

From: [Bill Rooney](#)
To: ["Steve Searcy"](#); ["James Richardson"](#)
Cc: ["Avant, Bob"](#); ["John Mullet"](#); ["bmccutchen@tamu.edu"](mailto:bmccutchen@tamu.edu)
Subject: FW: DARPA draft
Date: Wednesday, September 02, 2009 10:06:00 PM
Attachments: [GOAL I.doc](#)
[DARPA RD Plan 90209.doc](#)

Steve and James

Bob asked me to forward an "opportunity" for your input.

We have been in development stages of a grant proposal to DARPA as is outlined in the attached document DARPA RD Plan. This was submitted as a concept paper back in July; they have now asked for a more detailed proposal. The group working has felt that your expertise is important for Goal I (ie, harvest logistics and economics of production). Bob had some information from a previous grant, but we are trying to tailor more to the concepts described in both of these documents.

So, hopefully you are interested in contributing. What we need now is for you to review and edit the information on the Goal I document. Specifically, objective 3 to Searcy and Objective 4 to Richardson. As of now there is [REDACTED] annually (total) for three years for all the objectives in Goal I.

I'm sure you've got questions, and please feel free to contact either Bill M., John M, Bob or myself (979 220-1951).

Regards,

bil

Dr. William L. Rooney
Professor, Sorghum Breeding and Genetics
Chair, Plant Release Committee
Texas A&M University
College Station, Texas 77843-2474
979 845 2151

-----Original Message-----

From: Avant, Bob [mailto:bavant@tamu.edu]
Sent: Wednesday, September 02, 2009 8:17 PM
To: Bill Rooney
Cc: Mullet, John E.
Subject: Re: DARPA draft

I'll work on it tomorrow night.

Would one of you send the latest version to Searcy and Richardson for their input and provide background. This will be their first intro to the project. They both contributed to the document I sent John on Friday, but it was for a DOE proposal.

I am traveling until midnight and will be in meetings until 5 tomorrow. So I can't contribute until then

Sent from my iPhone

On Sep 2, 2009, at 6:50 PM, "Bill Rooney" <wlr@tamu.edu> wrote:

Bob:

I understand and agree. We need additional input on that (or have you write them).

Regards,

Bill

Dr. William L. Rooney
Professor, Sorghum Breeding and Genetics
Chair, Plant Release Committee
Texas A&M University
College Station, Texas 77843-2474
979 845 2151

-----Original Message-----

From: Avant, Bob [<mailto:bavant@tamu.edu>]
Sent: Wednesday, September 02, 2009 3:19 PM
To: Mullet, John E.; Bill Rooney; Stelly_David Stelly
Cc: McCutchen, Bill
Subject: RE: DARPA draft

Under the Project Deliverables section, I think we should include logistics and economics bullets. I won't have time until Thur evening on way back from Albuquerque to edit more. Have to prepare for that meeting by 9 am in morning.

Bob Avant
Program Director
Texas AgriLife Research
979/845-2908
512/422-6171 (Cell)
bavant@tamu.edu
<http://agbioenergy.tamu.edu>

-----Original Message-----

From: John Mullet [<mailto:jmullet@tamu.edu>]
Sent: Wednesday, September 02, 2009 8:06 AM
To: Avant, Bob; Bill Rooney; Stelly_David Stelly
Cc: McCutchen, Bill
Subject: DARPA draft

All,

I revised the front part of our proposal and provided space for the GOAL implementation plans/budgets we are developing.

Thanks,

John

High-Biomass Energy Crops for U.S. Energy Security

VISION: The Texas A&M University System (TAMUS) will create and deliver advanced energy sorghums and new energy crops through a novel, non-GMO, wide-hybridization technology platform. These unique energy crops will be sustainable, high yielding, widely adapted, drought tolerant, optimized for biofuels and biopower generation and will significantly improve U.S. energy security. Prototypic lines are available for immediate testing and use.

