# CleanSEED
Project Management Plan

This project is a collaboration among multiple sweetpotato producing states. Project Director (PD) Dr. Mark Shankle (Mississippi) and Co-PD Dr. Lorin Harvey (Mississippi) will oversee all grant project activities. Also, a Project Coordinator (PC) will be included to work with the PD and Co-PD. Each collaborating state has a Principal Investigator (PI) who will oversee their state's budget and reporting. Since this is a multi-state research and Extension collaboration, project objectives will be completed by team members across states ("Objective teams"); therefore, a lead person(s) has been assigned to each individual objective to coordinate related activities. Dr. Donna Peterson (Mississippi) will serve as the project's evaluator. The following **organizational chart** visually represents the structure of the project (blue represents lead university, orange represents state/partner teams with PIs/Co-PIs), green represents collaborators).
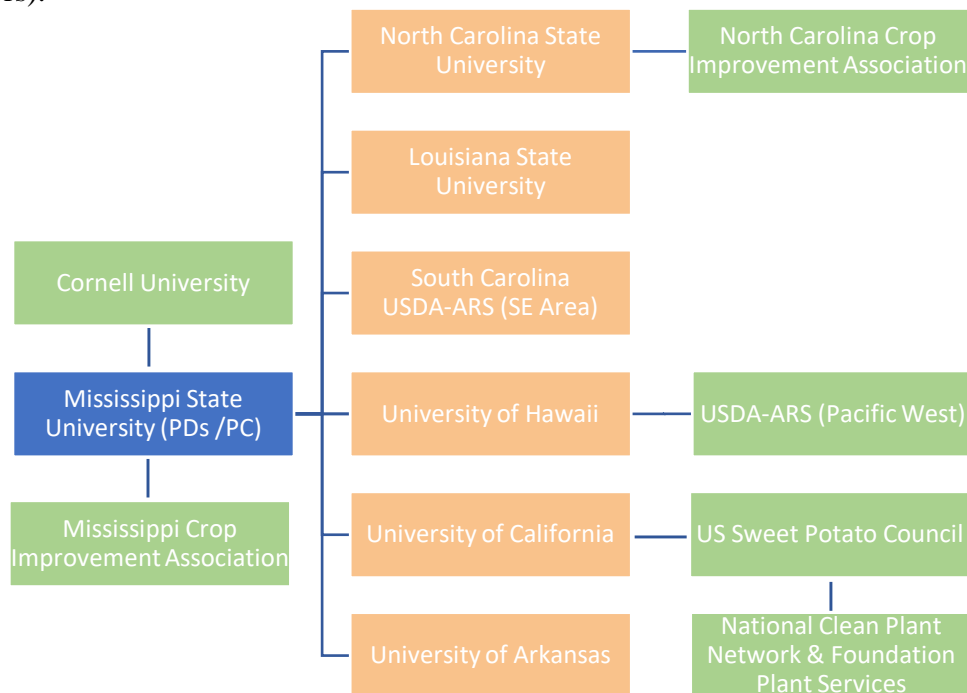
Description of how the project will be governed (project coordination and management):
Mississippi: Mark Shankle PD, Lorin Harvey Co-PD, and a PC (TBA) will be the team that provides direct oversight and accepts responsibility for project implementation and management (budget, personnel, reporting, etc.). The PDs and PC will coordinate the activities of all objectives and ensure that all CleanSEED partners adhere to the project management plan and timeline of milestones. The PIs representing each state team include *North Carolina:* Christie V. Almeyda, *Louisiana:* Jeffrey A. Davis, *South Carolina:* Kai-Shu Ling, *Hawaii:* Michael Kantar, *California:* C. Scott Stoddard, and *Arkansas:* Sathish Ponniah. Key Collaborators that link to existing programs include state crop improvement associations, the National Clean Plant Network (NCPN), Foundation Plant Services (FPS), and U.S. Sweet Potato Council (USSC).

