Institutional Response Matrices:
Southern Public Plant Breeding Survey

The Institutional Response Matrices were developed as a companion document to the report, *A Landscape Assessment of Southern Public Breeding Programs*. The matrices provide a consolidated view of institutional survey responses from public plant breeding programs across the Southern region and served as the primary source material for the analysis, findings, and recommendations presented in the report.

Because institutions provided information in varying levels of detail and format, responses were reviewed and standardized to facilitate comparison across states and territories. Efforts were made to preserve the intent and substance of each response while organizing information into common themes and categories. In some cases, responses were condensed for clarity or consistency; however, no attempt was made to alter the meaning or context of the information provided.

The purpose of the matrices is to provide a transparent reference that allows readers to examine the underlying information supporting the report's conclusions. While the report focuses on regional themes, emerging trends, and key observations, the matrices preserve the diversity of institutional circumstances, program structures, and state-specific considerations reflected in the survey responses.

These matrices are intended as an analytical reference document rather than a verbatim transcript of survey submissions. Together with the report, they provide a regional snapshot of public plant breeding capacity, infrastructure, succession planning, germplasm stewardship, funding support, and cultivar deployment systems across the Southern United States and its territories. It is anticipated that this document will serve not only as supporting material for the current assessment but also as a baseline resource for future evaluations of regional and national public plant breeding capacity.

Q1. What are the crops and commodities including the scale of the industry served, acreage impacted, share of state acreage from cultivars of impacted program, and certified seed adoption rate?

State/Territory	Reported commodities / scope	Reported impact / adoption
Alabama	Peanuts, cotton, soybean, wheat/feed grains, other agronomic crops, forages/cover crops, blueberry, horticulture.	Strongest quantified impact is peanuts: 175,000 acres statewide, about 70,000 acres planted to AU varieties. Forages/cover crops: 1.5M acres, about 300,000 acres planted to AU germplasm. Other commodities largely report 0 acres planted to AU varieties or emerging germplasm impact.
Arkansas	Cotton, rice, soybean, blackberry, table grape, southern pea.	Rice is the clearest major impact: AAES rice lines make up 25-30% of Arkansas rice acreage and about 310,000 acres in 2025. Fruit varieties have large out-of-state and worldwide impact. Southern pea impact is limited in-state but 2,000-3,000 acres in the southern U.S.
Florida	Forages, fruit/vegetables, agronomic crops, ornamentals, forestry/specialty crops, including citrus, sugarcane, turfgrass, pine, tropical foliage, and others.	Provides broad statewide acreage and farm-gate values for many commodities, including bahiagrass, citrus, sugarcane, turfgrass, pine, ornamentals, and vegetable crops. Does not consistently identify acreage planted to UF cultivars.
Georgia	Alfalfa, blueberry, citrus, forage grasses, muscadine grapes, ornamentals, peach, peanut, pecan, soybean, turf, wheat.	Peanut represents the largest documented impact, with UGA varieties accounting for approximately 90% of Georgia runner peanut acreage (910,000 acres) and 100% certified seed adoption. Additional impacts include forage grasses (510,000 acres), soybean (170,000–300,000 acres with 10–30% cultivar share), blueberry (22,000 acres with ~30% cultivar share), pecan (160,000 acres), and turfgrass, where UGA cultivars account for approximately 50% of Bermudagrass acreage.
Kentucky	Tobacco, wheat, forages/pasture plants, specialty small grains, sorghum, cereal rye, winter oat, chia, tomato.	Tobacco was formerly dominant but not being replaced due to sector shrinkage; nearly all 29,400 acres believed linked to certified seed from the program. Wheat: 330,000 acres, $147M in 2025, strong commodity association support. Specialty grains are smaller acreage.
Louisiana	Rice, sugarcane, wheat/oats, sweet potatoes.	Provides concise crop acreage: rice about 400,000 LA acres plus regional acreage; sugarcane about 520,000 LA acres; wheat/oats about 10,000 LA acres; sweet potatoes about 7,000 LA acres with licensing in Europe.
Mississippi	Cotton, corn, soybean, rice, peanut, horticulture crops.	Provides statewide acreage: cotton 300,000; corn 500,000; soybean 2.4M; rice 100,000; peanut 20,000; horticulture 50,000. No explicit breeding-program cultivar impact or adoption reported.
North Carolina	Sweetpotato, tobacco, Virginia-type peanut, blueberry, strawberry, tomato, ornamentals, small grains, cotton, corn, soybean, and turfgrass. Program includes major commodity crops, specialty crops, ornamentals, and emerging turfgrass releases.	Sweetpotato: 100,000 acres, ~90% NC State cultivars, 100% certified seed for early generations. Tobacco: 120,000 acres, ~80% NC State cultivars, 100% certified seed. Virginia-type peanut: 120,000 acres, ~90% NC State cultivars, 100% certified seed. Blueberry (9,000 acres), strawberry (2,000 acres), and tomato (3,500 acres) report more limited cultivar share. Small grains serve approximately 400,000 acres, primarily through germplasm and limited cultivar development. Cotton (400,000 acres), corn (900,000 acres), and soybean (900,000 acres) are supported primarily through germplasm development and pre-breeding activities. Ornamentals are the program's largest royalty generator, and a new turfgrass program has recently released zoysia grass and St. Augustine grass cultivars.
Oklahoma	Wheat, turfgrass, ornamentals.	Wheat is the clearest impact: about 70% of Oklahoma wheat acreage planted to OSU varieties. Turfgrass has substantial visibility in collegiate/professional fields, including FIFA World Cup surfaces. Ornamental program is emerging with state and nursery support.
Puerto Rico	Vegetables, legumes, tropical staples, specialty crops: pumpkin, pigeonpea, dry beans, sweet	Reports 15,000-25,000 acres in intensive vegetable production within 500,000 acres farmland. Estimates 10-30% of vegetable acreage and up to 50% of staple crop

