From:	Bill Rooney
To:	"j-young@tamu.edu"; "David Baltensperger"
Subject:	meeting this pm
Date:	Wednesday, August 26, 2009 8:12:00 AM
Attachments:	08.26.09 Energy Crop SCSC.pptx

Judy:

Attached are my four slides for the Hussey meeting this pm. These will serve as my handouts as well.

thanks for loading and getting it ready.

bill

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Energy Crops

TEXAS A&M UNIVERSITY
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Soil and Crop Sciences

- Algae Research - Herbicide Response
  - Butryococcus and Nannochloris algal strains screened against 20 herbicides (16 modes of action) to detect inherent herbicide resistance.
  - Herbicide resistance makes management of a pure culture of high-oil producing species easier. The screening system can be used with other algae species.
  - Butryococcus appears particularly susceptible, Nannochloris appears to be slightly more tolerant of the following herbicide families
    - Fatty acid and lipid biosynthesis inhibitors
    - Mitosis Inhibitors,
    - Carotenoid Biosynthesis Inhibitor
    - Photsynthesis inhibitors (Both photosystem I and II)
  - Developed methodology to determine lipid content from these species
  - Currently testing to determine if lipid content is altered by herbicide application

- Algal Bioenergy Production Research Opportunities
  - "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.

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- Oilseed Crops Activity (Chevron Funded)
  - Annual oilseeds in cool season and warm season.
    - 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.
  - Due to initial success in production and adaptation we expect expanded efforts in:
    - Flax
    - Castor: breeding for low ricin, and there are ***political, marketing, other grain contamination issues***
    - Jatropha; evaluating BMPs for the potential oilseed feedstocks, Jatropha Curcas and Chinese tallow
  - Economic and environmental
    - Model simulations are being developed for several of the oilseed crops.
    - Evaluation of phytochemicals in several of the crops on soil borne fungi
    - Determine the carbon footprint of these crops.

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- Perennial Grass Activities/Opportunities
  - 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. almum).
  - 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.

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- Sorghum (Ceres, Chevron, State, Federal)
  - Genomics and Breeding, includes line development, MAB, QTL analysis and gene cloning
    - Energy Sorghum
    - Sweet Sorghum
  - Agronomics: including population, harvesting, rotation, intercropping
  - Composition: NIR calibration curve development, routine composition testing to identify variation for divergent or specific selection
- Sorghum Wide Hybridization Platform (State)
  - Sorghum/Saccharum and other species
    - Introgression
    - New crop (vegetative and/or seed based)