Plan for staying on track with milestones/objectives: Donna Peterson (Co-PI) will serve as the project's evaluator to oversee activities related to process evaluation (comparison of actual vs. planned activities, project reach, and outputs) and outcome evaluation (desired outcomes are industry engagement, common terminology and standards, improved BPs, increased knowledge of CFS, reduced barriers to adoption of CFS use/practices, actual use of CFS and BPs, improved quality and yield, increased profit, and sustainability). In addition, we will hire a technical writer to assist with preparing/publishing the CleanSEED Production Manual. The technical writer will meet with "Objective teams" to make sure data collection, analyses, interpretation, and eventual presentation are delivered in a user-friendly format for use in the production manual and other outreach materials. We will also include a consultant with knowledge, experience, and a desire to help make this an exceptional project with perpetual meaning for the U.S. sweetpotato industry. The evaluator will work with the PD, Co-PD, PC, state PIs, "Objective team" leaders, and technical writer to track project progress and deliverables. Given the nature of this multi-state project, a CleanSEED Project Partner Committee (CPPC) inclusive of all state PIs, "Objective team" leaders, and project collaborators will meet virtually each month on a recurring schedule (second Thursday every month) to provide updates, new developments, and future timeline actions. An Excel spreadsheet that contains the project milestones chart included in the Project Timeline (Appendix B) and milestones activity track chart (Table 1) will be available in a shared drive (accessible by invitation) so the leaders for each objective can record progress. Progress will be reviewed at CPPC monthly meeting so that quarterly goals can be tracked to make sure "Objective teams" are reaching goals in a timely manner. More specific management activities are identified in the administrative timeline (Table 2).

Table 1. CleanSEED Milestones Activity Track

	Milestone (Activity)	Year 1				Year 2				Year 3				Year 4			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Objective 1	1.1 Prepare CFS terms/standards options with CleanSEED Project Partner Committee (CPPC)	X	X														
	1.1 Present CFS terms/standards options to CleanSEED Advisory Group (CAG)		X	X													
	1.1 Meet with Association of Official Seed Certifying Agencies (AOSCA) and present terminology			X	X												
	1.1 Work with state certifying agencies to update policies to reflect new terminology					X	X										
	1.1 Unify NCPN-SP Clean Plant Centers terminology					X	X	X									
	1.1 Distribution of new terminology Extension material to producers						X	X	X	X	X	X	X	X	X	X	X
	1.2 Meet with Objective Teams to incorporate research results into extension material		X		X		X		X		X		X		X		X

Objective	Task	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	All: Combine information, BPs, and SOPs into production manual							X	X	X	X	X	X	X	X	X	X
Objective 2	2.1.1 Propagation effects starting from true seed			X	X	X	X	X	X								
	2.1.2 Sampling, DNA isolation, and sequencing for somatic mutations	X	X	X	X												
	2.1.2 Phenotype Beauregard and identify mutations					X	X	X	X	X	X	X	X	X	X	X	X
	2.2.1 Evaluate greenhouse (GH) conditions to maximize plants	X	X	X	X	X	X	X	X								
	2.2.2 Evaluate GH storage conditions to harden plants	X	X	X	X	X	X	X	X								
	2.2.3 Collective samples and determine BPs for GH virus testing		X	X	X		X	X									
	2.2.4 Develop GH scouting plans for insect and vectors	X	X	X		X	X	X									
	2.2.4 Evaluate sprayer technology							X	X								
	All: Prepare BPs, SOPs, present results of greenhouse/lab objectives					X	X			X	X	X	X	X	X	X	X
Objective 3	3.1.1 Develop/test spectral set-up	X	X	X	X												
	3.1.1 Obtain spectral data	X	X	X	X	X	X	X	X	X	X	X	X	X			
	3.1.1 Define spectral signatures													X	X	X	X
	3.2.1 Collect samples for HTS		X	X	X		X	X	X		X	X	X		X	X	
	3.2.1 Extract and sequence RNAs			X	X			X	X		X	X				X	X
	3.2.1 Conduct bioinformatic assays				X	X			X	X		X	X			X	X
	3.2.2 Develop real-time RT-PCR					X	X	X	X	X	X	X	X	X	X	X	X
	3.2.3 Develop field-based test					X	X	X	X	X	X	X	X	X	X	X	X
	3.3.1 Weed survey for virus hosts			X	X			X	X								
	3.3.1 Viruses identified					X	X			X	X						
	3.3.1 Tolerance/control studies			X	X			X	X								
	3.4.1 Transmission efficacy trials					X	X	X	X	X	X	X					
	3.4.1 Identify on-farm sites	X	X														
	3.4.1 Field research/demo plots			X	X	X		X	X	X		X	X	X			
	All: Prepare BPs, SOPs, and present results					X	X			X	X	X	X	X	X	X	X
Objective 4	4.1.1 On-farm demonstrations			X	X			X	X			X	X			X	X
	4.1.2 Compile yield/economic data					X	X			X	X			X	X	X	X
	4.1.2 Conduct cost-benefit analysis									X	X	X	X	X	X	X	X
	4.1.2 Present Economic results											X				X	
	4.2.1 Communicate information to stakeholders at meetings/field days		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	4.2.2 Launch CleanSEED project information on US Sweetpotato Council website	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	4.2.3 Extension efforts via diverse platforms	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Activity																
4.2.4 Stakeholder surveys to gauge perception and adoption	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.2.5 Plan and record "Journey of CleanSEED" video				X	X	X	X	X	X	X	X	X	X	X	X	X
4.2.5 Publish and circulate video									X	X	X	X	X	X	X	
4.2.6 Distribution of CleanSEED production manual														X	X	X