PHASE I REQUIRED RESOURCES: [REDACTED] [REDACTED].

Budget categories: personnel, instrumentation, supplies, costs associated with genomics, breeding, production site management, harvesting logistics, IP protection/management, travel, and indirect costs. A more detailed budget will be provided upon request.

PROJECT DELIVERABLES:

1. Energy sorghum production maximized in locations of national security importance using optimized management practices and harvest logistics.
2. Energy sorghum hybrids with increased yield (15-20dT/acre/yr) and optimized composition for advanced biofuels and biopower generation.
3. An integrated genomics-to-energy crop breeding technology platform that will enhance the rate of energy sorghum and wide hybrid energy crop improvement for 10+ yrs.
4. Novel wide hybrid energy crops and/or seed propagated versions of energy cane or miscanthus and an understanding of the genetic basis of wide hybridization.

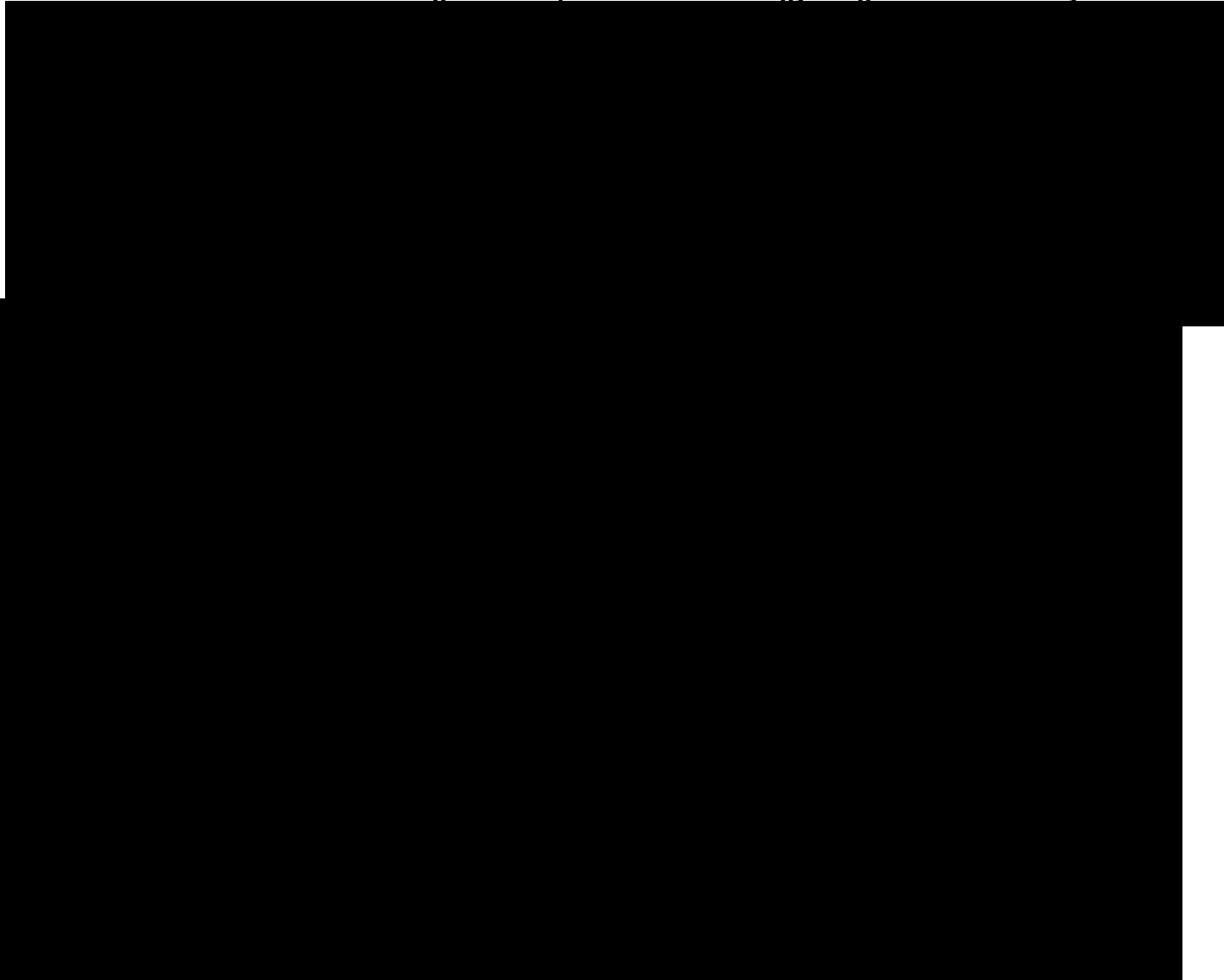
GOALS AND APPROACH:

