

# **Year of Family Farming**

## **Personal Reflections**

### **on**

## **Harnessing Ecosystem Services and Investing Sweat Equity**

When I was turning my compost heaps a few days ago to speed up the processes of decay so as to have lots of organic fertilizer available for the spring-time planting of vegetables, it struck me how often we risk creating confusion by the difficult words scientists and economists use to describe the kinds of things that small-scale farmers do, let us say naturally, every day.

And so, if my wife was to ask me what I had been doing all morning, I could truthfully have said that I had been “busy harnessing ecosystem services and investing sweat equity”, and she would have probably thought that I had become a little bit madder than I already am. Yet these are the kinds of terms that academics like to use to describe the actions that hundreds of millions of farmers are taking with great success to produce most of the food consumed today by the world’s 7 billion people.

Periodic turning of compost speeds up the breakdown of fibrous plant material by letting more air into the heap and by thoroughly mixing up the wet and the dry pockets which tend to develop in the absence of turning. You cannot of course see the bacteria which contribute so much to the decomposition process, but you can easily observe a great scurrying around of larger forms of life looking for comfortable new homes in the re-formed heap – woodlice, worms, beetles and their large white maggots and, in the winter, a few mice, rudely awoken from their hibernation. Working together to feed themselves and to multiply, this congregation of enormously diverse forms of life is transforming a pile of weeds, dried grass, household waste (such as peelings from fruit and the outer leaves of vegetables) and ash from the wood-burning fire into a valuable product. Through their digestive processes and the heat that their activity generates they are creating a dry brown crumbly nutrient-rich material with which I can mulch and feed the next season’s crops. So this is the kind of thing that “harnessing ecosystem services” is all about.

If you don’t have much money, making compost has the great advantage that it doesn’t cost a penny (or a dime if you are American). It takes, however, quite a lot of my time and energy to bring together the material, create the heaps and turn them over several times – though each time this is less strenuous as the material becomes increasingly friable. And so this is what the experts define as a “sweat equity” investment, in the sense that I am converting my physical labour into a productive asset.

Looking back for 30 to 40 years, I suppose the most important asset that we have ever created through sweat equity was to build terraces on steep and stony land close to our house. We – I, my wife and our two young children (who would now be declared child labourers) - used pick axes, crow bars and spades to create 4 large flat-topped steps, one above the other, climbing up the slope. As we dug, we sorted the stones from the earth, using the stones to build robust walls to hold up a metre's depth of soil across the full width of each terrace which could absorb and retain rainfall and release it slowly to our crops. It was hard work but it converted unusable land into a highly productive area from which – with the help of compost – we have met most of our needs for fresh vegetables over the years. As farmers in Peru, Yemen, Nepal and the Philippines learnt hundreds of years ago, stones, instead of being an obstacle to cultivation, can play a fundamental role in preventing soil erosion.



The question that naturally arises is how one can improve the performance of such systems which are typically used by small-scale farmers. As long as sufficient land is available, probably the most critical requirement is to ensure that the family has secure rights to it and that its ability to work is not constrained by poor nutrition, especially during the seasons when labour demand is highest. The best strategies for assuring a large measure of self-sufficiency will vary from place to place but are often centred on farming systems that are highly diversified. Diversification helps to ensure a well-balanced diet, to spread risks, to even out labour demand and to minimise wastage, for instance through feeding crop residues to small livestock. In many situations securing a stable food supply also requires the preserving and storage of crops so that they can be carried over from seasons of plenty to seasons of shortage.

But we have also learnt from our own experience that there is a hugely important role for improving the efficiency with which time and energy are used so as to increase the rate of return on sweat equity.

Each year, we grow a patch of chick peas, drying them at harvest time for use in the winter when fresh food is less available. For years, we have separated the peas from the pods by hand, but it is such a painfully slow process that our frustration drove us a couple of months ago to experiment with alternatives. We found that by putting several kilogrammes of chick peas in their pods into a sack and banging it strongly against a stone for a few minutes, we were able to separate the peas from the chaff. Making the most of ecosystem services, we placed the mix on a large sieve on a windy day and found that, with light shaking, the chaff would be readily blown off, leaving a large pile of clean peas in a tenth of the time needed for hand shelling. Hardly high technology, but it frees time for other uses.

If you have ever planted potatoes, you would know that, using conventional European technology, it is very hard work. You dig a deep trench, set the seed potatoes spaced out along the trench bottom and then refill the excavation and build a ridge of soil on top. When you harvest, again you have to dig deep and move mountains of soil. It is hardly worth the huge effort. So, instead of giving up growing potatoes in ways that may have used up more calories than they produced, for several years we have applied methods developed by North Koreans. During the winter, we build up a layer of mulch composed of weeds and crop residues on the area where the potatoes will be planted, which softens, protects and nourishes the underlying soil. We pull out the few stray weeds that have rooted, pile them on top of the mulch and then plant the seed potatoes by dropping them in behind a spade, pushed straight down through the mulch, without inverting the soil at all. When we harvest them with the lightest of digging, yields are as good as those under conventional systems but the human energy requirement is at least halved – or, if seen, from another angle, labour productivity is doubled!

If you still doubt what it means to harness ecosystems for food production, please learn more about bees. The most blatant – and marvellous – way in which we “harness ecosystems” is to look after bees. In return for our provision of housing and occasional protection from disease, they work for us non-stop, producing honey and pollinating our fruit, an extraordinary form of cooperation between people and insects.

A couple of weeks ago, the United Nations launched the International Year of Family Farming. Hopefully by the end of the year, many more people around the world will come to appreciate the enormously important role that family-run farms play in producing our food in sustainable ways. Hopefully they will learn of the value of respecting rather than challenging the forces of nature – of seeking to stimulate them rather than to control or even to destroy them through the application of farming systems that accelerate soil degradation, pollute water resources and narrow the diversity of plant and animal species on which our lives depend.

And let us hope, too, that people will vocally condemn the ignorance of those who portray small-scale farmers as primitive, inefficient, unscientific and incapable of feeding the world's future population.

**Andrew MacMillan\***

(December 2013)

\* Andrew MacMillan is an agricultural economist specialised in tropical agriculture, former Director of FAO's Field Operations Division. He recently co-authored a book entitled "How to End Hunger in Times of Crises – Let's Start Now", Fastprint Publishing.