Tracking color code	Not on track	Sort of on track	On track	Completed

The PIs of each state will be responsible for managing the team's budget and personnel as well as compiling state progress reports by their due dates.

Table 2. Administrative Timeline

Date(s)	Event	Action
TBA	Award announcement	• Publicize award • Advertise for Project Coordinator
September 1, 2022	Projects begin	• Negotiate and execute contracts/subcontracts • Train CPPC on data management plan (DMP)
Continuous (according to seasonal determinants and schedules)	Implement project plans based on objectives and corresponding activities	• "Objective teams" conduct experiments; coordinate projects with team members and stakeholders; collect data; produce outputs and outcomes • Develop and disseminate Extension-related materials; track dissemination; assess human-subjects related outcomes
Semi-annually	Project Coordinator and Technical Writing Assistant meet with "Objective teams"	• Assemble results from project objectives into user-friendly Extension and outreach documents.
Continuous	Conduct process and outcome evaluation	• Collect, analyze, and report data to assess project implementation metrics • Collect, analyze, and report data to assess project benefit/outcome metrics
Continuous (as relevant data are collected and analyzed)	Disseminate findings through website, field-days, professional presentations, and publications	• Develop dissemination plan • Track dissemination
Monthly	Hold conference calls with CPPC	• Schedule monthly conference calls

		• Discuss project progress (activities for each objective and partner/collaborator) • Discuss barriers and solutions • Discuss plans for upcoming month
Summer (June/July)	Hold virtual meetings with CleanSEED Advisory Group (identified below)	• Review and discuss overall project progress, outputs, outcomes, and work plans • Obtain approval of work plans
Winter (January/February)	Attend U.S. Sweet Potato Council National Convention Hold face-to-face meeting with CleanSEED Advisory Group	• Review and discuss overall project progress, outputs, outcomes, and work plans with advisory group • Obtain approval of work plans from advisory group • Translate project progress and outcomes to broader group of stakeholders through presentations at convention
Two months before NIFA report due	"Objective teams" compile annual progress reports and work plans based on work to date	• "Objective teams" compile data and develop work plans for the upcoming year
One month before NIFA report due	"Objective teams" submit annual progress reports to PD/Co-PD/PC/Evaluator	• Compile "Objective teams" annual progress reports and work plans • Compile overall project metrics (e.g., process, outputs, outcomes) • Develop annual report for NIFA • Send overall annual report to CPPC and advisory group for review
As scheduled	Report to NIFA	• Submit report to NIFA

