Best Practices for Aquaponics

Practices for Promoting Environmental Health & Food Safety

Licensing:

- **Arizona Game and Fish Department:**

  You must have a license to import, purchase, possess, transport and stock fish species for your aquaponics system. This is to ensure that live aquatic wildlife are acquired from a licensed fish farm operator or private noncommercial fish pond that has been certified free of certain diseases and causative agents. Find more information and the license application.

- **Arizona Department of Agriculture:**

  If the fish from the aquaponics system will not be sold , no license is required. If the fish from the aquaponics system will be sold, you may need a license.

  Contact the Arizona Department of Agriculture to learn more.

- **County Public/Environmental Health Department:**

  If the aquaculture operation has a commercial aspect and the fish will be processed in any way (e.g., filleting, scaling) you may need a permit and/or variance through the local county public health or environmental health department.

  Find contact information for your local county public health or environmental health department.

Security:

- Ensure there is a method to prevent unauthorized access to the system tanks (e.g., fencing around the school that is locked after hours).

Chemical Storage:

- Store chemicals in a secure area where they cannot be accessed by students or unauthorized personnel.
- Store chemicals away from food or surfaces where people may eat or drink.

Water Quality:

- Use only potable water. Do not use harvested rainwater for aquaponic systems.
- Monitor water quality, including temperature, pH, dissolved oxygen, ammonia, nitrites, and nitrates.

Backflow Prevention:

- To protect potable water from contamination, ensure that there is an air gap or appropriate backflow prevention device between the potable water source and the fish tanks.

Disposal of Waste Water and Solid Wastes:

- Do not dispose of system waste water by discharging it directly back into a stream, sewer, irrigation ditch, or reservoir, because you might be releasing small fish or other aquatic life forms into that stream or water system, and in so doing you may be in violation of the Clean Water Act.
- System waste water may be used to water fruit trees or non-edible plants, as may waste water from an alternative handwashing station water catchment.
- Solid wastes from fish may be composted (refer to Composting Best Practices and treat as a manure).

Human Sanitation:

- Wash hands with soap and potable water before harvesting produce.
- Wash hands with soap and potable water after contact with system water or fish. Wash hands any other time they have become contaminated (such as after touching one's eyes, mouth, or face, etc.).
- Ensure there is a method to prevent individuals from working in the aquaponics system who, in the last two days, have experienced vomiting and/or diarrhea. In addition, exclude any individual with jaundice, wounds on the hands or arms that appear infected or cannot be covered with a bandage, or a fever with a sore throat.

Zoonosis Prevention:

- Wash hands and cover any wounds before handling fish or having contact with the system water. Wash hands again after contact with the fish or system water.
- Wear pierce-proof, waterproof gloves and/or any other appropriate personal protective equipment.
- Report sick fish to an aquatic animal health professional at the Arizona Department of Agriculture immediately so that disease management recommendations can be implemented.

Prevention of Contamination by Pests:

- Place netting over your produce or enclose the system in a greenhouse to reduce animal-to-plant contact as, for example, with birds.
- Keep production tanks off the ground.
- Cull any plants soiled with feces and discard them in a covered trash can. Be sure to wash hands after handling soiled produce.

Prevention of Contamination by Pests, cont'd:

- Use pesticides only as a measure of last resort, and use only the minimum amount necessary.
- Communicate with facilities management to ensure pesticides applied to the school grounds are not applied in such a way as to contaminate the produce, system water, etc.
- It is recommended to keep logs that record the date, amount, and name of plant pest control substances or plant disease control substances.

Harvesting Produce Safely:

- Harvesting should be supervised by adults.
- Harvest bins should be made of a smooth, easily cleanable material and should be washed, rinsed, sanitized and air dried before use at harvest. Otherwise, unused, disposable, food-grade bags may be used.
- Keep harvest bins or bags off of the ground or other surface that may contaminate them while harvesting and after washing, rinsing, sanitizing and air drying them (if applicable).
- Only touch the produce when harvesting – don't touch the root system, system water, or equipment.
- Use only potable water for rinsing produce; never use system water.
- Prohibit drinking, eating, chewing gum, etc. – only do this in designated areas away from food production or packing.

Reference Sources:

Arizona Game and Fish Department, www.azgfd.com/license/speciallicense/aquaticstocking/

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www.ctahr.hawaii.edu/oc/freepubs/pdf/FST-38.pdf