

*As anyone who met Emilia knows she was passionate in her beliefs. Wherever she saw injustice she responded, whether against the preparations for war with Iraq, nuclear power in her adopted home of France or the civil rights movement during the 1960s in southern California. Perhaps her activism was created by her very first experience of a dysfunctional world: an air raid on Barcelona during the Spanish Civil War at the moment of her birth.*

*However, for the agronomic work for which she later became known, it was a simple childhood walk that revealed the nonsense of modern agriculture, Emilia wrote:*

*“I was still a child when I realized that grown-ups didn’t know what they were doing when it came to agriculture. The earth in the Spanish wheat fields looked awful: parched, dry and lifeless. I had no idea what could be done, but one thing I knew for sure, there had to be a better way!”*

*This simple revelation was the impetus toward her lifelong attempt to reconcile agriculture with Nature. Over a period of 30 years Emilia worked at this reconciliation and this effort eventually resulted in ‘Synergistic Agriculture’ an agronomic technique mimicking soil’s own natural processes.*

*But despite much work worldwide Emilia was frustrated at the slow pace of change:*

*“We have today the knowledge of the error of the plow and the knowledge of how to correct this fault while maintaining food production, but how long must we wait (on even a small scale) for this revolution to begin? Unfortunately, it is one of the characteristics of humanity to be conservative, but it is also possible to make a quantum leap when we understand that our life and that of the planet is at stake”*

*But she was not pessimistic about the future despite her doubts:*

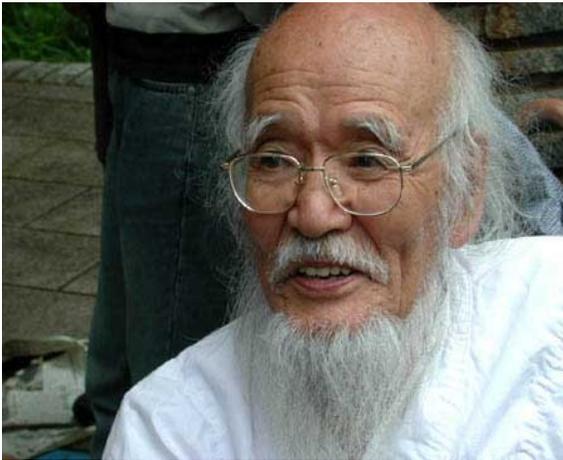
*“It is my deep conviction that the parasitism of the dominant society and its economic practice, is not a fatality that we cannot escape. There is no reason that conventional and traditional agriculture today using the plow, should not soon leave it behind.”*

*The following article has been put together from some notes Emilia prepared for her long awaited Synergistic Agriculture Handbook. In explaining Synergistic Agriculture Emilia tries to expose the misconception of science-based solutions to fertility applied not only in conventional agriculture but much organic agriculture too. She argues that while organic and conventional farmers neglect the “Synergistic Effect’ of an undisturbed and balanced soil life, they will never achieve a truly sustainable yield of healthy crops. For those permaculturalists who believe that the growing of annual crops has nothing to do with them, read on.*



Permaculturalists recognize the importance of growing the maximum amount of food from perennial plants in permanent places. They also recognize the importance of ‘perennializing’ annuals by allowing self-seeding whenever possible. Yet, for the vast majority of vegetable and cereal crops eaten, that must be seeded or transplanted annually, Permaculture has almost nothing to say on how they should be grown and permaculturalists are left to choose from one of the many organic techniques. However, if we are truly committed to sustainable agriculture, then home and commercial production of annual vegetable and cereal crops is every bit as important as perennial planting. What is needed and what I propose is an agricultural technique that through succession and rotation allows for the production of these crops through no tilling, no erosion, and no dependency on off-farm inputs, whether labeled ‘organic’ or not. I call it ‘Synergistic Agriculture’ and believe strongly that this approach not only could but should be the one agronomic practice for growing annual crops adopted by all permaculturalists since, not only is it organic, but deeply ecological too.

Synergistic Agriculture evolved from radical roots, sources include, Edward Faulkner, Masanobu Fukuoka, Ruth Stout, Alan Chadwick, Marc Bonfils as well as Bill Mollison and David Holmgren. Yet, considering the difficulties I have had in convincing organic farmers and even other permaculturalists of my technique, you might think what I am proposing is revolutionary. But to propose an agriculture in which we do not plow and do not use fertilizers is not just a novelty, it is an agronomic reform, the first true reform since agriculture was invented in the Neolithic era. While the reasons for these difficulties are no doubt many, for present purposes I shall concentrate on the conventional thinking that underwrites the attitude toward soil and its fertility in order to illustrate the mental leap necessary for organic farmers and permaculturalists to grasp the simple proposition of Synergistic Agriculture.



