**Minutes**

**2019 Sugarcane Crop Germplasm Committee Meeting**

**Beltsville, MD**

**July 23, 2019**

In attendance:

|  |  |  |  |
| --- | --- | --- | --- |
| Peter | Bretting | USDA-ARS, Beltsville | Yes |
| Jack | Comstock | Rio Farms, Inc., Monte Alto, TX | yes |
| Wayne | Davidson | Florida Sugar Cane League | Yes |
| Ricardo | Goenaga | USDA-ARS, Subtropical Hourticulture Research Station, Miami, FL | Yes |
| Kenneth | Gravois | Louisiana State University | Yes |
| Mike | Grisham | USDA-ARS, Sugarcane Research Unit, Houma, LA | Yes |
| Anna | Hale | USDA-ARS, Sugarcane Research Unit, Houma, LA | Yes |
| Jeffrey | Hoy | Louisiana State University | Yes |
| Collins | Kimbeng | Louisiana State University | yes |
| Gary | Kinard | USDA-ARS, Beltsville | Yes |
| Matt | Klostermann | Rio Farms, Inc., Monte Alto, TX | Yes |
| Chris | Laborde | U.S. Sugar Corp | Yes |
| Martha | Malapi-Wight | USDA-APHIS, Beltsville | Yes |
| Dimitre | Mollov | USDA-ARS, Beltsville | Yes |
| Aliya | Momotaz | USDA-ARS, Sugarcane Field Station, Canal Point, FL | Yes |
| Charley | Richard | Charley Richard and Associates | Yes |
| Hardev | Sandhu | University of Florida | Yes |
| Jim | Shine | Sugar Growers Cooperative | Yes |
| Herman | Waguespack | American Sugar Cane League of the USA, Inc. | Yes |
| Duli | Zhao | USDA-ARS, Sugarcane Field Station, Canal Point, FL | Yes |

**AGENDA**

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| 8:00-8:10 | Introductions, welcome, and call-in time for those who couldn’t come. | **Call in Number:**  Toll free#: 1-888-844-9904  Access Code: 5513528 |
| 8:10-8:15 | Approval of previous meeting’s minutes (previously sent to committee) | Collins Kimbeng – LSU Ag Center, Baton Rouge, LA |
| 8:15-8:25 | National Germplasm Resources Laboratory’s 2017 Report to PGOC, RTACs and CGCs | Gary Kinard, USDA-ARS-NGRL, Beltsville, MD |
| 8:25-8:35 | NPL Report | Peter Bretting, Beltsville, MD |
| 8:35-8:50 | Report on the Status of the World Collection at SHRS, Miami | Ricardo Goenaga, USDA-ARS, Miami, FL |
| 8:50 – 9:20 | Sugarcane Importation and Quarantine-Related Activities | Martha Malapi-Wight, USDA-APHIS, Beltsville, MD |
| 9:20-9:35 | BREAK |  |
| 9:35-9:45 | Update on the 2018 Funded Project: Assessing the Resistance Response of Basic Germplasm and Accessions to Sorghum Mosaic Virus and Identification of Genetic Markers for Resistance through Genotyping by Sequencing and Genome Wide Association Studies | Jeffrey Hoy, LSU Ag Center, Baton Rouge, LA |
| 9:45-10:00 | Nomination of Committee Members and Officers |  |
| 10:00-10:20 | New Topics and Open Discussion (GRIN system, etc.) | Open Discussion |
| 10:20 – 10:30 | BREAK |  |
| 10:30-11:15 | Tour of ARS Greenhouse | Dimitre Mollov, USDA-ARS, Beltsville, MD. |
| 11:15-1:15 | LUNCH | On your own |
| 1:15-1:30 | Drive to Building 580 | On your own |
| 1:30-3:30ish | Tour of APHIS Quarantine Program | Martha Malapi-Wight, USDA-APHIS, Beltsville, MD |

The meeting was chaired by Dr. Anna Hale. Meeting was called to order around 8:15 AM.

