

Aldo Leopold And Intelligent Tinkering

Aldo Leopold prompted a great deal of thought and debate about the idea of intelligent tinkering. The following excerpt from his book *Round River* provides some insight into his views:

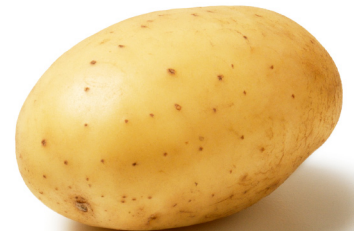
“Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the ranges; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and co-operate with each other. The competitions are as much a part of the inner workings as the co-operations. You can regulate them—cautiously—but not abolish them. The outstanding scientific discovery of the twentieth century is not television, or radio, but rather the complexity of the land organism. Only those who know the most about it can appreciate how little we know about it. The last word in ignorance is the man who says of an animal or plant: ‘What good is it?’ If the land mechanism as a whole is good, then every part is good, whether we understand it or not. If the biota, in the course of [eons], has built something we like but do not understand, then who but a fool would discard seemingly useless parts? To keep every cog and wheel is the first precaution of intelligent tinkering.”

Leopold, Aldo: *Round River*, Oxford University Press, New York, 1993, pp. 145-146.

SOME QUESTIONS AT THE HEART OF THE DEBATE

Although we might agree that understanding the “complexity of the land organism” is important, there is no consensus on the degree of “tinkering” we should be doing with domesticated crops. Some questions can help frame a discussion on this topic:

- Do genes that are inserted into genetically engineered crops like Round Up® Ready Corn threaten the wild relatives of these crops? Can engineered genes drift from genetically modified plants and become incorporated into growing populations of nearby related crops or wild relatives?
- How effective and reliable are seed banks? Should we invest in seed banks, sperm banks, and cryogenically frozen tissues to conserve wild species of plants and animals?
- How can we prevent environmental disasters like the one that was created when kudzu was introduced to the Southeastern United States? *
- Do botanical gardens and zoos effectively help to preserve plant and animal species? Is there a better way to do that than preserving native habitats?
- Does an individual seed contain all of the genetic variability necessary to assure that a species can survive extinction?



**In 1876, countries around the world were invited to build exhibits to celebrate the one-hundredth birthday of the United States. The Japanese government constructed a beautiful garden filled with the sweet-smelling blooms of kudzu. American gardeners were captivated by the plant and used it for a variety of ornamental purposes. By the 1920s, the plant was used to feed animals and then, a decade later, to control erosion. In the 1940s, farmers were paid to grow the plant. However, because the kudzu vine grows so fast and is so prolific, enveloping trees and denying them sunlight, it was recognized as a weed by the USDA in the 1970s and listed by the U.S. Congress as a Federal Noxious Weed in 1997. With the propensity to replace existing vegetation, kudzu causes much economic and ecological damage. Some government publications estimate that kudzu causes more than \$100 million of damage per year in the U.S. According to another source, which factors in \$336 million of lost productivity in forests, losses from kudzu are “greater than \$500 million per year” (Blaustein, Richard J. 2001).*