

# Organic Agriculture

## Fair price for a fair days work

Questions we often hear asked about organic products are *"Why are they more expensive than non-organic conventional products?" "Are they worth the extra cost or is it all just another scam to squeeze more out of gullible consumers?"* Are the critics of sustainable organic agriculture right when they say *"It cannot and will never feed the world?" "Organic is more about meeting the wants of a middle class niche market" and "Adopting such methods of agriculture will take us back centuries?"* Is this the just the voice of powerful agrochemical industry trying to protect their vested interests in a multi-billion dollar business or are they right?"

In this newsletter we aim to answer these questions and to explain why here at Warabe Mura we are totally biased in favour of organic and small sustainable farms. While we understand there are some positive aspects of intensive agriculture, we will attempt to explain why we believe sustainable organic agriculture is the best way to farm the land in the long-term. We will explain why it is the way to support farming communities and to help create jobs, the way to feed the world and, last but not least, the way to preserve and protect the Earth's wondrous ecosystem and all that dwell there.

### The Benefits of Industrial Agriculture Modern Farming

Modern intensive farming, with its use of higher yielding plant varieties, fertilisers, pesticides, irrigation and mechanised monocropping, has given us incredible growth in yields. Corn yields between 1920 and 1980 soared by 333%, from 21 to 91 bushels an acre, and they are still improving with present yields at 110 bushels. The use of certain modern farming practises and chemical inputs it is now possible to grow crops where previously, due to the lack of one or more of the essential inputs (fertile soil, or water), they could not be grown.

The benefits of intensive agriculture (apart from yields) and the modern food system as a whole are well known: cheap food in abundance for those who have the means to purchase it, cheap animal feed, competitive export advantage and very large corporate profits.

### Profits from Industrial Agriculture Modern Farming

Who are and who aren't the true benefactors of the present day food system? Is there really such a thing as cheap food? What are the true consequences of modern intensive agriculture?

Worldwide expenditure in the 1990s for food and drink was \$250 billion. Just ten agrochemical companies accounted for 80% of world sales. Between 60-90 % of all wheat, soya and maize are now marketed by just six transnational corporations. In 1993, an estimated \$25 billion was spent worldwide on pesticides. One company, Monsanto, reported sales in excess of \$1 billion for its herbicide, Roundup.

### The Costs of Industrial Agriculture Modern Farming

Although modern farming production gains are impressive they have come with great cost to the environment, our health, the economy, and to farming communities. Other lesser-known problems are the loss of fertile land and biodiversity, reverberations of which are being felt worldwide.

The University of Essex in the UK recently completed the first national study of the environmental and health impacts of modern agriculture for the UK and conservatively estimated the total financial costs for 1996 at a staggering £2.34 billion. The study dealt with external costs that are not reflected in food prices such as the loss of natural capital; water and air contamination, soil degradation and loss, damage to wildlife, habitats, hedgerows and dry-stone walls, loss of biodiversity, greenhouse gases and health.

Other immediate and more obvious costs we bear are in the form of taxes that finance the subsidies many farmers are now dependent upon to survive, but again these costs are not reflected in food prices. In the UK, subsidies amount to some £3 billion yearly. US subsidies to farmers are 10 times that, at \$32 billion. Of this just \$2 billion serves as incentives for environmental stewardship.

Dependency it not something that happened over night but has taken 50 years of subsidisation to achieve. These subsidises provide support for intensive agriculture and selected crops, as in the so-called Commodity Program in the US. This system gives strong incentives for farmers to cultivate only those crops which create a glut in the market and force prices down. Farmers get less per bushel and, more often than not are, pushed further into the dept- subsidy spiral.

Until very recently organic farmers and those wishing convert to organic had no supportive funding from their respected governments and even today it is minuscule in comparison. Bob Quinn, president of Kamut International and an organic farmer in Montana, said that before he turned his land over to organic production the subsidies he received from the government were more or less to the dollar what his outgoing expenses were on chemical fertilizers and pesticides, about \$25,000. He switched from conventional to organic some 15 years ago and the subsidies stopped. The reason he decided to switch was the disturbing way everything around his farm just wilted and died every time pesticides were sprayed. If that is what they do to plants what about to him, his family and pets, he wondered. His farm is now a successful concern both financially and ecologically, while those who still farm conventionally around him are hard pressed to make ends meet and even told to take land out of production to stabilise market prices. Basically they are paid for doing nothing and in the process lose a sense of self worth.

## Farms in Crisis

To describe what has happened to farming communities 'catastrophic' would be an understatement. In the early 1900's America had around 32 million farmers living on farms, a third of the US population. By the 90's the figures were down to 4.2 million, less than 2% of the population, and just 6% of US farms accounted for 56% of US farm sales. The story is much the same in Britain having lost half of its farms less than 50 acres in size over the last 50 years. While small family farms struggle the large-scale farms are thriving; the biggest 10% now supply half of Britain's output. In China, over the last 20 years rural populations have shrunk from over 92% to less than 40%. In one year alone 10 million people left the land. The prejudice against the small in favour of the large has certainly helped bring this decline about aided by government policies and joint funding with industry that serve the needs of the large agrochemical industry over that of the small sustainable rural communities.