	corn, sweet chili pepper, cassava, sweet potato, coffee.	systems influenced by AES germplasm/evaluation/extension. Certified seed adoption is limited, especially vegetatively propagated crops (<10%).
South Carolina	Peach, soybean, oats, winter pulse crops, mustard greens, snap beans, cantaloupe, turnip greens, watermelon, collard greens.	Provides crop-by-crop table-style metrics. Examples: peach 18,000 acres; soybean line Paul Cheraw 2,000 acres and 50% share/adoption; oats Graham 1,000 acres and 100% share/adoption. Several vegetable crops report acreage but N/A for adoption.
Tennessee	Soybean and wheat, with emphasis on UT soybean breeding and winter wheat.	Soybean: 1.55M acres statewide and $683M production value; about 5,387 acres planted with UT-developed varieties in 2025; direct producer revenue estimated at $2.3M and broader economic impact at about $20.8M. Wheat: 278,898 acres planted, $103M production value; market share still being compiled.
Texas	Very broad portfolio: cotton, corn, wheat, sorghum, oats, hemp, rice, sugarcane, peanuts, forage legumes, perennial grasses, hibiscus, turfgrass, cowpea, guar, potatoes, fruits, vegetables, nuts, ornamentals, specialty crops.	Describes millions of acres served statewide. Potatoes, wheat, and turf are largest royalty/licensing income generators. Public cultivars historically represent substantial share in selected commodities, with strong certified seed adoption where regional adaptation and quality advantages exist.
Virginia	Wheat, barley, soybean.	Reports statewide acreage: wheat 241,979; barley 56,000; soybean 578,852. Combined value over $300M per year. Virginia Crop Improvement Association releases program varieties.
Virgin Islands	Cucumber, sorrel, watermelon, sweetpotato, dragonfruit.	Serves local farmers operating at 5 acres or less, supplying local retail grocery and farmers markets.

Q2. Does your AES align with, complement, and support private sector common areas of need?

