Commercial aquaponics production and profitability: Findings from an international survey

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Agrotourism greatly enhances profitability for commercial aquaponics operations

Aquaponics is a form of agriculture that combines aquaculture (fish farming) and hydroponics (soilless plant farming). The practice works in a way that benefits both the fish and the plants: the fish and bacteria supply nutrient-rich water for the plants, which then absorb those nutrients to purify the water that returns to the fish. Aquaponics is used by a variety of people in a variety of settings—for example, by hobbyist gardeners, educators, and non-profit organizations.

Interest in this method has increased in part because of its potential to produce food in urban settings, yet few studies have focused on commercial-scale aquaponics production. Commercial producers are defined as those who sell aquaponics-grown fish, plants, or aquaponics-related materials or services. The purpose of this research was to survey production methods, crop and fish yields, and profitability of aquaponics in both the United States and internationally.

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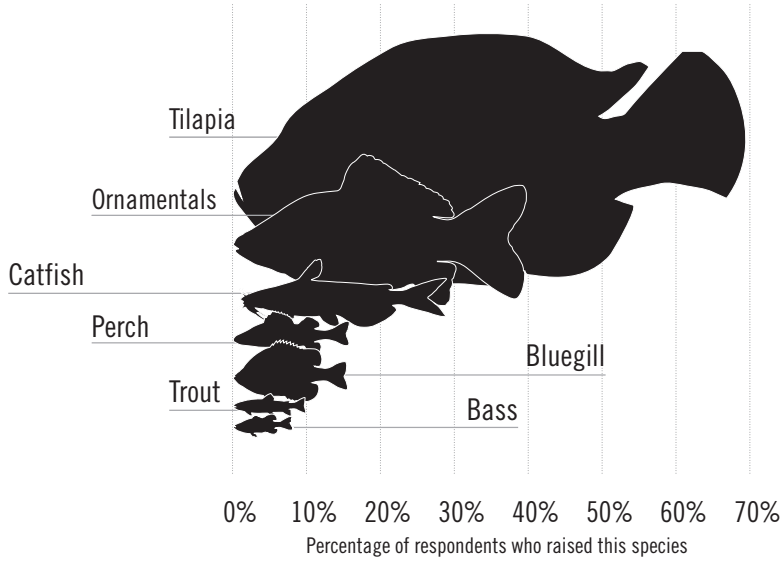
Key Findings

- Many operations resembled small farms in size and gross sales revenue, but used more direct sales outlets (e.g. at their farm/facility or farmers' markets) to sell their products than a typical small farm.
- The most commonly raised plants were basil (81%), salad greens (76%), non-basil herbs (73%), tomatoes (68%), head lettuce (68%), kale (56%), chard (55%), bok choi (51%), peppers (48%), and cucumbers (45%).
- The median quantity of fish harvested was 50 to 99 pounds per year and the median quantity of plants harvested was 100 to 499 pounds per year. Facilities tended to focus on the production of plants over fish, likely due to economical and biological reasons.
- 24% of respondents did not harvest any fish in the previous 12 months, presumably because they were new operations.
- Of 257 respondents, 95 sold aquaponics-grown fish or plants exclusively, 69 sold aquaponics-related materials or services exclusively, (e.g. equipment, fees for designing facilities, workshops, etc.), and 93 sold both.

Who We Are

Based within the Bloomberg School of Public Health, The Johns Hopkins Center for a Livable Future (CLF) is an academic center that conducts and promotes research and communicates information about the complex inter-relationships among food production, diet, environment and human health.

Fish most commonly raised by survey respondents



Study Summary

Two hundred fifty-seven survey respondents who sold aquaponics-related food or non-food products and services in the previous 12 months met the inclusion criteria for this study. Of these respondents, 81% lived in the United States, while the remaining respondents were from 22 other countries. The survey was available online from June 25, 2013, to October 1, 2013.

Are Commercial Aquaponics Operations Profitable?

- Facilities located in USDA plant hardiness zones 7-13 were approximately four times as likely to be profitable than facilities located in colder climates (zones 0-6).
- Gross sales revenue and profitability were higher for operations that diversify their revenue stream by incorporating sales of non-food products, services, or education opportunities.
- Less than one-third of respondents were profitable in the last 12 months. Although many were newly established operations, future studies should be conducted to determine if aquaponics will develop into a profitable food production method.

Full Title:
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