Plan and timeline for recruitment and functioning of advisory groups: A CleanSEED Advisory Group (CAG) consisting of a balanced number of industry stakeholders from multiple states will be formed to engage in the project. The lead PI from each state will be responsible for recruiting stakeholders from their respected state to be a member of CAG. Key stakeholders that participated in the grant planning workshop to develop CleanSEED project objectives will be considered a priority invite as a CAG member. Current members that have confirmed to participate in the CAG are listed in Table 3. The CAG will meet with PIs representing each state twice a year (summer and winter) to provide executive oversight and direct input. The summer meeting will be virtual, and the winter meeting will be face-to-face at the USSC National Convention. At each meeting, objectives and results from the CleanSEED Project will be presented, evaluated, and refined as needed. Notes will be taken during these meetings to document progress and the nature of discussions. The PD, Co-PD, and PC will oversee the scheduling and coordination of these meetings, while the Evaluator will conduct process and outcome evaluation to document desired metrics, outputs, outcomes, and additional needs.

Table 3. CleanSEED Advisory Group (CAG)

Member	Affiliation
Terris Matthews	AR grower/packer/shipper
Matthew Alvernaz	CA clean seed producer/grower
Taiwan Gu	HI grower
Todd O'Neal	LA clean seed producer/Black Gold Co.
Greg Flint	MS Crop Improvement Association
Phillip McKibben	MS Crop Consultant
Jennifer Daniels	NC certified clean seed producer/grower
Dustin Auman	NC Crop Improvement Association

Intellectual property management: The lead university, Mississippi State University (MSU), has an operating procedure relative to intellectual property (OP 76.01) that defines intellectual property as "any patentable materials, Plant Intellectual Property, copyrighted materials, trademarks, software, art and creative endeavors, know-how, and trade secrets, whether or not formal protection is sought." Any intellectual property developed through this project will be reported to MSU's Office of Technology Management. Collaboration with researchers at other universities or others outside MSU may lead to intellectual property that is jointly owned by MSU and the other persons or their employers. Partners on this project have a history of collaboration with one another and will cooperate in determining protection and commercialization of jointly owned intellectual property. The operating procedure notes that grants between external sponsors and MSU in which intellectual property is produced may contain provisions with respect to disposition of rights to the intellectual property. For example, the sponsor may specify that the materials are placed in the public domain; claim reproduction, license-free use, or other rights, or assign all rights to MSU. An Intellectual Property Advisory Committee arbitrates and recommends final decisions concerning ownership of intellectual property and assists in mediating and resolving any disputes between MSU and developers. If intellectual property is determined to be owned by MSU, the developer will execute an assignment of rights to MSU.

Strategy to become self-supporting by the end of the project period: Beginning with the end in mind is important. Therefore, multiple elements comprise our strategy to become self-supporting. First, producer/grower stakeholders must perceive the activities conducted in this project as addressing priority issues and needs. Through input from the CAG, CPPC, stakeholder surveys, and outcome evaluations, we will gather information needed to ensure that priority issues continue to be addressed. Responsiveness to stakeholder needs builds trust. A second element in making this project self-supporting is credibility. Project evaluation will enable us to document success in achieving the desired outcomes/benefits and contribute to that credibility. Disseminating our research and evaluation findings through peer-reviewed publications and conference presentations also enhances credibility. Third, buy-in from the sweetpotato industry will be critical. Potential users of the information developed through this project must see how it can be practiced in the real world. If this project is successful in developing common terminology across states, the manual of BPs for production of clean seed is widely disseminated through various education and outreach activities, and the economic analysis demonstrates the benefits of CFS, industry buy-in will follow. Fourth, strong collaboration with additional entities (e.g., National Clean Plant Network, U.S. Sweet Potato Council, state sweetpotato organizations,

state crop improvement associations, state Extension Services) will be essential to support integration of the BPs into the industry. These entities are key partners in this project. Additional strategies for becoming self-supporting will be discussed in meetings with the CAG and CPPC, since early and regular planning will help increase the likelihood of self-support and sustainability. Clearly identifying roles of different partners in the work of making the project self-supporting will be important.