- 1. Grow and optimize production of current energy sorghum hybrids at sites of importance to national security (including but not limited to Hawaii and Puerto Rico)*

[REDACTED]

[REDACTED]

2. Build a full-scale integrated genomics-to-breeding technology platform that will accelerate the rate of stable genetic improvement of energy sorghum and wide hybrids



3. Develop next generation energy crops using novel wide hybridization technology that enables sorghum to be crossed with energy cane and other energy grasses (Figure 3).

Wide-hybridization technology developed at TAMUS allows sorghum to be crossed with sugarcane and other C4 grasses that can increase yields by 20% or more. The resulting intergeneric hybrids have the potential to exhibit strong hybrid vigor and express unique combinations of useful traits from the species being crossed, such as large seed size or drought tolerance from sorghum, with perennial growth, cold tolerance, and/or high nitrogen use efficiency from other C4 grasses. This technology when fully developed will also allow mass-production of hybrid seed from crosses with energy canes (first time ever) reducing the cost of planting energy cane by at least a factor of ten, providing for the first time seed-based (or vegetative) propagation of wide hybrid energy crops, and potentially generating a novel suite of next generation energy grasses for advanced biofuels and biopower generation.

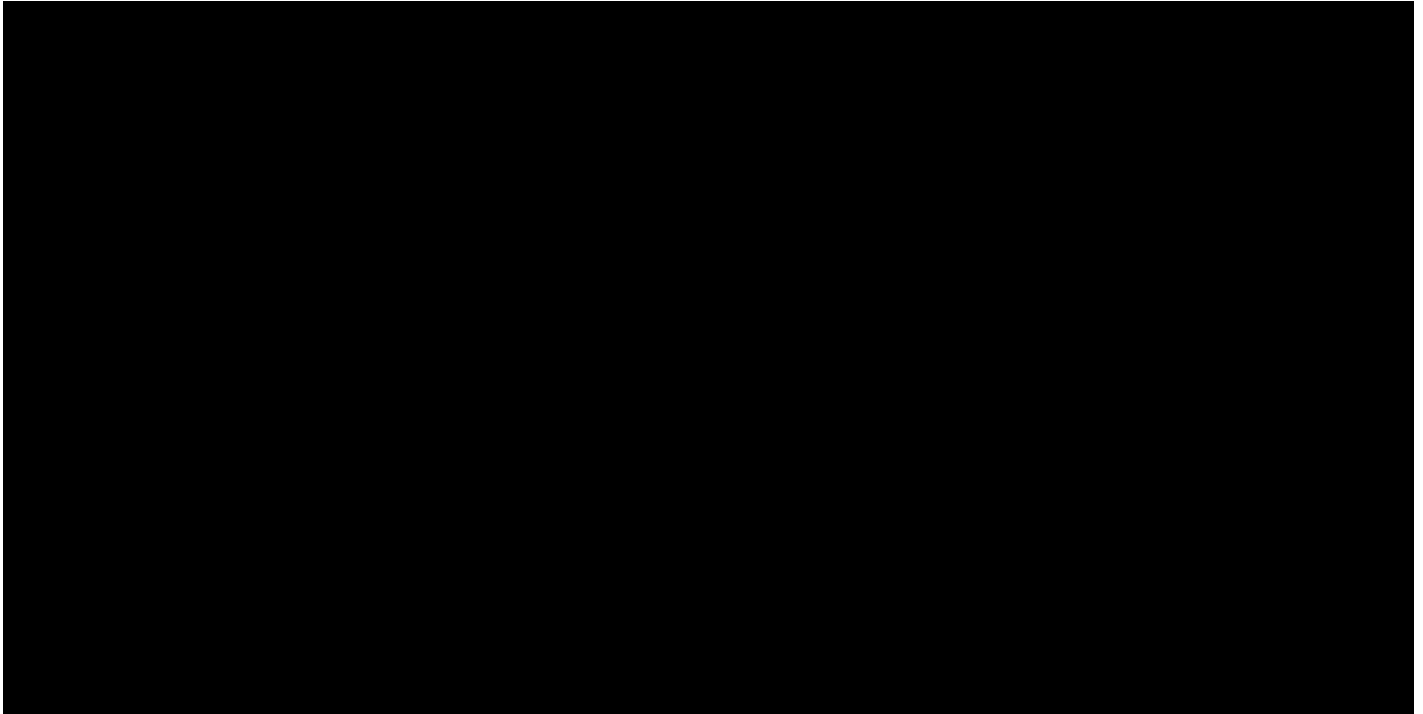
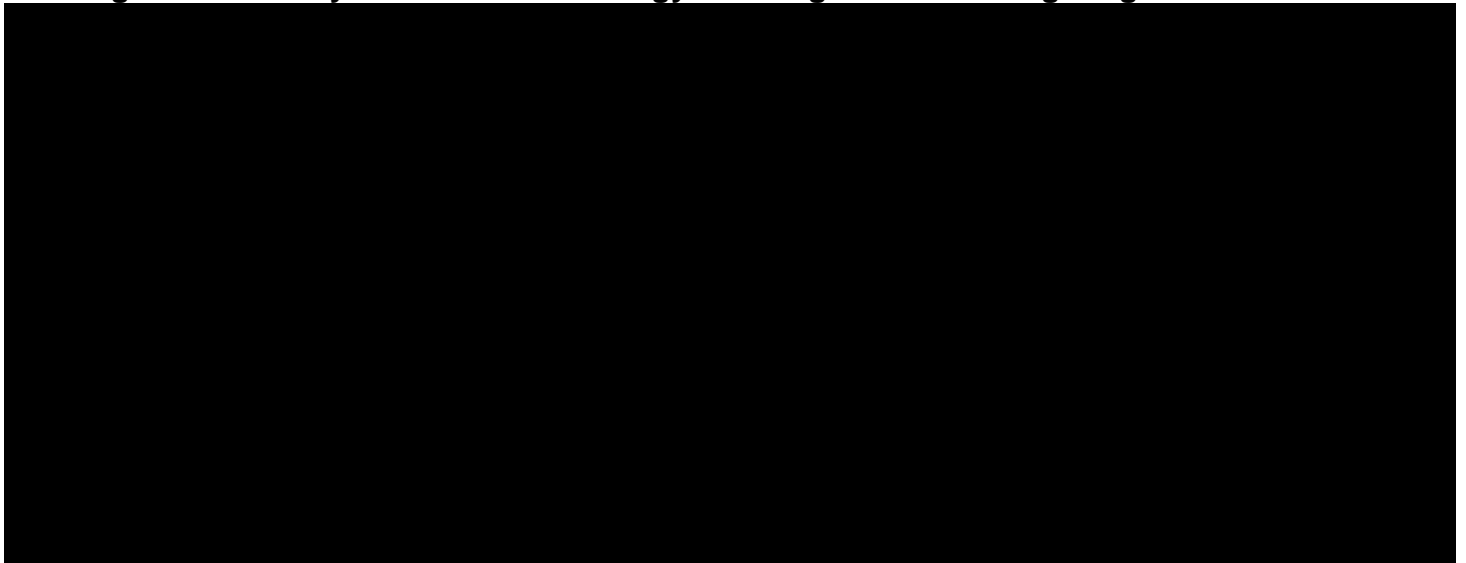


Figure 3. Wide hybridization technology showing cane fertilizing sorghum.



