

## **Environmental Case Study**

### *Pacific*

### *Water Wars in Hawaii*

#### **Introduction**

Water is a precious commodity in many parts of the world. Thousands of gallons a minute are needed for agriculture, commerce, household use, and manufacturing in small cities. Clean water for any use is not always easy to find. The water that is used usually becomes polluted with chemicals and microorganisms that make it unsuitable for reuse. So, the water must be treated before it is disposed and again before it is used to make it harmless for all purposes. Just because Hawaii is surrounded by water does not exempt the island from water resource competition. The salty water of the Pacific Ocean is not useable as is for most human needs. So, Hawaiian water users must compete for a limited supply of fresh water.

Almost 50% of the water used in the United States goes towards agriculture and energy production. Agricultural irrigation has remained a major user of water since water usage was closely monitored in the 1950's. A decrease in the acreage of farmland has not reduced the over 130 billion gallon a day water usage. Increased mechanization on farms and intensive growing practices doubled agricultural water use from 1950 to 1980. Some crops require more water than others. The consideration of irrigation water usage for crops is secondary for crops that bring in a high income. After all, why worry about paying the costs of water consumption if it is a small part of the cost of growing the crop. So, dry areas such as the Oklahoma panhandle grow water intensive crops, such as corn.

Irrigation water is not likely to go directly back into the environment - therefore depleting water supplies. What is not taken up by the plants rapidly evaporates from the soil in hot or dry areas. The water that does soak into the ground water or ends up in surface waters is usually contaminated with agricultural chemicals such as fertilizer and pesticides. Therefore, agricultural water uses put a higher demand on water resources because in effect it causes greater water loss.

#### **Background**

Hawaiians claim a cultural link to taro. Taro is sometimes referred to as the "potato of the humid tropics." The plant produces large, flamboyant elephant ear shaped leaves that make it valuable as an ornamental yard plant in many warm regions of the United States. In Hawaii it is not the leaves that make the plant a valuable economic crop. The underground stem contains a starch-like material that is used throughout the Pacific islands as a source of meal for breads and other foods. Taro is used in the traditional Hawaii dish called poi. It is believed that certain varieties of the plant originated in Egypt and were transplanted from one country to another as people colonized new tropical regions. The taro favored in Hawaii is grown, propagating the underground stem called a corm. Hawaiian taro takes a large volume of water to get the plants large enough before the corms grow large enough to harvest.

Taro is a profitable crop to grow in Hawaii. It has a great demand locally and is exported to other states and the Asian food market in other countries. In addition, taro is preferred as a "healthy" source of "starch" because it does not aggravate dietary disorders such as diabetes. So, it is economically important as a specialty food for the burgeoning health food market in Europe and the United States. Other Pacific islands and Australia compete with Hawaii in the global taro market. This means that in order to be globally competitive Hawaiian growers must try to produce the best quality taro at a very small cost. Taro in Hawaii is irrigated using the fresh water from rains and mountain streams. Well water is also used to supply irrigation systems for taro production.

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#### **The Issues**

Hawaiian taro growers have run into two problems associated with water use for crop production. First, they are competing with other water users for the limited supplies of fresh water in Hawaii. Water in Hawaii, like in many states, is distributed to users based on complex water rights laws. The second problem encountered by taro farmers is the impact of their crop on Hawaii's fragile environment. Taro is not native to Hawaii so it can be considered a potential invasive species. Plus, taro farms compete for wetland space. Wetlands are protected in the United States by the Environmental Protection Agency. Taro farmers must resort to growing the crops in areas needing irrigation because they cannot destroy wetlands in order to grow the moisture-loving crops.

In 2003, the Hawaiian Board of Land and Natural Resources angered taro growers in East Maui. They refused to provide water leases to the farmers until water conservation and stream quality issues related to taro farming were investigated. The taro growers did not believe that the leases were being held up for environmental reasons. They felt that their water usage was being sacrificed for the benefit of the larger pineapple and sugarcane industries. It became a "David and Goliath" situation in which the smaller taro farmers felt that their rights were being compromised by the "bigger guys". Compounding the problem is that the taro growers cannot use the wetlands where the crops could grow without needing irrigation.

The Hawaiian government feels that the taro growers are putting unjustified pressure on the governing body's decisions on water leasing. After all, there is a limited amount of water in the watershed supplying agriculture with irrigation water. The pineapple and sugarcane industries date back further than the large taro production fields. Plus, the government needs to reduce the amount of pollution entering Hawaii's streams that flow through fragile ecosystems. Currently, petitions by the taro growers are forcing the Hawaiian Board of Land and Natural Resources to consider the needs of taro farmers. Tough decisions now have to be made to ensure equitable water usage and environmental protection.

#### **References**

##### **Literature**

1. de Villiers, M. 2001. *Water: The Fate of Our Most Precious Resource*. Houghton Mifflin Company; Boston, MA.
2. Krauss, B.H. 1993. *Plants of Hawaiian Culture*. University of Hawaii Press; Honolulu, HI.
3. Postel, S. & Richter, B.D. 2003. *Rivers for Life: Managing Water for People and Nature*. Island Press; Washington, DC.

##### **Web Sites**

1. Environment Hawaii  
<http://environment-hawaii.org/>
2. Environmental Protection Agency  
<http://www.epa.gov/owm/water-efficiency/>
3. United States Geological Survey - Hawaii  
[http://hi.water.usgs.gov/w\\_use/](http://hi.water.usgs.gov/w_use/)
4. Water: Use It Wisely  
<http://www.wateruseitwisely.com/>

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### **Key Principles**

1. Agricultural water usage
2. Water conservation
3. Fresh water supplies
4. Water rights
5. Taro production in Hawaii

### **Ethical Considerations**

1. Who should have priority of water usage?
2. How should the government balance the needs of competing water usage by agriculture and manufacturing?
3. Defend or debate the statement: "Agriculture has the responsibility of limiting farmers to crop growing practices that use the minimum amount of resources."
4. Who should have the responsibility of determining the types of crops that can be grown in an area with limited resources?

### **Civic Engagement & Service Opportunities**

1. Volunteer for a local community group involved in volunteer water quality monitoring in your area.
2. Write or e-mail your local politicians about water management issues in your area.
3. Form a student group having an environmental preservation mission.
4. Set up a public forum at your school discussing water usage practices in your area.

Learn more about community service as part of your educational enrichment by visiting the following websites: <http://www.learnandserve.org/>, <http://www.servicelearning.org/>.

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