* Introductions, sign in sheet passed around (See members in attendance above)
* Jeff: motion to approve 2018 minutes. Herman: second. Motion carried. 2018 CGC minutes accepted as presented.

Research Leader,Gary Kinard welcomed the group to the facility and gave an overview of the facility including the administrative structure of the operation. He then proceeded to present the **National Germplasm Resources Laboratory’s 2018 Report to PGOC, RTACs and CGCs:**

* NPGS did not accept germplasm requests due to lapse in funding caused by furlough from December 22, 2018 through January 26, 2019.
* GRIN website remained operational but was not updated during the closure.
* Dr. John Wiersema retired in June 2018 after more than 30 years as the curator of GRIN Taxonomy. Dr. Melanie Schori, who joined NGRL in Jan. 2017 to take over.
* **Proposals**: July 26, 2019 was deadline to submit proposals for plant explorations or exchanges for FY 2020 is July 26, 2019. Proposals must be endorsed by CGC.
* Proposals for foreign collection must obtain informed consent from host country. Plant Exchange Office can help negotiate terms. Proposals must comply with Convention on Biological Diversity on access and benefit sharing.
* A list of successful FY 18 proposals was shared. The only foreign country was to Italy to collect *Phalaris* spp. Sugarcane not represented on the list.
* **ARS and U.S. Forest Service**: As of 2016 established a collaborative agreement to conserve germplasm in forests. Pilot studies ongoing with cranberry on best locations for *in situ* and *ex situ* conservation. Leaves of wild pops. sent to NCGR in Corvallis, Oregon and Vegetable Crop Research unit in UW – Madison, Wisconsin for genetic analysis.
* **Book:** A new two-volume book on wild relatives of crop native to North America to be published by Springer. Up to 600 taxa included. Many CGC staff are authors. Find details by searching [North American Crop Wild Relatives, Volume 1](https://www.springer.com/us/book/9783319951003?utm_medium=email&utm_source=govdelivery) and [North American Crop Wild Relatives.](https://www.springer.com/us/book/9783319971209?utm_medium=email&utm_source=govdelivery)
* **GRIN-Global**: Transition from GRIN for plants to GRIN-Global now complete. GRIN Taxonomy now available through GRIN-Global. Up to 16,425 taxa represented with scientific names of up to 27,472 genera included. Wild relatives of major and minor crops now represented in GRIN Taxonomy. 232 major crops from 119 genera represented. Can now search via traits, class, breeding type. Feedback on the functionality of the system will be helpful
* **NGRL and USDA Economic Research Service (ERS)**: survey conducted of more than 5300 recent global recipients of crops from the NPGS and awaiting results.
* **Plant Disease Research Unit (PDRU)**: conducts research on pathogens that infect clonally propagated prohibited genus to support the APHIS Plant Germplasm Quarantine Program, NPGS germplasm repositories, state departments of agriculture, and university scientists. This facilitates safe introduction, conservation, and international exchange of valuable plant germplasm.

**Report on the Status of the World Collection at SHRS, Miami; presented by Ricardo Goenaga, USDA-ARS, Subtropical Horticultural Research Station, Miami, FL**