State/Territory	Classification	Notes
Alabama	Yes	Strong crop variety testing program; research farms located across major soil and climate conditions.
Arkansas	Yes	Rice and fruit are most aligned; soybean has been catching up; cotton germplasm shared with industry partners.
Florida	Yes	
Georgia	Yes, gap-filling role	Breeding focuses on crops with limited private regional breeding; germplasm and varieties are licensed to private sector.
Kentucky	Commodity-specific	Tobacco historically aligned; cereal rye of interest to bourbon industry; wheat, fescue, and other crops focus on grower needs.
Louisiana	Yes, through licensing and agreements	Contracts to license herbicide-resistant rice and wheat; rice cooperative agreement with Horizon Ag.
Mississippi	Yes	
North Carolina	Yes, strategic pre-breeding role	Focuses on crops relevant to NC; for industry-served crops, emphasis is placed on pre-breeding activities supporting established private breeding programs.
Oklahoma	Yes	Wheat, turfgrass, and ornamentals are key points of alignment.
Puerto Rico	Yes, niche/enabling role	AES fills gaps for tropical adaptation, resilience, smallholder systems, organic production, and orphan/specialty crops not prioritized by private companies.
South Carolina	Yes, but needs strategy	Alignment exists, but respondent identified a need for a strategic plan to engage private sector more efficiently.
Tennessee	Yes, strong gap-filling rationale	Supports licensing and distribution; fills private-sector gaps in conventional/non-GMO soybeans and wheat, specialty oil profiles, disease resistance, and public germplasm.
Texas	Yes, broad and strategic	Addresses pre-competitive, region-specific, specialty/minor crop, low-input, and long-term trait needs; partners for testing, licensing, and seed distribution.
Virginia	Yes, demand-driven	Most public varieties are released at the request of private industry.

Virgin Islands	Partially relevant	Alignment described mainly through undergraduate research and workforce development

Q3. How many breeders, including college-affiliated USDA ARS breeders and breeding adjacent faculty are affiliated with your SAES? (Consider early-generation vs. advanced-generation capabilities; dependance on ARS labs or other partners for marker screening, genome selection, end-use quality; impacts due to loss of ARS positions).

State/Territory	Capacity	Breeding-adjacent Faculty	Capabilities / ARS or other partners	Notes
Alabama	5	4 breeding -adjacent faculty		
Arkansas	6		Emerging collaboration with USDA-ARS rice breeders.	Six plant breeders: cotton, soybean, vegetable, fruit, and two rice breeders.
Florida	39			
Georgia	17	18 breeding-adjacent faculty		
Kentucky	4	10 breeding-adjacent faculty		
Louisiana	7		ARS partnership in sugarcane.	Plant breeders: Rice-2; sugarcane-2; wheat-2/1; sweet potatoes-1
Mississippi	4			
North Carolina	22	Extensive breeding-adjacent and commodity expertise across horticultural and agronomic systems	Broad early- and advanced-generation capability across commodity, specialty, ornamental, turfgrass, forestry, and bioenergy crops	Very diversified breeding portfolio, spanning major commodities, specialty crops, ornamentals, turfgrass, forestry, and emerging crops
Oklahoma	3		USDA-ARS collaboration on peanut varieties	
Puerto Rico	4		High reliance on USDA and retired/emeritus capacity; active institutional capacity appears smaller than reported total.	Six breeders: two retired, two USDA, two UPRM, one of whom is in a crop management position.
South Carolina	12		Some USDA-ARS storage/data relationships for vegetable germplasm.	
Tennessee	2	4 breeding-adjacent faculty	Whole-genome genotyping relies on USDA-ARS Beltsville. Former ARS soybean breeder position at WTREC is vacant with no plans to fill.	Soybean program has in-house early- and advanced-generation capability and marker-assisted selection.
Texas	36	Supported by faculty in genetics, gene editing, crop physiology, agronomy, extension, pathology, entomology, economics, end-use quality, and soil sciences.	Programs span early and advanced generations; USDA-ARS and external collaborations.	Supported by institutional genomics, phenotyping, data science, and end-use quality capacity.
Virginia	2			
Virgin Islands	3	One breeder also doubles as a physiologist; Programs supported by one agronomist.	Working on early generation to advanced material development; both limited in scope	Discussions are ongoing on how to enhance support systems for breeder-material development

Q4. What new hires are being planned in the next year or two that are being directed to classical plant breeding?

