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Stranger Aquaponics
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Aquaponics and New Delhi

Modern-day aquaponic technology and how it can be used to help countries suffering from food and water shortages

Introduction

We evaluate the benefits of Aquaponics in modern-day society, how reasoning factors into these benefits, and apply it to a real life crisis in New Delhi, India. New Delhi, an area of India where food and water shortages are the worst in comparison to all other cities, we discuss the possible applications of Aquaponics and the benefits when applied into New Delhi. Methods of application are discussed, providing possible solutions to extreme situations such as the one in New Delhi. The real-world results of previous aquaponics projects as well as active organizations are analyzed on our findings. Lastly, further questions and process evaluations are covered in discussion, providing insightful questions to further the idea of reasoning in Aquaponics, as well as errors and room for improvement in the research of this topic, all pointing back to our leading thesis: Aquaponic technology is a very reasonable solution to solve New Delhi's issues of sanitation, food and water shortages, as well as reducing pollution in various ways.

Methods

To explore the environmental benefits of Aquaponics, applying it to a real life situation such as the crisis in New Delhi, India, creates an avenue to evaluate the instance of reasoning in Aquaponics. Aquaponics is useful for many reasons, one of the reasons being that it has the ability to grow crops using 95% less water, and no pesticides. It also doesn't require land, which is good for places in urban environments. In places like India, water scarcity (due to pollution) is a big issue. Water scarcity makes it harder for these people to mass produce crops for a growing population, so aquaponics could help out massively since they could grow much more crops with the amount of water they have. It also reduces the ecological footprint by being devoid of

additives such as pesticides. Because aquaponics require systems to self-clean in order to properly function, they are also very sanitary systems.

Swachh Bharat Abhiyan (Shuddhi NGO), an India-based organization, has been moving to clean up debris following natural disaster for victims, provide children with education, provide nutrition and care, as well as much more. Organizations like Shuddhi NGO are very practical and necessary organizations; they work hard to gather funding and volunteers in order to apply practical solutions to issues surrounding Indian cities. Their solutions can be as simple as bringing a garbage truck down to cities to help clean up debris, or can be as elaborate as gathering crowd-funds to physically build education centers for the children of India.

Our method of approaching the real-world situation in New Delhi using aquaponic technology would be to reinstitute small buildings around the city or develop minimal-cost facilities where aquaponic systems could be built an maintained. Small facilities means easy access and harvesting, which could be beneficial to residents of the city all on its own. To solve the water shortage in New Delhi, aquaponics can help reduce the need for water used in growing food. Water is constantly recycled in aquaponic systems, meaning that the 5% ratio used in aquaponics out of the total water used commercial agriculture is reused and may never need to be changed. To solve hunger issues in New Delhi, aquaponic systems can produce thousands of pounds of plant food alone; when constructing aquaponic systems to farm fish as well, the amount of consumable food produced is immensely larger.

Applying aquaponics as a solution to New Delhi's current issues would be a very reasonable way to address such a severe crisis; the emissions in the city only grow when things like clean food and water have to be transported directly, so constructing aquaponic facilities would dramatically reduce the energy footprint needed to transport goods as well as use minimal energy in the process of maintaining them. Overall, this method or aiding to the severity of New Delhi's pollution and sanitization crisis is a very practical solution, and could even theoretically begin to be reasonably applied in intervals with the proper financial support.

Results

Our findings were quite supportive of our thesis, all showing that the main problems existing in New Delhi, India, were all dilemmas that could be improved with he institution of aquaponic technology. Aquaponics, proven to be an ideal form of wastewater purification

according to our research, could easily improve the situation of unsanitary drinking water in New Delhi.

Experts in aquaponics, such as Nelson and Pade, Inc.® have grown produce as exotic and diverse as bananas, citruses, pomegranates, corn, greens, beets, carrots, onions, and more. Because of this information, that could mean that the nutritional value of aquaponics being applied to aid New Delhi's food shortage is entirely conceivable. There is not a firm limit to the types of produce that can be grown through aquaponics, so children and poor families that cold be suffering the greatest from unsafe necessities would have the security of not only clean food, but also a variety of it, providing essential nutritional needs.

Experts Nelson, Made, Inc.® have practiced growing fish as small as goldfish to fish as big as large mouth bass. Just like there is a reasonable variety in crop options, there is also a fair amount of consumable fish types that can be grown using aquaponic technology. Around five main edible fish breeds thrive in aquaponic systems: tilapia, catfish, crappie, bass, and sunfish. Salmon are also a species reported to be able to be farmed on aquaponic farms, but are more difficult to feed due to their carnivorous nature.

Reducing the footprint left behind from transporting clean water, as well as trying not to worsen the current pollution level of New Delhi as it stands, is a tricky topic to provide solutions for. However, our research shined light on some of these difficult areas, making this solution seem more applicable in the real-world setting of India. Aquaponics leave a very small footprint behind when used commercially: they produce essentially no waste, if waste is produced it can typically be reused, and the electricity needed to maintain a facility housing multiple aquaponic systems is not extensive depending on the size of the facility and the type of UV lights used on the plants—if they are needed at all.

The research we found in interest of supporting our thesis was quite impactful, making the application of aquaponics appear to be a very realistic and practical solution as explained in our methods. Most of our evidence acclaimed aquaponics to be the type of solution that would be appropriate to a crisis similar to New Delhi; additionally, we made sure to analyze our room for errors in the section below.

Discussion

Aquaponics is an entirely reasonable approach when it comes to solving issues related to food and water shortage. In places where space, food, water, and sanitation is scarce, aquaponic technology is a practical solution due to its extremely small energy footprint, self-cleaning abilities, and potential to produce two different types of food to people in new Delhi that are facing hunger. One particular possible error could be in our findings on the energy footprint that aquaponics leaves behind. Although it is true that even larger-scale aquaponics have a very small footprint in comparison to anything remote to commercial farming, the need for lighting, constant water pump power, and even air temperature control is generally unavoidable. It is true that the need for electricity may still reduce the emissions of industrial gases that have fogged New Delhi, but the disappearance of them completely is likely an impossible feat of aquaponics alone.

If this thesis were to go further, I believe it would be reasonable to ask harder questions about how an organization planning on bringing aquaponics into New Delhi, India, would go about such a task. Materials and water would be transported in, most likely, but what would be the most efficient way to get it there? Would the construction and/or creation of the aquaponic facilities further worsen the pollution level of the city? Are the financial expenses of bringing in plants, water, fish, and necessary technologies to get the facilities running far beyond the amount of money that the facilities could profit from? If so, what is the most financially efficient way to help New Delhi impose these systems without doing any damage on either end?

Overall, our thesis, that aquaponic technology is a very reasonable solution to solve New Delhi's shortages as well as reducing pollution in multiple ways, was highly supported in our research; it remains true, even with the exception that some critical points were not as highly analyzed, such as finance and transportation emissions. To conclude, although food and water shortages exist all over the world, aquaponics remains to be a rising successful way or producing food for hundreds of mouths at any given time. Applying it to a real-world crisis such as the shortages in India are both conceivable and reasonable, and thanks to new organizations and the financial abilities of countries like our own, problems this extensive would be being solved as soon as the next few upcoming years.