* **Maintenance:** A total of 1000 (was 1400 in last year’s presentation by Mike Winterstein ??) accessions planted in a 10-acre block (5-acre block + 5-acre rotation block). Replanted May 2014, 20 ft by 15 ft between row and plots, respectively. Drip irrigated, sprinklers used for cold protection.
* **Characterization:** 10-stalk sample used to collect data on ht, diam, internode length & #, Brix, flow. date, diasease & biomass wt/plot.
* S. Spont managed differently since weed. Ported recently, pots on concrete slab. Aphis permit renewed June 2019.
* **Distribution:** last 5 yrs., S. bar. Total 145l; 60% to Brazil (44), LSU (22), U Fl. (45), Fort Collins, CO (10), Miami Dade college (10), Argentina, Expe Agrocola (14), Houma (1), TX. A&M (1), etc.
* S. sin. Total 189 total; Brazil - Campinas (56), U Fl. (40), Ft Collins (20), Japan (10), Argentina (12), China (9), Houma (1) TX A&M (2, LSU (22), etc.
* S. Off. Total 1658; Brazil - Campinas (1013), LSU (225), UF (250), Ft Collis (55) U Illinois (40) etc.
* S. sp. Total 1470; Brazil - Campinas (787), LSU (300), UF (301), Monsanto (30), Japan (10), Ecuador (10), U Illinois (10) etc.
* S. rub. Total 183; UF 50, Ft Collins (30), Res Inst at Virginia Mason (27), LSU (20), TX A & M (14), Brazil - Campinas (12), etc.
* Top Misc. requested included 11 accessions of a combination of the following spp. M. floridus (2), M. sinensis (4), and M. sp. (5).
* **Issues and Solutions**: Hurricane Irma. Greenhouse damaged, congress appropriated funds available, contracting finalized and work to start soon.
  + **Vacancies:** Numerous vacancies, hiring freeze + closure list, Khun retired, 100% molecular biologist; Ayala, 70% curator, Cat.4 hire, Tech position to assist curator. No longer on closure list, 12 positions to be filled.
  + **Mislabeling**: To bring in sugarcane experts to assist with ID, collaborate with Angelique D’Hont (CIRAD, France) by supplying lyophilized leaf samples for fingerprinting.
  + **Recovery of lost germplasm**: Brazil (Luciana Pinto of Instituto Agronomico de Campinas, Sao Paulo willing to send back germplasm-will go through quarantine, Fort Collins provided 27 accessions from backup collection stored in liquid nitrogen, in vitro (cryopreservation) preservation-40-90% viability.
  + Hurricane Irma 2017, very devastating, poor condition of collection, weed control measures needed.
* **Backup collection**: cryopreservation in Ft. Collins has potential but there are viability issues. Mayaguez, Puerto Rico another potential.
* Q & A…….
* Martha: clones must go through quarantine on way back
* Jeff: Seems unworkable since has to go through quarantine
* Chris: if collection continues to grow how do we manage
* Ricardo: there is space
* Kenneth: how many missing?
* Ricardo: about 100
* Kenneth: specifically, asked Brazil?
* Ricardo: yes
* Herman: who decided?
* Ricardo: CGC
* Peter: Ft. Collins would be an ideal location. However, does not yet work well, endophytes in clones interfere with regeneration, expensive, so for now field is the best but quarantine a bottle neck. Fl-PR no problem. PR-Fl is the issue where quarantine needed but this will only happen when something is lost and a replacement needed. Advantage with field is potential to evaluate.
* Someone asked if Tomas’ position was advertised? Answer: No.
* It will be a Cat. 4 plus technician. Yes, it is budgeted.
* Just for sugarcane? No. For sugarcane and tropical fruits.
* Expect to hire several technicians in the project to assist with field work.
* Kenneth: Is this new money? Ricardo: Yes, new money for entomology.
* Jack: What project is the RL position? Ricardo 99% time in Miami.
* Jeff: seems like the PR is the best available site for a backup. Tom Tew can be contacted to help to ID mislabeled clones.
* Charlie: Is it possible to see the budget? Ricardo: Yes
* Mike: Following up on collection expanding …. what of the core collection? Is there a need to revisit the diversity of that collection?
* Charlie: you mean the commercials that don’t need to be there?
* Ricardo: in Mango over 90% is represented (in the core???)
* Mike: things coming in from other countries not represented.
* Kenneth: the biggest hole is the sponts. from India and China.
* Charlie: what about S. off. from Hawaii?
* Anna: they still have them. Per’s proposal was not funded.
* Kenneth: what about Brazil?
* Jack: private companies in Brazil received clones and say NO when asked to send back a duplicate.
* Jeff: as a committee, do we need to explicitly state how important the issue is?
