RFP Title:
Abiotic Stress Management

Proposal Manager’s Name:
Jackie Weiss

RFP Contact:
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Proposal Start Date:
10/1/2018

Completion Date:
9/30/2019

Proposal Deadline:
4/16/2018

Anticipated Decision Date:
7/20/2018

Action Team: Supply
Target Area: Sustainability
Program Goal: Sustainable Production
Road Map: Sustainable Production Practices - Advancing sustainability by developing and promoting advanced production practices and facilitating adoption of digital farming technology.

Track: Technical Solution (Creating competitive advantage for U.S. soy growers by differentiating soy offerings throughout the value chain, leveraging the latest technological advancements and innovations)

Milestone(s): Create soybean germplasms that contain new genetic sources of resistance to soybean diseases and tolerance to environmental stresses.

Audience: Public Researchers
Objective: Objective G: Public researchers will create innovation in soybean yield protection and yield improvement that can be incorporated into commercial products.

Stage: Technical Solution Stage 2 - Investigation Stage - Explore important problems, opportunities & potential solutions for feasibility

Innovativeness: Moderate (New but familiar market or solution)

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<tr>
<th>Description/Purpose of RFP</th>
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<td><strong>Current Issue/Opportunity:</strong></td>
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<td>Drought occurrences are the most severe abiotic stressor each year causing significant yield losses in rainfed areas of many regions. Most soybean farmers experience drought and heat stress for some period of time during July through September, often during the most critical period of seed development. Drought is the major cause of year-to-year variation in soybean seed yield throughout the soybean-growing region. Identification of the genetic mechanisms</td>
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of improved varieties as well as appropriate management practices for tolerating periods of drought is critical to sustaining soybean production. Incorporation of these drought tolerance traits into regionally adapted, high-yielding soybean germplasm to protect against drought related yield loss, will provide improvements that can result in maintenance of economic yields, even when drought occurs during critical seed production periods. There are also many regions where flooding during the early stages of plant development can result in substantial yield losses. Similar genetic approaches to develop flooding tolerance in soybean for these regions will be very beneficial.

**Current Market Environment:**

Drought stress is the major cause of year-to-year soybean yield variation in rain-fed regions of the U.S. soybean growing area (Zipper et al., 2016, Env. Res. Ltr. 11; Toker et al., 2007, Genet. Resour. Crop Evol. 54:1781). Due to only 8% of the U.S. soybean production acreage being irrigated, irrigation is not a viable option for overcoming drought in much of the country. Flooding early in the growing season, often experienced in areas of the Mississippi Delta where soybeans are grown in rotation with rice on zero grade land, can result in 20-40% soybean yield loss. These stresses have been more prevalent and severe with the climate change that has developed over the past decade and represents the major production constraint that soybean producers must deal with each year.

**Proposal Direction:**

Various plant physiological mechanisms under genetic control have been identified that allow soybean plants to tolerate drought for short periods. Continued identification of new sources of drought and flooding tolerance will protect soybean yield potential from the ravages of these environmental stresses. This RFP seeks proposals that identify new physiological mechanisms of drought and flooding tolerance, as well as new sources of genetic variation for these traits. Once these traits and the genes responsible have been identified, proposals should include objectives that include incorporating those genes into adapted, high-yielding soybean germplasm, and means to demonstrate to farmers the value of improved varieties and practices in terms of sustainability, improved yield protection, and economic viability.

**Proposal Submission Instructions:**

To request a proposal worksheet to assist you in developing your proposal in USB’s correct format, please contact:

Connie Davis; codavis@smithbucklin.com

For strategic and project specific questions, please contact:

Jackie Weiss; jweiss@smithbucklin.com

For budget and compliance questions, please contact:

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