Planning for Sustainable Brownfield Redevelopment

AQUAPONIC DEVELOPMENT PLANNING

KENT COUNTY, DELAWARE, EPA REGION 3

Interest in buying food that is grown and produced locally has spurred the startup of local agriculture and farmers markets in many communities. Urban farms can use a variety of farming techniques, including aquaponics, to produce food at smaller sites in more urbanized areas. There is growing interest in urban aquaponic farms that use aquaculture (raising fish) and hydroponics (the soil-less growing of plants) in an integrated system. Aquaponics can provide a sustainable method of producing healthy, fresh, and cost-effective protein and vegetables to communities, while providing job and educational opportunities for citizens. This interest can be attributed, in part, to the ability to utilize brownfields and other underutilized properties and buildings in or near large population centers for aquaponics operations.

In urban areas with food insecurity (where consistent access to adequate food is limited by a lack of money and other resources at times during the year), urban aquaponic farms can be crucial to providing access to affordable food and work opportunities for underserved populations. As communities look to support healthier citizens, urban aquaponic farms can offer a product that improves health while providing a reuse option for brownfields.

In January 2015, Kent County, Delaware, expressed interest in partnering with Delaware State University (DSU) and EPA's Land Revitalization Team to support aquaponics farms on brownfields. DSU, one of EPA Region 3's partner universities, signed a Memorandum of Understanding with EPA to strengthen its environmental sciences curriculum and support sustainable environmental initiatives on campus, benefitting the local community.

In 2015 and 2016, EPA's Land Revitalization Team provided technical assistance to Kent County to support business planning for aquaponics farm development on brownfields within the county. EPA used its Urban Farm Business Plan Handbook to develop a new tool specific to planning an aquaponics farm. The Aquaponics Business Plan includes a series of worksheets to help project partners identify the project vision, mission, goals, as well as the technical needs of aquaponics development. The worksheets feed into an aquaponics farm Business Plan that helps stakeholders make better site selection and project decisions.

To further support the commercialization of aquaponics throughout Kent County and the City of Dover, the Land Revitalization Team hosted a series of facilitated discussions to help the project's stakeholders understand project needs, including additional expertise, funding, and leadership. Information gathered during these discussions was used to develop a county-wide Business Plan and identify additional actions to be taken to ensure that an aquaponics business development would be economically feasible. Steps include conducting a market assessment of the area and utilizing GIS data to target potential brownfields within the county. Additionally, project partners developed a list of potential, additional partners that could provide additional expertise and resources for an aquaponics farm.

Figure 1. Aquaponics Tank for Tilapia (photo credit: Delaware State University)

LESSONS LEARNED

- Aquaponics offers a productive brownfield reuse option that can improve food security and provide jobs.
- Aquaponic projects can be configured to fit on a variety of sites, making it a good match for brownfields with site constraints that would otherwise limit reuse.

PLANNED POST-TECHNICAL ASSISTANCE ACTIVITIES

- Conduct a market assessment to determine opportunities within the County.
- Conduct a GIS analysis of potential sites.
- Seek interested parties willing to operate an aquaponics project.
- Continue populating the Business Plan with additional information as other interested parties are identified.

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