* Jim: proposed a formal motion Seconded by Jeff: (**specific verbiage of motion missing please supply me with the verbiage**)
* **NPL Report, presented by Peter Bretting, Beltsville, MD**
* USDA National Germplasm system: 20 sites, some at land grant universities.
* Growth of collection slow but steady at ½ to 1% per yr., mostly filling gaps.
* **Distribution**: @ 250,000 per yr., 15 years ago it was 125,000, 2/3 domestic and 1/3 international. Mostly faculty and students at Land Grant univ.
* Most request for maize and soybean from private sector.
* **Budget:** peaked at $47 million from 2010-2012, in 2013 budget took a big hit due to sequestration, crept up to around $44 million in 2018.
* Consider the effect of deflation on today’s $$ amount, it is buying less.
* **Challenges:** Increase demand (distribution) but budget not keeping up with demand, doing more with less by sharply focusing priority, having to decide what not to do.
* Retired personnel not being replaced, hiring and training some new staff.
* Currently developing and applying cryopreservation and/or in vitro conservation methods for clonal germplasm.
* BMPs and procedures for managing accessions (and breeding stocks) with GE traits and the occurrence of adventitious presence (AP).
* Acquiring and conserving additional germplasm, especially of crop wild relatives.
* Hiring freeze partially lifted, hope to hire new/additional staff.
* **Management training initiative**: generational turn over an issue, no formal training for younger people, at least 1/3 of NPGS PGR managers likely to retire within 5 years.
* ARS scientists secured a USDA/NIFA grant for a workshop at Ft. C. 24-26 April 2018 that discussed designing & developing a training program for PGR management to be delivered primarily through distance-learning, YouTube, then pursue a certificate course for folks who are hired. The workshop generated numerous insights; workshop participants are developing prototype educational materials and have submitted a NIFA Higher Education Challenge grant proposal.
* **Some good news**: budget increase in some specific crops because pressure groups got their congress representative involved, **Coffee genetic resources** ($1.9 million) for Hilo, HI; Mayagüez, PR; Ft. Collins, CO; Beltsville, MD. Citrus genetic resources ($1 million) for Riverside, CA; Ft. Collins, CO. **Industrial hemp genetic resources** ($500,000): Geneva, NY.
* Citrus can be shipped out of Riverside to Ft. Collins for backup because Aphis conducts regular checks (monthly).
* Farm bill took industrial hemp (< 0.3% dry wt of THC) out of schedule 1 control program, interest increasing.
* Hemp first used as source of fiber, then rope, now for health (CBD oil). Geneva, New York now collection site because the state government put money into it.
* Less than 1 yr ago a DEA permit was needed, farm bill defines what universities and companies can do but not the USDA – the USDA have to go through some legal issues
* Diff states have diff regulations so traveling through a state can be tricky
* Is it USDA to decide that a someone ordering from a particular state can’t have it because of their state law?
* Q & A…..
* Kenneth: what kind of private commodity input?
* Pater: private sector support e.g., world coffee research foundation. Not sure if the foundation will provide or pledged to provide additional support to the gov’t.
* Chris: there’s a TV show about a guy trying to find the best coffee that also helps with exposure.
* Ricardo: once collection established for cocoa companies have been very supportive.
* Martha: Funding to Beltsville is for crops or pathogen?
* Peter: markers for crops not pathogen. Hemp and coffee can start collection in 2019 using new tools that were not available before.
* Jack: will that be done before or after the accession is received?
* Peter: both ways. Will use markers to decide what to keep or not to keep in Hawaii (I think referring to Cocoa)
* Kenneth: Niranjan and Jiaping have ID on a good number of clones (I think referring to sugarcane)
* Peter: Cocoa model studies with SSR have ID mislabeled, misidentified accessions etc.
* Kenneth: how many accessions? Ricardo: 260 (not sure what crop alluding to?)
* Martha: sequencing any sugarcane will result in 50% coverage of transcriptome
* Jack: explain please, RNA from host or pathogen?
* Martha: 90% of sequence present is from the host.
* Jack: someone could make good use of that information.
* Martha: No bioinformatics capability yet.

