

Soil, soil fertility, seeds and small scale agriculture

Notes inspired by the writing and campaigning
of Vandana Shiva



The key idea of “Discover” is to discover, or rediscover, the valuable skills, traditions and resources which have been lost or neglected, but which can contribute much to the health, wealth and worth of Africa today.

The purpose of this newsletter is to encourage you to improve your soil fertility, to farm organically and to plant traditional fruits, vegetables and medicinal plants using your own seeds.

Discovering our traditional resources is particularly important regarding the seeds and agricultural practices that developed over centuries in Africa. Over the past 60 years or so traditional seeds, vegetables and farming have steadily disappeared owing to the introduction of maize, cassava, hybrid seeds, cash crops and genetically modified crops. These changes have been driven by commercial interests, with little or no regard for the health and welfare of the population.

I have admired Dr Vandana Shiva for a long time. She is an Indian scientist who campaigns very vigorously for the right of farmers to control their own destiny by keeping and sharing seeds. To keep control over their own lives, farmers and farming communities must use their own seeds. She campaigns equally strongly against the international seed corporations that seek, sometimes aggressively, to sell their seeds and herbicides.

Vandana Shiva is convinced that the practice of keeping and using one’s own seed is a matter of global importance. She says:

*“2015 has been declared the Year of Soil. Let us recognize that in the seed and the soil we can find answers to every one of the crises we are facing;
Violence and war, Hunger and disease and the Destruction of democracy”*

Do you agree? This is a big claim! Maybe you will understand this better as you read further.

The following is a summary of some of her forthright views and clear thinking. These ideas encourage me in my work in Discover to take our resources of soil and seeds and our traditional farming methods very seriously.

Soil and soil fertility

Vandana Shiva writes;

“Twenty years ago I started the Navdanya farm in the lower Himalayan Doon Valley, on a piece of land left barren and sandy by a eucalyptus plantation. With love we grew diversity, and gave back as much of the organic matter to the soil as possible. Today the soil is thriving with organisms, earthworm mounds cover the farm, we have been able to reduce water use by 70% because the soil can hold water, the soil smells with life and the soil gives us life.”

Natural soil is rich in earthworms, microorganisms and humus. It also contains a large amount of carbon. Soils on large commercial farms which use large quantities of agricultural chemicals contain much less of all these things.

“Rebuilding soil fertility is the very basis of sustainable food production and food security.

Today societies across the world stand on the verge of collapse as soils are eroded, degraded, poisoned, buried under concrete, and deprived of their life. But it could be so different.

During the 2009 drought, when I visited Navdanya members in different parts of India, I found that their crops had not suffered, because they were using locally adapted seeds and their soils had water-holding capacity as a result of organic manuring. By contrast farmers using Green Revolution varieties or genetically modified cotton had had crop failures.”

Small organic farms vs large farms

Small organic farms produce more food per acre than large industrial farms because small farmers give more care to the soil and to plants and animals. Small farms include a variety of crops and animals, there is no waste

because all “waste” is returned to enrich the soil and the wider environment is enhanced. Thus soil fertility is maintained. Biodiversity is protected because the lack of chemicals ensures that a wide variety of insects, birds and plants can thrive.

As farms increase in size, they replace labour with fossil fuels for farm machinery and toxic chemicals. The caring work of farmers is replaced by harsh and careless technologies. Thus, food production per acre goes down.

It is often said that large farms are more efficient. That is because the productivity is measured in terms of output per person employed. The chemicals, water or fossil fuels consumed are not taken into account, and nor is the destruction of the soil. In this way, the more family farmers are displaced and replaced by chemicals and machines, this false calculation says productivity has increased. When the inputs of oil and other natural resources are taken into account, industrial agriculture is, in fact, very inefficient. Industrial agriculture uses 10 calories of input to produce one calorie of food.

Many governments invest heavily in oil and oil based products. Governments in industrialised countries subsidise oil companies in their search for oil with billions of dollars. Large farming enterprises are similarly subsidised. This clearly favours large, mechanised farms and disadvantages the majority of the world’s farmers, the soil, the environment and the climate. No such subsidies are available for small-scale organic farmers, in spite of the fact that they create employment, nurture the soil and improve the environment. Further, by planting trees and hedges, by using few if any oil based products and by storing carbon in the soil with organic matter they reduce the greenhouse gases in the atmosphere.

In many African urban markets, fruit and vegetables have been shown to contain many times the safe level of pesticides. This is partly because many farmers are illiterate, and cannot read the instructions on the packets, and as a result apply too much. It is also because of limited storage space, where pesticide packets are stored in the same area as food and the food becomes contaminated. Also pesticides banned in Europe on safety grounds are available in Africa.