RESEARCH PLAN:

GOAL 1: Optimize energy sorghum production at sites of national security.
[Bob Avant, Bill Rooney - in progress.]

Deliverables:

Rationale/Approach:

Objectives:

Budget:

GOAL 2: Develop next generation energy sorghum by building and utilizing an integrated germplasm/genomics to breeding technology platform.

[John Mullet, Bill Rooney – in progress]

Deliverables:

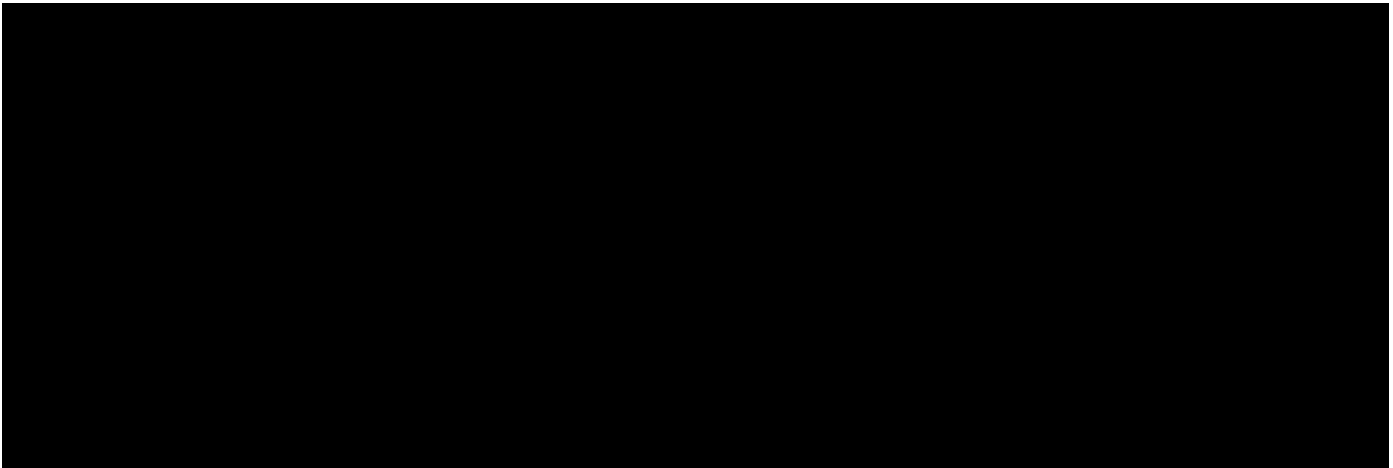
Rationale/Approach:

Objectives:

Budget:

Goal 3: Develop next generation energy crops using novel wide hybridization technology that enables sorghum to be crossed with energy cane and other energy grasses.

[David Stelly, Bill Rooney – in progress]



Project Objectives:

