

# Interviews with 3 researchers about NRSP12

## Dr. Anand Jayakaran

*Professor, Green Stormwater Infrastructure Specialist, Biological Systems Engineering, College of Agricultural, Human, and Natural Resource Sciences, Puyallup Research and Extension Center, Washington State University. Past -President American Ecological Engineering Society.*

### Urban Resilience Through Nature-Based Solutions

Ani discussed nature-based solutions for urban resilience, emphasizing trees as the first intervention due to their stormwater management and co-benefits. He identified three key research areas: the role of plants in stormwater systems, the intersection of social sciences with nature-based solutions, and incorporating climate science projections into design. Ani also highlighted the need for better integration of arborist knowledge with engineering and the importance of understanding community needs and building trust in underserved areas.

### Affordable Sensor Technology for Monitoring

Ani discussed the need for more affordable and reliable sensor technology for monitoring various environmental parameters, such as bacterial contamination and harmful algal blooms, which are currently expensive and difficult to deploy. He emphasized the importance of post-construction monitoring and the development of low-cost asset management systems for nature-based solutions like trees and bioretention systems. Brad suggested the possibility of sensors that could trigger human intervention for maintenance, allowing for better resource allocation.

### Synthesis Centers for Research Collaboration

Brad and Ani discussed establishing synthesis centers for researchers to collaborate and develop research questions beyond specific disciplines. Ani emphasized the importance of in-person collaboration, incentives like funding opportunities, and the prestige of being part of a curated cohort. They considered the potential outcomes of the project, including building a network of researchers, writing grants, and publishing a manuscript in a journal. Ani highlighted the value of the process itself, including rigorous thinking and writing, even if the final product is not published.

## 5-Year Project Outcomes and Metrics

Ani discussed the desired outcomes for a 5-year project, including securing a grant, graduating students, and measuring tangible impacts such as increased awareness and behavior change. He emphasized the importance of developing standardized metrics to assess the project's success and highlighted the challenge of balancing case studies with broader data synthesis. Ani expressed willingness to contribute his research to a shared repository, noting the potential benefits of standardized data for AI-driven research and the value of documenting both successes and failures in nature-based solutions.

## Mapping Hub for Nature-Based Research

Brad and Ani discussed the development of a mapping and reporting hub for researchers, focusing on the utility of map-based data for Ani's field-based research. Ani emphasized the importance of soil, climate, and plant data for nature-based solutions, highlighting the need to understand regional applicability and sustainability. They explored how such data could support research by providing insights into similar ecosystems and informing the design of nature-based solutions across different regions.

## Dr. Jeff Hattey

*Professor, School of Environment and Natural Resources, The Ohio State University*

*Interests & Expertise: Soil Management; Soil Science Education; Animal Waste Management; Urban soil; Urban agriculture*

## Nature-Based Urban Resilience Grant

Brad and Jeff discussed a grant proposal focused on nature-based solutions to increase the resilience of cities. Jeff emphasized the importance of addressing community infrastructure, particularly stormwater management, to align with municipal budgets and resident concerns. He highlighted soil health as a key area for research, considering both contamination issues and soil compaction in urban areas. Jeff also stressed the role of carbon management in improving soil structure and reducing stormwater runoff.

## Urban Land Management Challenges

Jeff and Brad discussed the challenges and opportunities in urban land management, focusing on soil health, land utilization, and reconnecting urban dwellers with the land. Jeff highlighted the contrast between engineering goals for construction and biological goals for land enhancement, emphasizing the need for a patchwork approach to urban development that balances ecological and social needs. They also touched on the

historical conversion of prime farmland to urban areas and the potential for nature-based solutions to address environmental challenges in cities.

### **Synthesis Centers for Research Collaboration**

Brad and Jeff discussed establishing synthesis centers for researchers to collaborate and develop interdisciplinary research questions. They agreed that bringing people together in person, like at the National League of Cities meeting, is valuable for exchanging ideas and building relationships. Jeff emphasized the importance of having a mix of researchers, practitioners, and city planners to inform research questions and facilitate funding opportunities. They also discussed the need to incentivize researcher participation, including financial support and the promise of future funding opportunities.