State/Territory	Planned hires
Alabama	None
Arkansas	One vacant plant breeding position and one soon-to-be vacated position. Institution is considering classical breeding roles, genomic/phenomics positions, or a combination.
Florida	Three planned hires: forage breeding, specialty crop/ornamental plant breeding, and lettuce breeding.
Georgia	None, except replacements for existing breeding positions.
Kentucky	Recently hired a horticulture breeder. Wheat breeder retirement may prompt request for another breeding position but not yet proposed or approved.
Louisiana	None
Mississippi	None
North Carolina	Planned hires include sweetpotato breeder, ornamental breeder, and berry breeder positions
Oklahoma	Perhaps one wheat breeding hire to replace current person.
Puerto Rico	Plan existed to hire one breeder with 75% teaching and 25% research appointment, but recruitment is frozen.
South Carolina	None

Tennessee	Recently hired new soybean breeder. Potential wheat breeder and horticultural crop breeder hires are under discussion but not approved.
Texas	Hiring needs evaluated continuously. Replacement or strategic hires are directed toward maintaining or strengthening breeding capacity. Major breeding programs generally get filled upon termination or retirement depending on center/department priorities.
Virginia	None
Virgin Islands	Proposals for personnel needs have been tabled for consideration.

Q5. Do you have a succession plan in place for retiring breeders or if a breeder gets poached?

State/Territory	Classification	Notes
Alabama	No	
Arkansas	Yes, case-by-case	Postdoc or senior staff may manage programs until replacement; high-impact programs may overlap retiring faculty and successors.
Florida	Yes, under development	Succession plans are currently under development for each plant breeding program.
Georgia	Yes, limited detail	Response indicates succession planning primarily for peanut breeding.
Kentucky	Commodity-specific	Wheat has a planned handoff to a newer specialty grain breeder; tobacco was not replaced, and inventory was licensed to companies.
Louisiana	Yes, proactive intent	Bring in successor a couple years before retirement; work to prevent poaching.
Mississippi	No	
North Carolina	Partial/commodity-dependent	Succession planning depends on crop economic importance; strong continuity support for major crops such as sweetpotato, with less defined approaches for smaller crops.
Oklahoma	No	
Puerto Rico	Partial, constrained	Retired breeders remain active emeritus; need for more breeders, but hiring plan is frozen.
South Carolina	No	
Tennessee	Yes, case-by-case	Successful soybean transition after retirement, but no written plan; succession is managed case by case.
Texas	Yes, multi-level	Succession at department, college, and agency levels; identifies critical programs, overlaps appointments when feasible, documents germplasm/data, and uses interim management.
Virginia	No	
Virgin Islands	No	Under discussion but need is urgent.

Q6. Do you provide internal support for breeding programs through Hatch or other mechanisms, especially for technical support or equipment acquisition?

State/Territory	Classification	Notes
Alabama	Yes, constrained	Hatch equipment grants available, but 50% match requirement is prohibitive.
Arkansas	Yes	Partial or full support for combines, planters, lab equipment, and infrastructure through department/AAES processes.
Florida	Yes	Royalty revenues are used to support breeding programs.
Georgia	Yes, broad infrastructure	College supports greenhouses, fencing, barns, research farms, statewide variety trials, weather stations, and some technicians.
Kentucky	Yes, modest	Capacity funds support technicians and portions of breeder salaries; most costs supported by gifts, endowments, grants, and royalties.
Louisiana	Yes	State and Hatch funds support salaries; state and F&A funds support equipment.
Mississippi	Yes, operational support	AES supports two-thirds of tractor lease cost; no land or facility charges; limited personnel support.
North Carolina	Yes, strategic investment	Royalty funds and institutional resources support strategic investment in breeding programs, including equipment and infrastructure.
Oklahoma	Yes	Hatch funding contributes to breeder salaries.
Puerto Rico	Yes	Hatch supports technical support and equipment; limited program income also used.

South Carolina	Yes	Usually includes technical support for assistant professors.
Tennessee	Yes, limited detail	Affirmative response with little explanatory detail.
Texas	Yes, substantial	Hatch and internal mechanisms support technical staff, field operations, infrastructure, equipment, core facilities; reported $16.2M in 2025 involving plant breeding groups.
Virginia	Yes, royalty-based	Internal support comes from royalty revenue generated from released varieties.
Virgin Islands	Yes	Hatch support for staff hires and research materials.

