,

MISSISSIPPI STATE UNIVERSITY EXTENSION