

SUSTAINABLE AGRICULTURE

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The challenge of agriculture is simple, harvest less than the natural recovery or increase. This is easy to say, but most agriculture has been mining soil fertility and often ground water while poisoning the environment. “The desert follows the plow” is all too often a true saying. Restoring damaged agriculture land is one of the major challenges of the next 100 years.

The keys to sustainable agriculture include maximizing diversity and mimicking natural ecosystems. A farm needs to make skillful use of labor and time, minimize costs, manage money well, and do very good marketing. The asset value of a farm should increase every year.

Timing is important by working with crops and crop seasons the premium of beating the market can be realized. A farm has to be profitable to survive, but many farms have always had off farm income. A sustainable system relies on cooperation between neighbors and the community. It must reinforce a sustainable culture as well as resource management practices. It will also rely on well paid stable labor instead of illegal undocumented immigrants who by some estimates account for 50-80% of the farm labor force.

Energy input : output ratios are useful in examining the sustainability of agricultural systems. Traditional farmers in many areas get a return of 15 times as much energy as they invest (15:1 but in some cases up to 30:1). Green revolution grain varieties in a traditional setting often have a return of 7:1, but for rice in California it is only 2:1. U.S. agriculture overall runs a deficit of 1:10. Why? Fossil fuels.

Sustainable solutions

1) New (and old) solutions -- permaculture, polyculture, natural farming, biointensive agriculture, forest

gardens, edible landscaping, agroforestry. The area required to grow food for one person by different systems:

French Biointensive	3,500 sf
Chinese traditional methods	5-7,000 sf.
U.S. agriculture	80,000 sf

2) Organic agriculture – emphasizes biological resources and biocontrol. Growing very fast worldwide, usually certified by an independent review team.

3) Improve efficiency of conventional farming - LISA = Low input sustainable agriculture
IPM integrated pest management, conservation tillage.

4) Rainfed agriculture instead of irrigated farming reduces environmental cost, risk of salt and alkali buildup, toxic drainage, and reduces subsidy costs.

5) Mixed farming is much easier to make sustainable than single crop monocultures over tens of thousands of acres. But changes are needed to make local use more feasible. See Joel Salatin’s book about Polyface Farms, Everything I Want to Do is Illegal.

6) Community supported agriculture is growing in importance – members of the community buy shares in a farm and get a share of all that is produced each year..

We could slash pesticide use without major impacts – one estimate suggests a 50% cut in pesticide use would increase food prices only 0.6%, but save 4-5 times on environmental damage prevented as increased cost to consumers.

Population that could be fed from 50 million acres of irrigated US farmland with biointensive farming 500 million, from all planted U.S. ag land -- 1 billion+, from all farmland, rangeland and urban gardens 2 billion.

The problem of world hunger and famine results from lack of common sense, limited access to land (tenure) or water, distorted economic incentives, limited credit, flawed market systems, ignorance and distribution problems. We can feed everyone we have today and the 12 billion we may have on earth

in 30 years – but to do it we will have to be much smarter and wiser.

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REVIEWER

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