Q7. Do your breeding programs receive support from commodity groups?

State/Territory	Classification	Notes
Alabama	Yes	Row crop commodity groups have limited funds compared with neighboring states but dedicate about 25% of total grant funds.
Arkansas	Yes	Soybean and rice breeding programs supported by respective commodity boards.
Florida	Yes	Some programs receive commodity support, but not all.
Georgia	Yes	Commodity groups provide additional support for breeders and other scientists.
Kentucky	Yes	Small grain growers and a major flour mill support wheat; some support for winter oat, chia, and cereal rye.
Louisiana	Yes	Rice about $650K; sugarcane about $550K; wheat about $60K/$30K; sweet potatoes about $12K.
Mississippi	Yes	Selected programs have historically received funding from commodity boards.
North Carolina	Yes	Commodity and crop improvement partnerships support breeding activities across multiple crops and systems.
Oklahoma	Yes	Wheat Commission and Oklahoma Genetics royalties support wheat; Hatch supports salary portions for other breeders.
Puerto Rico	No	Commodity groups are not comparable to continental U.S. grower associations; no major commodity-board support for breeding programs.
South Carolina	Yes	Support for some commodities, including peach and vegetables.
Tennessee	Yes	
Texas	Yes	Many programs, including cotton, wheat, rice, and corn, receive direct or indirect commodity-group support.
Virginia	Yes	Commodity and industry support, plus specialized federal support such as the U.S. Wheat and Barley Scab Initiative.
Virgin Islands	No	

Q8. Do you have state-level or other partnerships involved in managing the breeding portfolio?

State/Territory	Classification	Notes
Alabama	No	
Arkansas	No	
Florida	Yes	Florida Foundation Seed Producers, Inc for licensing.
Georgia	Yes	UGA Research Foundation handles IP/licensing; Georgia Seed Development increases seed; Georgia Crop Improvement handles certification.
Kentucky	Yes	Tobacco partnership with UT; contracts with Tennessee Crop Improvement Association for seed storage, distribution, and certification.
Louisiana	Yes	Sugarcane three-way agreement among LSU, ARS Houma, and AMSCL.
Mississippi	Yes	
North Carolina	Yes	Extensive partnerships include NC Crop Improvement, NC Foundation Seed Producers, and NCDA research stations supporting breeding, seed systems, and cultivar deployment.

Oklahoma	Yes	Greenleaf Nurseries partnership for ornamentals; USDA-ARS collaboration in peanut variety development.
Puerto Rico	Yes,	Partnerships with USDA-NIFA, USDA-ARS, mainland universities, UPR campuses, federal agencies, Puerto Rico Department of Agriculture, and PR Science Trust.
South Carolina	Yes	Peach Advisory Board, Vegetable Research Advisory Council, and pulse breeder stakeholder relationships.
Tennessee	Yes	
Texas	Yes	Extension, commodity boards, USDA-ARS, regional research committees, germplasm repositories, and private-sector partners.
Virginia	No	
Virgin Islands	No	

Q9. What royalty sharing policies do you have within the college or university?