Small organic farms are productive, with their range of plants they promote biodiversity, and healthy soils yield healthy produce. It is of course important to blend traditional farming methods with recently developed know-how, e.g. the use of vetiver grass¹ for preventing soil erosion, the use of mulch and other insights of the permaculture² and Foundations for Farming³ movements.

Seeds

Today multinational corporations have developed genetically modified (GM) seeds. The corporations claim that these seeds produce a good harvest. They promote them very strongly throughout the world. This is very dangerous for the earth, for farmers and for consumers. For the following reasons:

1. Biodiversity. It is important to have seeds of many different varieties of any crop, be it sorghum, wheat, cotton, rice or anything else. Why?
 - a) Different varieties are suited to different soils and climates.
 - b) Once a particular seed is no longer available, it is gone forever.
 - c) The pleasure of eating depends on having variety.
 - d) As the climate changes, it is important to have other varieties available.
 - e) Plant, insect and bird life thrive on diversity.
 - f) GM crops are usually grown as a monoculture in very large fields, thus reducing biodiversity even more.



A display of many varieties of Ethiopian sorghum at the Institute for Biodiversity Conservation in Addis Ababa. The objective of this institute is to rescue the country’s plant resources from adverse impacts of various human activities and natural calamities and thereby support crop improvement programs.

¹ See <http://reap-eastafrica.org/blogs.info/reap/AmLeaflets/Vetiver%20Grass.pdf>

² See <http://permaculturenews.org/about-permaculture-and-the-pri/>

³ See <http://www.foundationsforfarming.org/>

2. Once tied into a contract with such a company, a farmer is obliged to buy new seeds every year and also the herbicide Roundup. The farmer is forbidden to keep seed for planting. Thus the freedom of the farmer is taken away. In India, after suffering crop failures many farmers have gone deeply into debt, and found no escape except by committing suicide.
3. The effect of Roundup is to protect the crop by killing all other plants (which are labelled as weeds, however useful they may be). In fact as a result of using Roundup, "super-weeds" develop which are resistant to Roundup and therefore require an even stronger herbicide.
4. GM crops need large inputs of fertiliser, pesticides and herbicides. Such agricultural chemicals destroy the life (microorganisms, earthworms etc.) in the soil. The herbicides and pesticides are designed to kill every other plant and most insects. The chemicals also drain into the rivers, killing fish life, and polluting our drinking water.
5. It is a human right to retain seeds from one's own plants and to use them for the next crop. This has been the practice since time immemorial. We must defend this right at all costs!

Climate change

Some organisations claim that forty per cent of the greenhouse gases causing climate change come from industrial agriculture, with its heavy use of machinery, animals kept in factory conditions and oil based agricultural chemicals.

With organic farming the amount of carbon stored in the soil is considerably higher than in industrial farming. A massive contribution to reducing the impact of climate change could thus be made by a return to organic farming.

Earth Democracy

Vandana Shiva has established a new movement called "**Earth Democracy**".

This provides an alternative worldview in which humans are embedded in the Earth Family. We are connected to each other through love and compassion, not hatred and violence. Ecological responsibility and economic justice replace greed, consumerism and competition as objectives of human life.

Small-scale organic farming is a creative, highly satisfying and labour intensive activity that enables people and communities to be self-sufficient. At its best farmers cooperate with each other and benefit from each other's skills and experience. In societies where food is produced on commercial farms, few labourers are required and the displaced people drift to the cities. Thus the cities expand and more of the land disappears under concrete.

From a publication of the United Nations:

Organic agriculture can increase agricultural productivity and can raise incomes with low cost, locally available and appropriate technologies, without causing environmental damage. Furthermore, evidence shows that organic agriculture can build up natural resources, strengthen communities and improve human capacity, thus improving food security by addressing many different causal factors simultaneously. (Ref 4)

If you have found this article interesting, and you have access to the internet, please watch this film. It is entitled "Seeds of Freedom" and is about half an hour long. It can be watched in English or French.

<http://www.seedsoffreedom.info/watch-the-film/watch-the-film-english/>

Sources of information

1. Vandana Shiva, "We are the Soil", Resurgence & Ecologist, January February 2015, No 288, pp 22-23.
2. <http://exopermaculture.com/2014/01/03/vandana-shiva-small-is-big-the-future-of-food-security-lies-in-protecting-and-promoting-small-farmers/>
3. <http://seedfreedom.info/we-are-all-seeds-a-new-year-message-from-dr-vandana-shiva-for-2015/>
4. "Organic agriculture and food security in Africa", UNUP-UNCTAD, (2008)
http://unctad.org/en/docs/ditcted200715_en.pdf
5. <http://navdanya.org/>

Keith Lindsey

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