**Sugarcane Importation and Quarantine-Related Activities presented by Martha Malapi-Wight, USDA-APHIS, Beltsville, MD**

* **Staffing issues**: hired computer scientist away from NIH, worked on sequencing data of HIV patients, GS 13 permanent pos.
* Mol biologist in charge of making sequencing libraries leaving, position advertised, hoping for overlap with new person before she leaves.
* 108 sugarcane clones in quarantine, imported 16 clones 2018-2019, 5 infected with regulated pathogen mostly viruses, infection adds a year and half to process, 14 clones released, processing cost is $4500 per clone, this cost is subsidized and paid by our agency, sugarcanes imported from multiple countries, since I joined imported 88 from multiple countries mostly from Brazil and Guatemala, 2 sent from LA for clean up
* Rate of sugarcane infected by regulated pathogen: since joined in 2015, 2 main pathogens, in 2013 17 imported with YLS, 2014 30 all YLSB, 2015 12 YLS, 2016 6, with sugarcane streak mosaic virus, in 2017 and 18 same trend like 2016 so in 3 years 60 accession infected.
* Only 2 specialists to clean up for all crops including sugarcane.
* Have over 700 plants from over 30 species, so there is a backlog.
* People are now more conscious about material being imported, trying to import cleaner material so number (infected) decreasing.
* **High throughput sequencing technology (HTPS)**: Last 3 years talked to you about work with introducing high throughput next gen sequencing.
* UC Davis foundation plant services has already introduced this technique for fruit trees pomology program and got a permit from APHIS to use it.
* There is pressure within country to use it we don’t want to be last.
* Internationally every quarantine program will use this technique.
* Refresh ----bought sequencer 2 years ago.
* Plant sample plant - extract total RNA (from plant and all pathogens in plant) - construct library, cut and put adaptors, takes 5 days inhouse now, get sequencing reads overnight.
* Improve the Poaceae program.
* Priority – establish multiple collaborations to improve testing. Have collaboration with Dimitre but more needed.
* In lab studying effect of degradation of RNA, still comparing conventional method with high throughput seq.
* **4 collaboration established:** first with Oklahoma State University, second with FRESCO, a phytosanity group from Europe, third with Phillip Rott (UF), CIRAD, Dimitre and fourth with Penn State.
  + Grant with Oklahoma state, National Institute of Microbial Forensics and Food and Agriculture Biosecurity, co-PI Franscesco Choa for $115K, MS student, Poaceae, Francisco to develop EDNA probes that can jump into the high throughput seq data for identification of pathogen and compare between all platforms we are currently using.
  + Invited to join European phytosanitary (FRESCO) group, they are quite advanced with HTPS, Bioinformatics network with 12 countries, goal to develop 1 bioinformatics tool, to standardize all these protocols between countries so can ID the same pathogen with the same sequencing data, only group in US to be invited, hoping to bring new computer scientist to next meeting in November.
  + With Dimitre, UF and CIRAD; studying genetic diversity of sugarcane yellow leave virus, more than 90 yellow leaf genome from all over the world, collected diff. times and years, trying to develop a more robust tool to ID all viruses, hybrids and recombinants
  + Have background (PhD) in nano devices, want to improve diagnostic methods by incorporating nanotech. Collaboration with Penn State, Christina Rossa and Maria del Carmen from Plant Pathology and Physics department, helping to develop carbon nanotubes that can purify viral particles, ultimately having less tissue cells and more viral particles for sequencing, have already developed these tubes for avian influenza strain, so now they are developing tubes for identification of viral pathogens of sugarcane, received permit last week to import infected plants from me and will start with sugarcane streak virus, the technique will improve sensitivity, will start with sugarcane streak viruse as my pilot study.
* Showed 1 slide of validation of high throughput sequencing technology; positive controls of sugarcane plants, Fiji virus, sugarcane streak virus, YLS, etc. Regardless of time of year the pathogen was able to ID pathogen, there sequences that we are getting from HTPS are able to ID these viruses
* So have developed HTPS protocol for sugarcane and have validated it and will now use the technology in other quarantine programs in PGQP
