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Health Options

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Tuesday January 14, 2014

Key to future sustainability is looking to Hawaii's past

In the middle of the Pacific, we are only days away from a food shortage if our supply system malfunctions. Our capacity to produce adequate food locally is woefully lacking. This is due to many years of major changes in our lifestyles and their impact on the environment. With urban development, a great deal of productive agricultural land and coastal fishponds have been lost. Many people are waking up to the need to improve local food production in environmentally sustainable ways.

Tetzuzan "Benny" Ron, aquaculture coordinator at the University of Hawaii at Manoa, has given local food production and environmental sustainability a great deal of thought. We recently had the opportunity to interview him.

QUESTION: What do we need to consider as we attempt to increase food production in Hawaii?

ANSWER: Moving in the right direction requires a paradigm shift for many of us. Essentially, we need to look back to move forward. By this I mean that we need to learn from traditional Hawaiian agricultural practices and incorporate their core concepts into environmentally friendly new technologies.

Q: What are these core concepts?

A: First, we need to conserve and protect our water supply. If we deplete or contaminate underground aquifers, we risk hitting a point where it will be virtually impossible to recover. Since pure water is our most basic need, we should instill in our hearts and minds the deep meaning of the Hawaiian term "wai" (water). Wai is a manifestation of the god, Kane i ka wai ola (Kane, giver of the waters of life). There is no life without water.

Of course, the next most basic need is food. Food production requires the combined health of our water supply, the land and the sea. To learn from our host culture in Hawaii, I recommend that anyone who wishes to deal with agriculture should study the term "haloa," which comes in the form of kalo (taro) and represents the original source of Hawaiian ancestors.

Thirdly, we need to respect our host culture by incorporating aloha or love for the aina (land), the kanaka maoli (Hawaiian people) and others in Hawaii.

Q: What steps can we take to improve local food production in a sustainable fashion?

A: My focus has been on developing aquaculture technologies that are environmentally friendly. Farming fish or shrimp produces animal waste that is primarily nitrogen in the form of ammonia. As this accumulates, it becomes toxic to the animals. However, when handled properly, this "waste" can be valuable.

The secret weapon is using beneficial bacteria in the system. Even the human body utilizes bacteria. It harbors about 10 times more bacterial cells than its own cells. In aquaculture systems, bacteria can be used to convert ammonia nitrogen into a form that plants and animals can use. For many people, using bacteria to convert ammonia waste back into fish or shrimp feed is another paradigm shift.

Aquaponics combines raising aquatic animals in combination with plants (hydroponics). A technology called biofloc introduces a high diversity of friendly bacteria into this aquaculture system to take up ammonia and convert it to protein that can be used by aquatic animals such as shrimp and fish. This biofloc approach is both economical in terms of feed cost and environmentally sustainable.

For more information about aquaculture technology and training, visit www.aquaculturehub.org.

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