



This summary was prepared by the Claude.ai artificial intelligent assistant using the following prompt:

Write a summary of RegenPGC's quarterly report, identifying key trends and important takeaways. Present your findings as a multi-page summary I can share with my team. The goal of this memo is to keep my team informed about our team's performance and help us anticipate potential challenges or opportunities for the upcoming quarter.

RegenPGC Quarterly Progress Report Summary

Q2 - Year 4 (November 1, 2024 - January 31, 2025)

Executive Summary

The Regenerating America's Working Landscapes to Enhance Natural Resources and Public Goods through Perennial Groundcover (RegenPGC) project continues to make significant progress in its fourth year. This quarter featured extensive outreach through a successful five-week webinar series that engaged over 200 participants, ongoing research across multiple objectives, and continued development of educational resources. The project maintains its focus on developing transformative approaches to agricultural production that enhance environmental resilience while maintaining economic viability.

Highlights and Key Accomplishments

Successful Webinar Series

- A five-week webinar series, "Unlocking the Potential of Perennial Groundcovers in Corn and Corn/Soybean Production Systems," ran from January 14 to February 11, 2025
- Over 200 registrants with an average of 60 participants per session
- Created 20+ companion "Field Notes" publications to share key insights
- Content covered system basics, suppression methods, groundcover selection, corn hybrid performance, and ecosystem service benefits

Research Advancements

- **Plant Breeding and Genetics:** Significant progress in genome sequencing of key perennial groundcover candidates (*Poa bulbosa* and *Poa secunda*)
- **Soil Health and Nutrient Management:** Completed field report on on-farm Waterloo PGC trials covering findings from 2021-2023
- **Ecosystem Services and Modeling:** Submitted first manuscript on erosion dynamics to a peer-reviewed journal
- **Socioeconomic Analysis:** Completed first draft of "Integrating Perennial Groundcover in Corn and Soybean Acres: Impacts on U.S. Production and Trade"

Education and Outreach

- Graduate student community seminars established for spring 2025, focusing on cross-disciplinary knowledge exchange
- Youth programs reached approximately 350 students through middle school science programs
- Educational materials for 36,000 agriculture students in 285 schools and 270 FFA chapters in Iowa

Progress by Theme

Research and Development

- Deployed image analysis pipeline to evaluate groundcover intensity
- Graduate students actively using tools to answer research questions
- RegenPGC Café discussions focusing on specific research topics each week

Extension

- Five-week webinar series successfully delivered (January-February 2025)
- Webinar recordings and field notes published on the project website
- Strong participation indicated growing interest in perennial groundcover systems

Education

- Graduate seminar series featuring presentations from objective leaders and graduate students
- Research Experience for Undergraduates (REU) continues supporting students
- Research Experience for Teachers (RET) program planning for 2025 cohort
- Youth education efforts reached hundreds of students

Commercialization

- Designing herbicide trials and securing contracts
- Visited on-farm trial operators to prepare for the 2025 season
- Initiated analysis of corn hybrid variety trial data
- Shared soil data summary with the ISU team

Progress by Objective

Objective 1: Crop Ecology and Management

- Students presented research at the North Central Weed Science Society conference

- Field trial data being analyzed from the 2024 growing season
- Planning for the 2025 field season, including potential adjustments to experiments

Objective 2: Plant Breeding and Genetics

- High-quality genome assembly for *Poa bulbosa* with six distinct haplotypes
- Transcriptomic study on summer dormancy in progress
- Characterization of newly collected genotypes underway
- Planning GWAS studies of shade avoidance response in maize

Objective 3: Soil Health and Nutrient Management

- Analyzing soil samples from on-farm trials
- Field report completed on Waterloo PGC trials (2021-2023)
- Planning for intensive sampling of N₂O emissions in spring 2025

Objective 4: Ecosystem Services and Modeling

- Simulated PGC combinations in EPIC model
- Statistical analysis of erosion data completed
- Manuscript on erosion submitted to peer-reviewed journal
- Planning climate scenario modeling

Objective 5: Socioeconomic Impacts and Policy

- Enterprise budget analysis presented at scientific meetings
- First draft of paper on U.S. production and trade impacts
- Framework for valuing unpriced system benefits under development
- Continued exploration of policy entry points in the federal farm bill

Challenges and Opportunities

Challenges

- Weather conditions limited some field data collection activities
- Varied performance of hybrids in PGC systems suggesting a need for targeted breeding
- Coordinating data sharing across multiple institutions and research sites
- Limited availability of comprehensive data for ecosystem service modeling

Opportunities

- Growing interest from stakeholders based on webinar participation
- Potential for integrating PGC approaches into federal farm policy

- Strengthening interdisciplinary collaborations through graduate seminars
- Expanding on-farm trials network

Plans for Next Quarter

- Continue spring field trials with minimal modifications to the experimental design
- Further analysis of corn hybrid performance in PGC systems
- Intensive sampling of N₂O emissions during fertilizer application
- Presentations at the *Weed Science Society of America* and other scientific meetings
- Continuation of graduate student seminar series
- Journal manuscript submissions from multiple objectives
- Preparation for on-farm field season
- Submission of abstract for Agricultural and Applied Economics Association conference

Conclusion

The RegenPGC project continues to make substantial progress toward its goal of developing perennial groundcover systems that maintain crop productivity while enhancing environmental benefits. The successful webinar series demonstrates growing interest from stakeholders. Research across all objectives is yielding valuable insights that will inform best management practices, breeding strategies, and policy recommendations. The coming quarter will focus on spring field activities, further data analysis, and continued outreach efforts.