State/Territory	Classification	Notes
Alabama	Multi-party split	Foundation services 67%; patent services 6.8%; other 12%; breeder 9.2%; university 10%; IP office 3.5%.
Arkansas	Plant breeder split	35% breeder, 60% AAES, 5% System.
Florida	Tiered reinvestment model	Net Royalty (100%) allocated as follows: 10% retained by Florida Foundation Seed Producers/TTO 20% Cultivar Release Incentive royalty distribution 70% Cultivar Development Research Support Program [For this 70%, 100% of the first $50,000 goes to the breeding program that developed the cultivar. For the next $100,000 (> $50,000 - $150,000), 50% to the breeding program, 25% to the Unit(s), and 25% to the FAES. For all revenues above $150,000, 33.33% to the breeding program, 33.33% to the Unit(s), and 33.33% to the FAES.]
Georgia	Detailed reinvestment model	After costs: first $10K to inventor; then shares to inventor, research program, department, crop development fund, Georgia Seed Development, and UGA Research Foundation.
Kentucky	Two pathways	Public releases managed by Experiment Station: 40% breeder, 60% station/department. Non-public/patented IP through Research Foundation: 40% inventor, 20% OTC, 20% department, 20% college.
Louisiana	AgCenter split	40% inventor, 10% president's office, 50% AgCenter campus.
Mississippi	Tiered by income	First $5K to inventor; $5K-$100K split 50% inventor, 25% admin, 10% development, 15% OTM; above $100K split 40% inventor, 30% admin, 20% development, 10% OTM.
North Carolina	Structured reinvestment model	Royalty distribution includes inventor, licensing office, college research office, and home department support, with substantial reinvestment into breeding programs.
Oklahoma	Simple split	50% inventor(s), 30% Office of Technology & Commercialization, 20% PI program.
Puerto Rico	No plant-breeding policy	No established UPRM AES royalty sharing for plant breeding products; university-level policies exist for other IP.
South Carolina	Breeder/program share	40% to breeder(s), 20% to breeding program.
Tennessee	UTRF tiered policy	After IP expenses: first $1M split 40% inventor, 15% campus, 15% department/lab, 30% UTRF; over $1M split 35% inventor, 20% campus, 20% department/lab, 25% UTRF.
Texas	Inventor-focused, limited reinvestment	37.5% to inventor teams; remaining revenue stays with TAMU Innovation; no royalty income returns to departments, colleges, or centers, though policy is being reconsidered.
Virginia	General split	Royalties split with academic unit and plant breeder; percentages not provided.
Virgin Islands	Under development	Policy under development through the Office of the Vice President for Research and Economic Development.

Q10. What is your model for managing relevant IP?

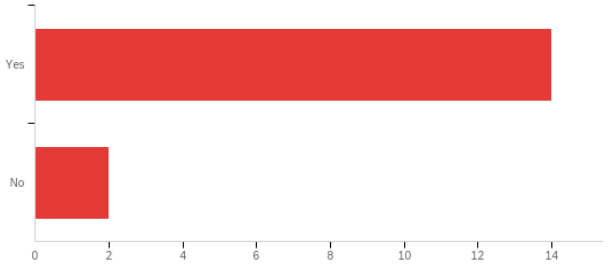
State/Territory	Classification	Notes
Alabama	Central tech transfer	AU technology transfer office.
Arkansas	Internal/agriculture-specific hybrid	Row-crop IP managed by Arkansas Crop Variety Improvement Program; fruit IP by Technology Commercialization Office; programs housed together and prioritize relevancy over income generation.
Florida	Protection and licensing model	Nearly all cultivars protected via U.S. plant patents or PVP certificates and licensed.
Georgia	Research foundation model	IP assigned to UGA Research Foundation; two full-time scientists manage plant variety portfolio.
Kentucky	Committee plus tech commercialization	Seed Commodity Committee reviews releases; public hybrids through certification; PVP/patents handled by Office of Technology Commercialization when licensing potential exists.
Louisiana	Agriculture IP office	AgCenter has its own IP office managing all IP aspects.
Mississippi	Central OTM	Managed by Office of Technology Management.
North Carolina	Central licensing model	University Office of Technology and Licensing manages commercialization, patents, and licensing with input from the college and faculty.
Oklahoma	OTC plus marketing/enforcement partner	Office of Technology & Commercialization manages IP; Oklahoma Genetics markets and addresses non-compliance.
Puerto Rico	Third-party/emerging	Recently partnered with PR Science Trust TTO for patenting and commercialization.
South Carolina	Research foundation	Handled by Clemson University Research Foundation.
Tennessee	UTRF model	University of Tennessee Research Foundation manages IP created by UT employees and commercialization.
Texas	System-wide central model	Managed through TAMU System technology transfer/commercialization; AgriLife works with Foundation Seed Unit and private seed partners.
Virginia	Central commercialization program	Virginia Tech Link, License, Launch program manages IP associated with variety development.
Virgin Islands	Under review	No current model; policy under review through Office of the Vice President for Research and Economic Development.

Q11. What is the state of your current local storage facilities for breeding materials?

