

**From:** [Bill Rooney](#)  
**To:** ["David Baltensperger"](#)  
**Subject:** information for tomorrow  
**Date:** Tuesday, August 25, 2009 9:23:00 PM  
**Attachments:** [Hussey Presentation - Rooney.pptx](#)

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David

For consistency's sake, I've put the information provided by each group on a slide for the presentation tomorrow.

I'm sure there is too much information, but I would like your insight so that the level is consistent with other presentation. Here are my thoughts

1. The algae work seems too specific (I will trim) - I plan emphasizing that we can be the department for production work.
2. The perennial grass slide from Russ - seems to be to many projects (sort of the throw it against the wall and see what sticks). Should I trim or leave it alone and let Hussey figure that out himself.
3. I think the oilseed and sorghum are about right, just enough to be dangerous. I might trim the oilseed a little, but I'll discuss what is mentioned.

Your thoughts are appreciated (before noon so I can make my adjustments).

Thanks,  
bill

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# Energy Crop Development

Activities/Opportunities

# Bioenergy Research

- Programs have developed/are developing
  - Sorghum
  - Algae
  - Perennial Grasses
  - Oilseed Crops

# Bioenergy

- Algal Bioenergy Production Opportunity
  - "agronomics" of algae production for oil/cellulose, etc. This program complements current activities in the GA project and these will be major issues if algal production progresses past small testing.
- Herbicide Response in Algal Activity
  - *Butryococcus* and *Nannochloris* algal strains for response to over 20 herbicides representing 16 modes of action in order to see if there is inherent herbicide resistance in the algae. If so, management of a pure culture of high-oil producing species might more easily be achieved with limited water resources being conserved due to the fact that draining algal ponds would be reduced. We have tried to be as diverse as possible to see a response and have created a screening system that we could use with other algae species.
  - We have noted some key herbicide families (Fatty Acid and Lipid Biosynthesis Inhibitors, Mitosis Inhibitors, Carotenoid Biosynthesis Inhibitors, and Photosynthesis Inhibitors (both Photosystem I and II) that have demonstrated a toxic response, particularly to *Butryococcus*. *Nannochloris* appears to be slightly more tolerant to these compounds.
  - We have developed a method for determining lipid content from these species and are now studying to see if the lipid content is altered when we apply any of the previously screened herbicides.

# Bioenergy

- Oilseed Crops Activity (Chevron Funded)
  - Annual oilseeds in cool season and warm season. Cool season in looking at agronomics on mustards, camelina, flax and safflower at nine locations. We have had excellent results with flax in Central and South Texas; yields are double what they were when we stopped producing flax in the 1970s; winter safflower has proven successful over most of the state. Warm season annuals include castor, sunflower, sesame and safflower. Castor has a broad adaptation as does sunflower. Sesame and warm season safflower have been less successful.
  - Castor breeding and testing- Steve Hague is collaborating with Dick Auld in identifying genetics related to salt and drought tolerance as well and cleaning up a low ricin castor, Brigham, for release.
  - Biofuel peanut- Peanut germplasm is being screened for oil content and crosses made with high-oil accessions. Charles Simpson is working on introgressing high-oil wild types with more agronomically acceptable peanut lines.
  - Perennial oilseeds - Evaluating BMPs for the potential oilseed feedstocks, Jatropha Curcas and Chinese tallow including row spacing, population, growth regulators, weed control, harvest and others.
  - Economic and environmental: Model simulations are being developed for several of the oilseed crops. Drs. Gentry, Hons and others have been evaluating the phytochemicals in several of the crops on soil borne fungi and other pests as well as work on determining carbon footprint.

# Bioenergy

- Perennial Grasses (Coordinated by Russell Jessup)
  - Pearl Millet-Napiergrass: Seeded yet sterile hybrids with introgressed cold-tolerance and apomixis from P. spp.
  - Perennial Sorghum: Sorghum bicolor x (S. propinquum, S. halepense, S. alnum).
  - Birdwoodgrass: Apomictic, seeded hybrids between inbred sexual Pennisetum ciliare & apomictic P. setigerum
  - Maidengrass: Miscanthus sinensis with improved southern U.S. adaptation.
  - Giant Miscanthus: Novel M. x g hybrid development with improved southern U.S. adaptation.
  - Switchgrass: Inbred line development
  - Bermudagrass-Stargrass: Dual-use, biomass/forage feedstock for erosion-prone lands.

# Bioenergy

- Sorghum Breeding and Development (Ceres)
  - Energy Sorghum
  - Sweet Sorghum
- Sorghum Agronomics (Ceres, Federal Funds)
- Sorghum Composition
- Wide Hybridization Platform (Opportunity)
  - Sorghum/sugarcane
  - Sorghum/other grass species