Masanobu Fukuoka, radical agronomic reformer'

When I first came across the Permaculture concept in the early 1980s I was delighted to see that Masanobu Fukuoka was mentioned in its books, acknowledging his contribution to the prevention of erosion caused by the cultivation of annual crops. But what seems to have been missed entirely is Fukuoka's equally important realization that soil's self-fertility can nourish

plants. I have recently re-read Bill Mollison's books in order to search for references to soil care. What I found was the underlying assumption, shared by conventional agriculture, that says it is necessary to add artificially what is lacking. While Bill does often advise of the need for mulches (with which I entirely agree), he also suggests they should be dug-in in the spring! Fukuoka himself acknowledges this misconception when discussing the rise of alternative agriculture in the West, he says:

“The problem, however, is that most people do not yet understand the distinction between organic gardening and natural farming. Both scientific agriculture and organic farming are basically scientific in their approach. The boundary between the two is not clear.”  
(The Road Back to Nature page 363)

This misconception might best be expressed, regarding soil's self-fertility, as an accounts ledger that must forever remain in balance. In other words, what comes out (the debit of harvested crop) must be replaced (the credit of fertilizer or amendments in whatever form). Such reductive logic applied to soil, accounting the supposed 'balance book of fertility', practiced by conventional and organic farmers alike, misses the simple point that soil is a living entity and as such its relationships are dynamic and not static. In Synergistic Agriculture I have shown that a healthy soil can be produced by plants alone – although a walk in the countryside reveals this obvious yet hidden fact too - I have not only reduced but eliminated the toolbox of organic farming, whether it be the addition of lime or sulfur, trace elements, heavy metals, rock powders, micronutrients delivered by irrigation or slow release pellets, blood and bone, inorganic and organic fertilizers, foliar sprays and composts. There is just no need for this ceaseless round of plowing, disking, spreading or spraying that exhausts the farmer as much as the soil. I therefore squarely oppose conventional agriculture's 'balance book' approach to soil fertility with the soil's own 'Synergistic Effect'.

Synergistic Agriculture overcomes these unnecessary conventional practices by renewing Permaculture's debt to Masanobu Fukuoka. Perhaps agriculture's inability to assimilate Fukuoka's simple message of soil's self-fertility is due to the sometimes philosophical expression of his profoundly practical research. It has been my aim for 25 years to occidentalize Fukuoka's work, with the hope that by experimenting with his system I may help in earthing-down the practice and principles of Natural Farming, not only in the family garden but on commercial farms, through the integration of compromises; the use of machinery, greenhouses and irrigation and adaptation to a temperate climate.

There will be no surprise therefore that the tenets of Synergistic Agriculture mirror closely Fukuoka's four principles of Natural Farming; no plowing, no fertilizer, no weeding and no dependence on chemicals, they are:

- 1 - KEEP THE SOIL UNDISTURBED AND UNCOMPACTED
- 2 - USE SOIL'S SELF-FERTILITY AS FERTILIZER
- 3 - INTEGRATE THE LITTER ZONE IN THE AGRICULTURAL SOIL PROFILE
- 4 - ESTABLISH A PARTNERSHIP WITH BENEFICIALS TO PROTECT CROPS

The encouraging rise in Conservation Tillage over the last decade has brought with it machinery designed specifically for no-till. However, the downside is the huge quantities of pesticide and herbicide necessary. The principles of Synergistic Agriculture are not antagonistic to this large-scale, machine-orientated farming, as is Fukuoka's Natural Farming. On the contrary, Synergistic Agriculture, through its refinement of annual succession and rotation, where each crop desired by the farmer must be balanced against the needs of the soil, offers these large farms a way of balancing soil life to a point where no pesticide or herbicide will be required, except, perhaps, the occasional application of natural, plant-based herbicides and pesticides like neem, derris root, pyrethrum or by biodynamic or homeopathic preparations. This is not only good news for the environment but also for organic farmers who have always been refused the benefits of no-till because of its use of synthetic pesticides and herbicides.

Excellent organizations set up to popularize sustainable farming and its best practices such as ATTRA (<http://attra.ncat.org/>) in the US and ECAF (<http://www.ecaf.org/>) in Europe, have shown the strides made in recent years to combine no-till, machine-orientated agriculture with crop rotations and the effective and necessary use of cover crops and green mulches. They illustrate just how close conventional farming practices can come to appreciating the soil's self-fertile dynamic without actually believing in it! Yet if this last step could be taken, if fertility is finally understood as being a product of soil's autonomy and not of farmers force feeding, then it is possible to envisage the eradication of plastics, manures, composts and synthetic chemicals through the natural mimicry of rotations, successions, mulches, dense and continual plant stands and allelopathy throughout the temperate West.

While I recognize that Permaculture is a design process and does not deal with techniques but principles, with Synergistic Agriculture I not only offer practical techniques proven over the past several years, but techniques driven by the principle of respect for the life and autonomy of soil in keeping with the foundational principles of Permaculture as recently expressed by David Holmgren (2002) to include:

“Consciously designed landscapes which mimic the pattern and relationships found in nature, while yielding an abundance of food, fibre and energy for the provision of local needs”.

By abandoning many of the fundamental techniques that conventional agriculture employs, both chemical and organic, including cultivation, fertilizers, herbicides and pesticides, Synergistic Agriculture is able to mimic the natural soil ecosystem. If Permaculture were to adopt my principle of 'Synergistic Effect' and then apply the associated techniques with respect to locality, then it could explicitly involve itself in the growing of annual vegetable and cereal crops for the first time. Not only would this give positive direction to enthusiastic gardeners turning to Permaculture for ideas how to grow their favorite vegetables, it would also open up a dialogue with large farms that actually produce the majority of the food consumed in the West.