

At Work



Bringing Water to Urban Community Gardens

The Rutgers Cooperative Extension (RCE) Water Resources Program received funding from the New Jersey Department of Environmental Protection (NJDEP) to implement green infrastructure practices in Newark and Camden, New Jersey to reduce combined sewer overflows (CSOs). To reduce the occurrence of CSOs, the volume of stormwater entering the combined sewer system has to be reduced. Infiltrating stormwater runoff into the ground is usually the key process, but harvesting rainwater for reuse is a viable option, specifically in engaging residents and community groups who manage community gardens and urban farms. Community gardeners often had no access to city water on site and often relied on the approval of neighbors to access water, or they would rely on the Fire Department to fill 55 gallon barrels. Open barrels risk mosquito breeding, making the community garden or urban farm less desirable to the community. Rainwater harvesting reduces the volume of stormwater entering the combined sewer system, provides a health benefit to the community, and has been

found to be the sole source of water for urban agriculture in most areas.

The mission of the RCE Water Resources Program is to identify and address community water resources issues using sustainable and practical science-based solutions. The water supply problem associated with these community gardens and urban farms was certainly an issue that needed to be addressed. Since the RCE Water Resources Program had funding to reduce stormwater runoff from draining into the combined sewer system, it seemed logical that harvesting rainwater for urban agricultural activities was a great way to achieve this goal while providing a sustainable source of water for urban agriculture programs to continue to flourish. The RCE Water Resources Program began with developing collaborative partnerships in Camden and Newark. Camden SMART (Stormwater Management and Resources Training) and Newark DIG (Doing Infrastructure Green) were established to prioritize green infrastructure initiatives in their respective cities, with the RCE Water Resources Program providing technical expertise. Through the collaborative partnerships, local community gardens and farms were identified and were contacted by a member of the collaborative. It is through the grassroots relationships with a member of the collaborative that made it possible for the RCE Water Resources Program to begin a dialogue of what rainwater harvesting would look like on the individual sites.

Several sources of funding were leveraged to implement projects in Camden and Newark. Funding was secured from the New Jersey Department of Environmental Protection, Camden County Municipal Utilities Authority, Passaic Valley Sewerage Commission, and the City of Newark Office of Sustainability. A total of \$80,906.77 was utilized to support implementation and programming activities of rainwater harvesting systems in Camden and Newark, which included \$64,371.08 that supported the construction of and supplies for all 15 systems. Partners included five organizations from Camden SMART, 13



organizations from Newark DIG, and 13 local partners for access of individual sites

From 2012-2016, the RCE Water Resources Program successfully installed ten (10) cisterns in Newark and five (5) cisterns in Camden. With these cisterns, a total of 167,274 gallons of stormwater runoff can be removed from the combined sewer system annually and reused by community gardeners. Based on an average cost of \$5.93 per 1,000 gallons of potable water use (NJ American Water, 2015), our community partners are saving a total of \$992.73 per year. In addition, over 300 rain barrels were distributed to Newark and Camden residents. A total of 350 residents participated in workshops to learn about the benefits and maintenance needs of rainwater harvesting systems. Based on NJ American Water's 2015 potable water use rates, each time a 50-gallon rain barrel fills, it saves a resident \$0.30 from their water bill. Local community groups were also trained on rainwater harvesting installations and have led their own installations with some support from the Rutgers Cooperative Extension County Agents and Master Gardeners. Source: <https://amwater.com/njaw/customer-service-billing/your-water-rates>

The rainwater harvesting initiative provided participants with the knowledge to access non-potable water as a primary water source in urban agriculture. Each of the 15 lead gardeners are responsible for continuously maintaining their rainwater harvesting system without additional funding support from the RCE Water Resources Program or partners. Each gardener and resident that participated in a rainwater harvesting workshop have indicated that they are now aware that harvesting rainwater also provides additional benefits such as the reduction of stormwater runoff and flooding in their communities. Some participants of rain barrel workshops indicated that their interest in rainwater harvesting stemmed from their interactions with a gardener that had a larger cistern on site. These initial efforts have also lead the City of Newark to begin developing their own rain barrel program which is aimed to launch in 2018. In the City of Camden, the Camden County Utilities Authority has trained several

of their staff to also lead their own rain barrel programs for the City of Camden.

Water conservation allows Extension professionals to begin connecting with residents and bring awareness to the issues of stormwater runoff and combined sewer overflows. A rainwater harvesting initiative can be applied into any community that has an agricultural presence. Once agriculture sites have been identified, it is a matter of identifying access to a rooftop downspout that can be diverted into a rainwater harvesting system such as a rain barrel or a larger cistern. Access to water in urban agriculture is rare, and as urban agriculture continues to increase its presence in the community, the opportunity to engage gardeners and local residents on the benefits of harvesting rainwater also increases.



For more information about this project, please contact:

RUTGERS
New Jersey Agricultural
Experiment Station



Christopher C. Obropta, Ph.D., P.E.

Associate Extension Specialist in Water Resources
Rutgers Cooperative Extension
Water Resources Program
Rutgers, The State University of New Jersey
14 College Farm Road
New Brunswick, NJ 08901
908-229-0210
www.water.rutgers.edu
obropta@envsci.rutgers.edu