* In the last 3 years that we have all the equipment to do inhouse sequencing we have sequenced 416 accessions in my program including sugarcane, rice, bamboo, and different grasses, we have transferred protocol and they have been able to use it for the fruit tree program (apple, pea) as well as the vegetable program (cassava, potato and sweet potato)
* Not only the genome or in this case transcript of the host but we have also gained information of all the pathogens that infected all these crops
* **Take home message**: have over 100 clones in the quarantine, 50% of them were infected with regulated viruses, in the process of validating the HTPS for 4 other quarantine programs using HTPS started with sugarcane program, not official yet but in conversation with the director (as I feel confident now) to introduce HTPS as a quarantine tool for the sugarcane program ONLY not yet for the other programs.
* Start with the tissue culture plantlets coming out from GH. Boss has agreed we can replace one of the 2 tests that takes 2 years with HTPS and that’s going to help us to move faster
* The reason starting with plants from tissue culture is because the pathogen infecting plants was already known (YLS and sugarcane streak) so very easy to identify them from sequencing, confident enough (next yr will write document, sign it and work with boss to introduce sequencing as a replacement of one of the tests).
* Every single sugarcane imported will be tested by HTPS and we have been doing that the last 2 years and are ready to introduce as a routine test.
* Q & A …..
* Chris: How many clones can be imported per year? Someone once told me 50-60 but now I see you are sitting around 100. How many do you feel you can maintain in quarantine with your budget and all the resources you have available?
* Martha: the mother plant is kept so plus 4 tissue cultured plants = 5 plants which has really slowed down things, if everything is clean we would have more space but I still don’t feel confident for example to discard the mother plant, I must keep it to make sure by the time we release a clean plant everything went well, the best advice is if you need to import sugarcane contact me. I still have not said no to any sugarcane importation process. Have said no to bamboo and grasses because of lack of space. For sugarcane I keep 2 greenhouses, 1 for the first round of testing and the second after they have gone through all the testing and they are negative. I have highlighted that the sugarcane group work well together ARS in LA and FL talking to each other is helpful because we can get one germplasm and share between different groups.
* Jack: are you seeing variation in the sequence data for sugarcane streak mosaic virus?
* Martha: No. I call it a monster virus, so many contaminations, machines have to be bleached to clean them, but we do not see quite a difference in contrast with YLS
* Dimitre: answering Jack’s question we have a published paper showing it is not as diverse as many others, not just what Martha is seeing but worldwide.
* Herman: Once process is complete, and you send it to the person who requested it do you send it to Miami?
* Martha: No
* Collins: you can’t.
* Herman: why?
* Anna: under transfer agreement cannot be distributed, Miami collection is public and can distribute it. Ricardo agreed.
* Martha: When it is imported, it states whom to share it with.
* Gary: Is there a common sharing like in Europe for HTPS bioinformatics?
* Martha: No. Guidelines still being developed. I have not seen any. So many different libraries and sequencing going on that is why we cannot develop a protocol. But for the bioinformatics pipeline the first one is being established with the 12 countries.
* Kenneth: How many non-pathogenic viruses do you see?
* Martha: if it is non-pathogenic it is considered part of the microbiome of the plant, we have a database of pathogens that affect the plant. I focus on what we know causes disease and what conventional PCR will not target. If I come across something novel, I collaborate with University of Maryland or Dimitre’s lab. for them to characterize it and do a Kush postulate. There is a group within APHIS of which I play an advisory role, they get together, and they are trying to develop guidelines to deal with all the sequencing data that we are obtaining.
* Charlie: Anna when you bring in material under MTA so you can’t share it with Miami, what does the MTA allow you to do? Bred with it?
* Anna: it depends but in LA if we bring something from anywhere else the sugar levels don’t allow you to do anything but bred with it.
* Charlie: But once you bred with it is the progeny public domain?
* Anna: Yes.
* Chris: what is the success rate of flowering of material brought into LA.
* It depends where they are from. The sponts. almost all flower we brought some from Japan that didn’t.
* Chris: what about commercial types?