State/Territory	Classification	Notes
Alabama	Poor, improving	Small, dilapidated cold room around 200 sq ft; moving to new facility with double capacity.
Arkansas	Multiple facilities	Cold storage facilities in Fayetteville and Stuttgart, including secure seed storage and standalone cold storage.
Florida	Highly variable	Depends on location and resources for each breeding program.
Georgia	Adequate to very good	Wide range by crop/location.
Kentucky	Improving/outsourced	Uses TN Crop Improvement for foundation seed; upgrading former seed improvement building with walk-in cold room and seed processing/handling.
Louisiana	Crop-specific mix	Rice has climate-controlled breeding, breeder, and foundation seed rooms; sugarcane maintained in field nurseries; sweet potato and wheat rely on USDA/national collections and LSU cold storage.
Mississippi	Adequate to poor	Storage described as adequate to poor.
North Carolina	Decentralized with redundancy concerns	Programs manage individual germplasm conservation needs; storage repair, renovation, redundancy, and backup power needs identified
Oklahoma	Improved but constrained	New Ag Hall seed storage, but greenhouse/field space is limited; wheat germplasm retention described as survival mode pending facility completion.
Puerto Rico	Below average	Only two of six stations have small cool rooms; some freezers and coolers for seed preservation.
South Carolina	Program-specific, uneven	Pee Dee has humidity-controlled coolers; peach is live collection; pulse lacks adequate long-term storage; vegetables use USDA-ARS facility.

Tennessee	Aging but functional; vulnerable	ETREC has three cold rooms, but no backup power, no off-site duplication, recent compressor failure, limited capacity, and single-location risk.
Texas	Variable, needs modernization	On-site and centralized/long-term storage with backups; continued investment needed for redundancy, biosecurity, and preservation.
Virginia	Poor	Mouse infestation triggered critical needs request to develop cold storage capacity; improvement would triple cold storage area.
Virgin Islands	Poor/limited	Small, isolated refrigerators.

Q12. Do you have faculty who serve as state representatives to regional germplasm repositories such as S009 or participate on Crop Germplasm Committees (https://www.ars-grin.gov/CGC)?



Q13. What kind of data management systems: digital inventory, data standards, genotyping/phenotyping integration are available for the different commodities at your AES?

State/Territory	Classification	Notes
Alabama	None	
Arkansas	Program-specific	No station-wide system; breeders choose tools; examples include Breedbase and Genovix.
Florida	Program-specific/basic	Most rely on Excel; one uses AgroBase; two developed SQL databases; one considering BreedBase.
Georgia	No centralized system	No centralized systems; master genotyping plan in planning stages.
Kentucky	Individual breeder systems	Left to each breeder; no large-scale genotyping/phenotyping facility.
Louisiana	Varies by crop	Station, regional, and national databases; rice uses customized Breedbase instance.
Mississippi	Some digital inventory	Digital inventory of existing germplasm; demoing greenhouse phenotyping system.
North Carolina	Mixed/ program-specific	Some programs use BreedBase; many rely on Excel spreadsheets and crop-specific standards associated with USDA-ARS repositories.
Oklahoma	Mixed and evolving	Ornamentals use OneDrive/Teams/external drives; turf has integrated phenotyping/genotyping in QTL/GWAS experiments but no inventory standards; wheat inventory capacity improving.
Puerto Rico	No integrated system	No integrated data system or digital inventory; Excel used by individual researchers; common traits recorded.
South Carolina	More platform-diverse	Field Book, BreedBase, cloud storage, Clemson databases; peach uses Field Book and BIMS within Genome Database for Rosaceae for phenotype/genotype integration.
Tennessee	Low-cost practical system	Microsoft Teams, spreadsheets, field books/tablets, custom databases, external hard-drive backups; integrated systems explored but cost is barrier.
Texas	Moderate to advanced but variable	Digital inventory, standardized field/phenotypic data, genotypic integration, analytics, high-throughput genotyping/phenotyping support; harmonization still needed; some use Agronomix/Agrobase Gen II.
Virginia	Campus digital storage	Uses campus mainframe-based digital storage/retrieval; limited detail on breeding-specific integration.

Virgin Islands	Developing	Digitized inventory development in progress; G x P integration not available.