

We Are The Soil. The Destructive Impacts of Industrial Agriculture

Biology and life have been replaced with chemistry.

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Global Research, May 27, 2014

[Asian Age](#)

Theme: [Biotechnology and GMO](#),
[Environment](#)

"The claim that the Green Revolution or genetic engineering feeds the world is false. Intrinsic to these technologies are monocultures based on chemical inputs, a recipe for killing the life of the soil"

'Creative work in being stewards of the land and co-creators of living soil is not an "input" into a food system, but the most important output of good farming,' writes Shiva.

We are made up of the same five elements — earth, water, fire, air and space — that constitute the Universe. We are the soil. We are the earth. What we do to the soil, we do to ourselves. And it is no accident that the words "humus" and "humans" have the same roots.

This ecological truth is forgotten in the dominant paradigm because it is based on eco-apartheid, the false idea that we are separate and independent of the earth and also because it defines soil as dead matter. If soil is dead to begin with, human action cannot destroy its life. It can only "improve" the soil with chemical fertilisers. And if we are the masters and conquerors of the soil, we determine the fate of the soil. Soil cannot determine our fate.

History, however, is witness to the fact that the fate of societies and civilisations is intimately connected to how we treat the soil — do we relate to the soil through the Law of Return or through the Law of Exploitation and Extraction.

The Law of Return — of giving back — has ensured that societies create and maintain fertile soil and can be supported by living soil over thousands of years. The Law of Exploitation — of taking without giving back — has led to the collapse of civilisations.

Contemporary societies across the world stand on the verge of collapse as soils are eroded, degraded, poisoned, buried under concrete and deprived of life. Industrial agriculture, based on a mechanistic paradigm and use of fossil fuels has created ignorance and blindness to the living processes that create a living soil. Instead of focusing on the Soil Food Web, it has been obsessed with external inputs of chemical fertilisers — what Sir Albert Howard called the NPK mentality. Biology and life have been replaced with chemistry.

External inputs and mechanisation are imperative for monocultures. By exposing the soil to wind, sun and rain, monocultures expose the soil to erosion by wind and water.

Soils with low organic matter are also most easily eroded, since organic matter creates,

aggregates and binds the soil.

Soil is being lost at 10 to 40 times the rate at which it can be replenished naturally. This implies 30 per cent less food over the next 20-50 years. Soil erosion washes away soil nutrients. A tonne of top soil averages 1-6 kg of nitrogen, 1-3 kg of phosphorous, 2-30 kg of potassium, whereas soil in eroded land has only 0.1-0.5 per cent nitrogen. The cost of these nutrient losses are \$20 billion annually.

Fertile soils contain 100 tonnes of organic matter per ha. Reduction of soil organic matter by 1.4-0.9 per cent lowers yield potential by 50 per cent. Chemical monocultures also make soils more vulnerable to drought and further contribute to food insecurity.

Further, eroded soils and soils without organic matter absorb 10 to 300 mm less water per ha per year from rainfall. This represents 7 to 44 per cent decrease in water availability for food production, contributing to a decline in biological productivity from 10-25 per cent.

No technology can claim to feed the world while it destroys the life in the soil by failing to feed it on the basis of the Law of Return. This is why the claim that the Green Revolution or genetic engineering feeds the world is false. Intrinsic to these technologies are monocultures based on chemical inputs, a recipe for killing the life of the soil and accelerating soil erosion and degradation. Degraded and dead soils, soils without organic matter, soils without soil organisms, soils with no water holding capacity, create famines and a food crisis, they do not create food security.

This is especially true in times of climate change. Not only is industrial agriculture responsible for 40 per cent of the Green House gases contributing to climate change, it is also more vulnerable to it.

Soils with organic matter are more resilient to drought and climate extremes. And increasing organic matter production through biodiversity intensive systems, which are in effect photosynthesis intensive systems is the most effective way to get the carbon dioxide out of the atmosphere, into the plants, and then into the soil through the Law of Return.

Soil, not oil, holds the future for humanity. The oil-based, fossil fuel intensive, chemical intensive, industrial agriculture has unleashed three processes which are killing the soil, and hence impacting our future.

Firstly, industrial agriculture destroys living soils through monocultures and chemicals. Second, an oil-based paradigm intensifies fossil fuel inputs and creates a false measure of productivity which presents an unproductive system as productive.

The trick lies in reducing creative productive work to “labour “ as a commodity, counting people as labour as an “input”, and not counting fossil fuels as an input. Intensive fossil fuel use translates into more the 300 “energy slaves” that work invisibly behind each worker on fossil fuel intensive industrial farms.

People as an input means the less people on the land, the more “productive” agriculture becomes. Farmers are destroyed, rural economies are destroyed, the land is emptied of people and filled with toxics. The creative work of farmers as custodians and renewers of soil and biodiversity is replaced by deadly chemicals.

Creative work in being stewards of the land and co-creators of living soil is not an “input” into a food system, but the most important output of good farming. It cannot be reduced to “labour” as a commodity. Land, too, is not a commodity. Creating, conserving, rejuvenating, fertile and living soil is the most important objective of civilisation. It is a regenerative output.

Third, displaced farmers flood cities. This is not a natural or inevitable phenomenon. It is part of the design of industrial agriculture. The explosion of cities buries fertile soil under concrete. The equivalent of 30 football fields are consumed by cement and concrete every minute.

The Save our Soils (SOS) movement, of which I am a patron, has been started by many organisations including FAO, IFOAM, Nature and More, to wake humanity to the soil emergency, which is also a human emergency.

We need to measure human progress not on the basis of how much cement buried the soil, but how much soil was reclaimed and liberated. This is what “saugandh mujhe is mitti ki” should mean. Living seeds and living soils are the foundation of living and lasting societies.

Vandana Shiva is a philosopher, environmental activist, and eco feminist. Shiva, currently based in Delhi, has authored more than 20 books and over 500 papers in leading scientific and technical journals. She was trained as a physicist and received her Ph.D. in physics from the University of Western Ontario, Canada. She was awarded the Right Livelihood Award in 1993. She is the founder of Navdanya <http://www.navdanya.org>

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