* Anna: it depends. The Australian canes don’t flower. Maybe they flower in Fl. We have to change the photoperiod regime to make it work, but then the decision may not be worthwhile to change an entire bay just to get one clone to flower. We would try FL on the commercial ones. With the focus on that one variety you can get it to flower but the question becomes is it worth it?
* Charlie: by the time you find out it doesn’t flower can you calculate the cost?
* Jack: request a change by committee to bring in seed.
* Collins: but our clones have to be present in the foreign country to make the desired cross.
* Jack: we have clones in Argentina for example.
* Anna: we might not gain much since the Argentina gene pool is also mostly from LA.
* Jack: what about Brazil?
* Chris: my interpretation of what Jack is saying is that it is more efficient and cheaper to bring in crosses.
* Anna: but you lose control of the breeding process. They will cross whatever is in the cubicle if we don’t have our clones present.
* Charlie: what about Barbados?
* Jack: they are thinking of straight pollen.
* Anna: I don’t have a problem doing that.
* Kenneth: isn’t that how the Australians got the Chinese material?
* Anna: that’s how the Australians got the Chinese material. They brought in F1s and proceeded to work with the F1s.
* Anna: and we were prepared to do that with the Australian until they came up with the yellow canopy syndrome and we don’t know what it is?
* Dimitri: they claim it is not a disease. It is something physiological.
* Anna: they say it has to do with starch transportation and was not variety specific.
* Charlie: they made crosses to their own material?
* Anna: the Australians sent their breeders to China to make those crosses themselves (no answer if Australian clones were present in China)
* Collins: are we sure the yellow canopy is not a disease?
* Dimite/Anna: that’s what they say.
* Collins: what area?
* Anna: mostly Townsville.
* Jeff: but it is spreading, and they have spent a lot of money and plan to spend more to figure it out.
* Dimitre: there is speculation it could be phytoplasma, also has been associated with Aphid vector but data not reproducible.
* Anna: it wasn’t variety specific.
* Dimitre: said one explanation was that they were breeding for high sugar and the plant could not handle it.
* Chris: from a disease point of view I can understand why you want to bring in disease resistant material and use it to cross. If you get material in and you can’t get it to flower you still need to agronomically characterize that material.
* Anna: we do
* Chris: then you can go back to country of original and focus the cross to import the fuzz.
* Collins: cross it with what? Something else in their program you know nothing about?
* Anna: yes after assessing in your environment we can decide if we are interested or not
* Mike: what’s an environment. We see a lot of differences when we send material to the Valley
* Kenneth: so the decisions you make in the crossing house should be different for them (Tx, valley) versus what you make for your program and we should never breed blind. You might be bringing in things they spent the last 30 years trying to get rid of.
* Chris: I am just trying to link/make the association with what is currently being done to bring in fuzz. The opportunities exist.
* Collins: did you send your material to Barbados to be crossed.
* Chris: yes, some of the crosses were from material we sent. But the main point I was trying to make is if you bring in material and even if they don’t flower they need to be characterized.
* Anna: they are put in our line trials. In the basic program even if it is a foreign commercial it is tested along with our basics.
* Collins: the agronomic information you get is not the most important thing. It is more important to put it into progeny testing. Some traits don’t reveal themselves in one generation (cited Tanksley’s work)
* Anna: Agreed
* Collins: hopefully in the exchange agreement you can also send some of your material to the reciprocating country such that you can request a cross of their material to yours.
* Collins: sometimes we request material from others and they don’t request anything in return even though you have a reciprocal transfer agreement.
* Herman: it is in your interest to send your material to them.
* Collins/Anna: you can’t they have to deal with their own quarantine (it cost money).
* Herman: you need to convince them that they need it.
* Collins: the best agreement is what we were trying to do with Hawaii.
* Collins: can we explore Barbados? It is worthwhile.
* Anna: you get more control of what you are crossing with the derived F1s.
* Anna: Hawaii is no longer an option for crossing.