### **Nature-Based Solutions Impact Assessment**

Jeff outlined the key objectives for a 5-year project focused on nature-based solutions for urban challenges. He emphasized the need for documents that can communicate the project's value at federal, state, and local levels, highlighting its relevance to urban and peri-urban populations. After two years, Jeff wants to see a tangible document showcasing the project's impact, while after five years, he envisions a multi-state assessment of the project's nationwide impact, including cost-benefit analyses and co-benefits of nature-based solutions.

### **Urban Advocacy and Research Funding**

Jeff and Brad discussed the challenges of advocating for urban issues compared to agricultural interests, highlighting the lack of a dedicated commodity group for urban concerns. Jeff emphasized the importance of presenting clear metrics to justify the value of investments in research and education, such as securing external funding and supporting state legislators. They agreed on the need to demonstrate the impact of NSRPs in terms of securing grants, training students, and publishing research to justify their renewal.

### **Research Repository Collaboration Initiative**

Brad discussed creating a research repository to promote discovery and collaboration, sharing documents, results, and tools for integrating data and maps. Jeff expressed support for sharing research results, emphasizing that much of his work is publicly accessible, especially if funded by taxpayers. He suggested using such a tool for background information when working in unfamiliar areas or for general data comparisons across regions. Brad proposed a mapping tool with thousands of data layers, and Jeff

confirmed this would be useful for his work. No major concerns were raised about the project's viability, and Jeff expressed his support for the initiative.

### **Urban Agriculture and Ecological Solutions**

Jeff and Brad discussed the challenges of urban agriculture and ecological solutions in densely populated areas. Jeff emphasized the need to balance ecological ideals with practical realities, noting that organic farming alone cannot feed the world's population due to insufficient natural resources. They agreed that while urban agriculture cannot meet city food demands, it can contribute to broader benefits like economic streams and co-benefits beyond food production.

### **Dr. Eleni Pliakoni**

*Professor, Urban Food Production, Postharvest Handling, Department of Horticulture and Natural Resources; Director of the Urban Food Systems Initiative, Kansas St Univ, Olathe Campus*

### **Grant Planning for Research Support**

Brad and Eleni discussed a grant aimed at supporting research activities rather than conducting research directly. Brad explained that the grant would help make certain activities useful for researchers like Eleni, and he sought her input on what activities would be most beneficial. He compared the grant to an NSF collaborative network, emphasizing that it is still in the planning stages and they are gathering diverse perspectives to inform its development.

### **Urban Agriculture for Resilience**

Brad and Eleni discussed nature-based solutions for urban resilience, with Eleni focusing on urban agriculture as a key area. They explored how urban agriculture could contribute to water storage, food security, and education, while also addressing challenges such as transportation efficiency and cost-effectiveness. Eleni identified three main research areas: defining urban resilience, improving food transportation within cities, and evaluating the economic viability of urban agriculture for both producers and consumers.

### **Synthesis Centers for Research Collaboration**

Brad and Eleni discussed establishing synthesis centers for researchers to collaborate on research questions beyond specific disciplines. Eleni emphasized the importance of a shared vision, funding, and support for grant submissions to bring people together. They explored potential outcomes for a 2-year project, including preliminary data for larger grants and identifying correct team members. For a 5-year grant renewal, Eleni suggested

measuring success through return on investment, successful proposals, and adapting to new funding agents. Both agreed that metrics for renewal would likely include money and publications.

## Research Impact and Data Accessibility

Eleni and Brad discussed the importance of identifying and measuring impact in research, including changes in knowledge, behavior, and situations. They explored the potential of a research repository to promote discovery and collaboration, with Eleni emphasizing the need for user-friendly organization and accessibility. Brad inquired about Eleni's anticipated use of geographically referenced data layers, to which Eleni responded that usage would depend on the message she wishes to convey. Eleni expressed interest in having baseline data on food losses, highlighting the difficulty in accurately measuring this metric, and suggested the need for standardized methods to assess contributions in research.

## Urban Agriculture Engagement Strategies

Eleni and Brad discussed the challenges of engaging a diverse group of people in discussions about urban agriculture and post-harvest physiology. They explored the possibility of using horizon scans as a mechanism to gather input from a core group while allowing for digital engagement from others. Eleni expressed concern about the viability of projects based on nature-based solutions in cities, citing the need to align priorities with the current administration's funding priorities.