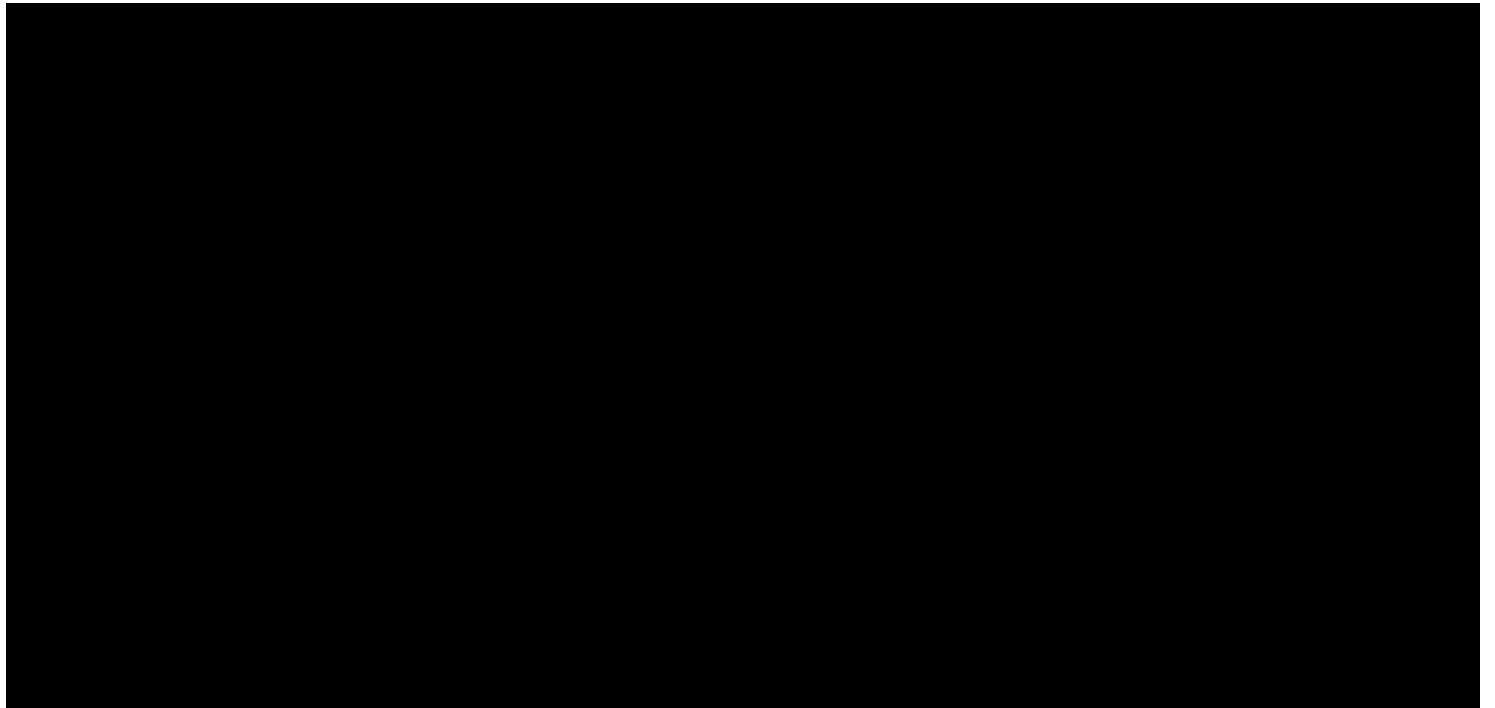
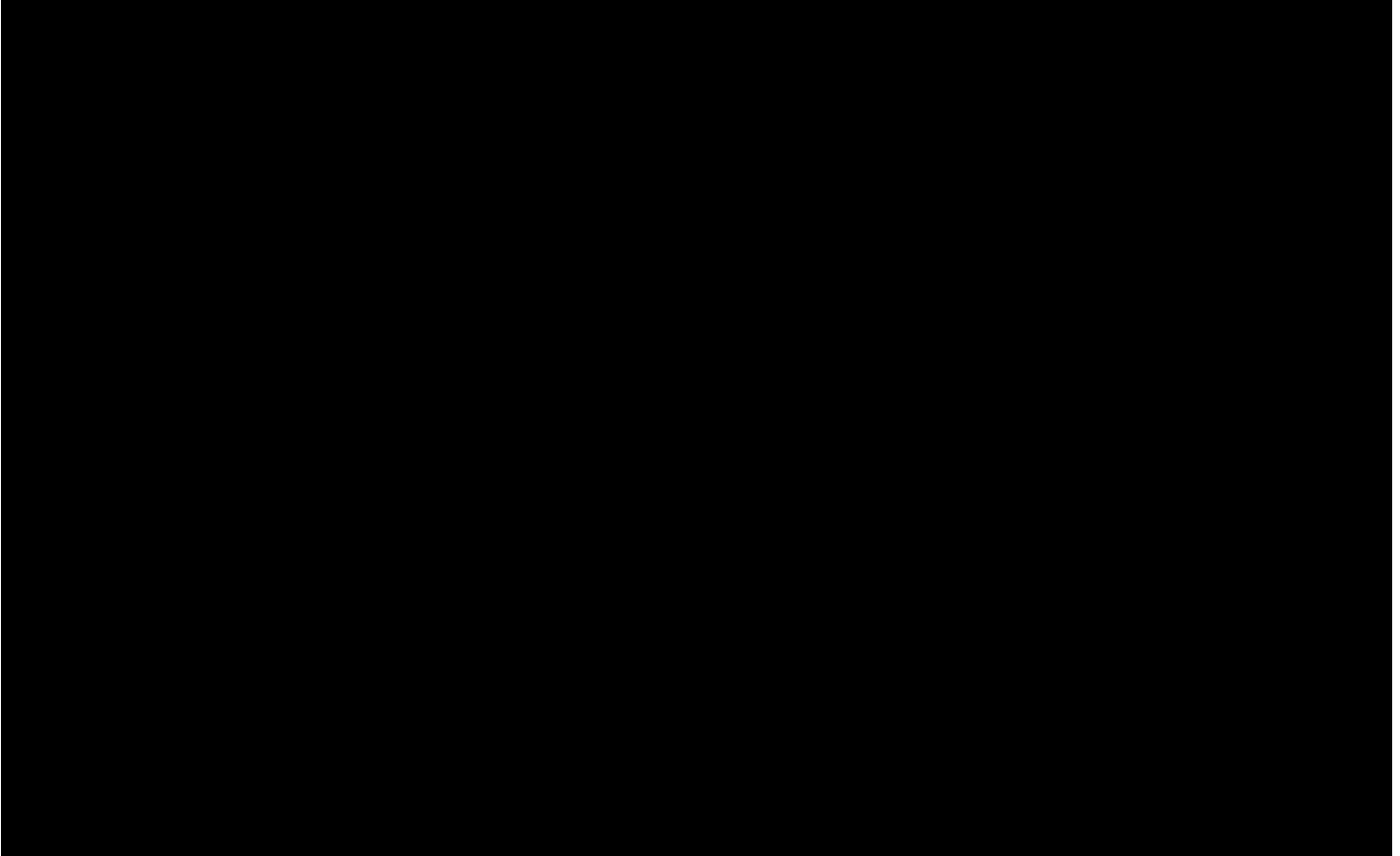
1. Production and selection of elite wide hybrids of sorghum/energycane and sorghum/miscanthus
2. Agronomic evaluation of intergeneric hybrids using vegetative propagated hybrids.
3. Use elite hybrids for introgression of desirable traits into both sorghum and energycane or miscanthus
4. Development of seed-based propagation systems for sorghum/energycane hybrids.
5. Molecular Characterization of iap and other important genes that influence intergeneric hybridization and recombination.