**Update on the 2018 Funded Project: Assessing the Resistance Response of Basic Germplasm and Accessions to Sorghum Mosaic Virus and Identification of Genetic Markers for Resistance through Genotyping by Sequencing and Genome Wide Association Studies, presented by Jeffrey Hoy, LSU AgCenter**

* Mosaic important disease, managed through basic breeding, we hope to add molecular angle to it.
* Outbreak in 2016 in LA, screen parent pop., using mechanical inoculation.
* Lots of resistance especially within the basic program, repeatability overall was good, ¾ (76% repeatable), probably some escapes, the key question is: is the data reliable for use in molecular characterization, where this is likely headed.
* **S. spont.** very narrow leaves, after inoculation phenotyping not reliable, leaf lamina too narrow to see anything, for spont. need to rely on RT-PCR assay.
* Overall got some good results out of this MS student project (MS J. Rice), we have the data to move forward.
* **Niranjan’s slide**: biparental cross for marker development (QTL), genome wide association (diversity panel) and genotype by sequencing.
* In our case sorghum mosaic virus but hopefully the results will be applicable and useful to sugarcane mosaic virus.
* Q & A..
* Martha: are you sequencing the transcriptome or the whole genome?
* Jeff: Not sure. he has some postdocs helping with that. There are plans to hire a new faculty that might also help with that.
* **Nominations**
* Anna: Tomas?
* Ricardo: Unless maybe he has something to do with the backup?
* Anna: Do we have to do something with that position?
* Mike: Asking Ricado ... You do have several vacancies, right?
* Duli: I think the new Canal Point breeder should be on the committee. Last year we reserved the spot for the new breeder.
* Chris: Made a motion to replace Per with Dr. Aliya Momotaz.
* Herman: second, motion carried.
* Anna: what about David Kuhn.
* Jim: made a motion to replace David with Dr. Ricardo Goenaga.
* Several voices to second, motion carried.
* Anna: Do we want to wait to fill the position vacated by Tomas?
* Mike: yes. Kenneth: agree.
* Herman: what about James.
* Mike: are we limited to the number of positions?
* Anna: there is no guidance on that.
* Kenneth: made a motion to add James.
* Herman: that was the motion I was making.
* Kenneth: second, motion carried.
* Charlie once again tried to vacate his position.
* Herman: you (referring to Charlie) can’t leave yet.
* Collins: but there is no one in the sector that he represents so there is no one to replace him anyway.
* Anna: what about Susan?
* Kenneth: we need to touch base with her to see where they stand with HARC if they are doing anything (I assume sugarcane related) keep her on but if not, then it doesn’t serve much value.
* Herman: you don’t need to make that decision this year.
* Charlie: it will be good to know if they have any intention of staying in sugarcane that opens opportunities for a lot of things, crossing, collection, be good to find out what their intentions are.
* Anna: agreed to email her.
* Collins: probably best to call her because all USDA emails go to junk folder.
* Anna: called for new topics or matters arising for discussion.
* Chris: motion to adjourn.
* Kenneth: second.
* Anna: Meeting adjourned: 10:55.