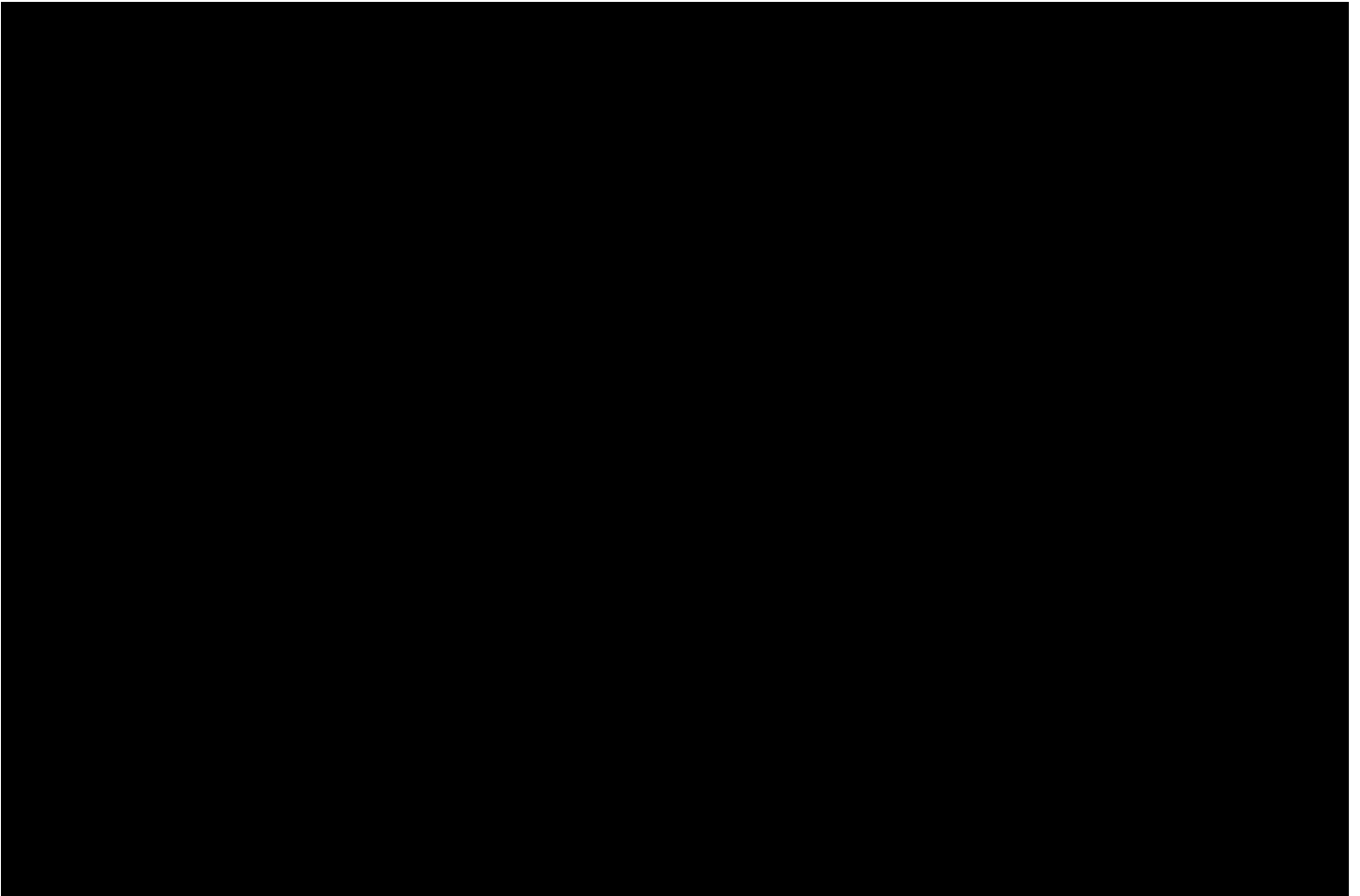
Deliverables:

1. Elite intergeneric hybrids with improved phenotypic performance for a variety of traits including but not limited to drought tolerance, sugar accumulation, and adaptation range.

2. Assessment of the value and range of production of these intergeneric hybrids.
3. Production of sorghum, energycane and miscanthus derivatives with traits derived from the complementary donor species.
4. Development of parental lines that optimize seed-based production of sorghum/energycane and/or sorghum/miscanthus hybrids.

Research Plan





[REDACTED]

[REDACTED]