It has been clearly demonstrated that you can destroy healthy rural communities just by increasing scale. The days of the small idyllic family farms are fast becoming something of the past with thousands of family farms going under and/or being bought out and absorbed by the larger commercial farms. The need to move to large-scale farming is created by government policy and the present day food system. For every food dollar spent by the consumer the farm gate price to the farmer is on average 5 cents, the remaining 95 cents go to transport, packaging, irradiation, colouring, advertising and corporate profit margins. To save farming communities we need to reduce these links so the farmer receives more for the produce and the consumer pays less.

At present farmers find themselves having to continually invest in increased inputs of chemicals and machinery to force more from the same land and/or acquire more land just to stay competitive and viable. To meet market demands, mass production and higher yields become the imperative at the expense good land stewardship and food quality.

The modern agriculture machine is not geared towards feeding people but to creating commodities. The whole impetus is towards exports, the control of overseas markets and reaping the profits those markets bring. Quality, health, biodiversity, concerns for the small and sustainable, the environment, animal welfare and the social fabric of the community do not figure in profits and therefore there lose is permissible; the law of competition, in short, is the law of war.

## The Environmental Costs of Modern Agriculture

**Water:** Another hidden subsidy that does not reflect in the price of conventional food is the cost of removing nitrates, phosphates etc., from drinking water. 25 thousand tons of pesticides are used yearly in Britain alone and they naturally end up polluting water supplies. The cost alone to remove pesticides is £120 million but only to levels stipulated by law and whose to say those levels are safe? The water companies don't pay this bill they pass it on to the consumer, not to the farmer or company that manufactured the chemicals in the first place. There are also the costs of removing fertilizers, sheep dips, and animal waste that are all toxins and contribute to algal blooms in our waterways and cause all manner of illnesses in us.

The enormous amounts of water used in modern agriculture accounts for well over half of the worlds' fresh water supplies. The huge sums of money spent on actually getting water to these thirsty intensive monocrops via irrigation systems and dams coupled with the cost of land lost due to them runs into hundreds of billions of dollars. Again, it is taxpayers who foot the bill; the costs are not reflected in the cost of conventionally grown food.

The use of agriculture chemicals in organic farming are prohibited by organic certifying bodies and therefore the external costs; economic, environmental degradation and health concerns are drastically reduced. For instance, animal manure is used as a natural fertiliser and returned the land, the manure must meet the criteria of organic regulation before it is returned, being free of growth hormones & steroids, antibiotic residues and agrochemicals often found in conventional reared animals manure.

**Footnote:** 40% of all antibiotics in the US are used in the production of factory farmed animals. Resistant strains of bacteria are becoming more and more common with some strains now resistant to all that modern medicine can throw at them. Are we heading for plague like outbreaks we have no answers for, all for cheap meat?

**Soil:** Past civilisations have perished due to their abuse of their natural surroundings like the Mesopotamia and the Mayan civilisation. What undermined those civilisations was the abuse and neglect of something as simple but vitally important to life, the soil!

The soil like all interconnected parts of the Earth's ecosystem has over the last hundred 100 years or so been degraded, denuded, demineralised and polluted at an unprecedented rate. In the last 20 years, Britain's soil has lost half of its organic content. Basically farmers have been converting the capital of soil fertility into income of yields. According to the US Global Change Research Information Office (GCRIIO) 90% of all US cropland is losing topsoil at about 17 times the rate it forms. The erosion rates in China, S. America, Africa and parts of Asia are estimated to be twice as high. Worldwide, an area the size of India and China combined has been seriously degraded. The UN estimates the cost of reversing man-induced desertification to be in the region of \$10-22 billion, the losses for not doing so \$42 billion per year. We desperately need to understand that the soil is a finite not infinite source of natural capital.

**Topsoil:** Is a living symbiotic micro-universe of vital and diverse organisms. It takes nature 100 - 400 years to build just one centimetre of topsoil. In a single spade-full of healthy topsoil we would discover a complex interdependent ecosystem with life beyond calculation, containing bacteria in the billions, assortments of fungi, algae and the simple celled amoeba protozoa. There are nematodes and mites in profusion, earthworms and the numerous beetles, centipedes and other insects that all part of the essential make-up for healthy fertile soil. It is no less than a living organism.

Intensive chemical agriculture does not see the soil as an interwoven biological wonder but bases its whole approach on the physical properties of soil. With the view if something is lacking it can be remedied with chemical inputs that are as good as or better than what nature provides and does in maintaining a healthy soil. The agrochemicals applied disrupt and kill the complex and diverse relationships of the soil. These inputs are toxic acids and life can not exist in such a medium but needs an alkaline terrain. A dead or diseased soil produces dead or diseased food that is lower in nutritional content and vitality and such food undermines our health and wellbeing. Treating the symptom and not the cause is one of the many blights of modern agriculture system.

For a healthy vital soil we have to consider both the physical and biological aspects and only when we do will the soil stay a living stable organism. Sustainable agriculture works with the soil to sustain and enhance vitality and fertility where needed and understands the soil is where the true capital and source of a farmer's livelihood.

Another grave concern (not dealt with in detail here) is land and soil degradation due to overgrazing of animals that denude private and public lands of its natural fauna leaving fragile topsoil exposed and vulnerable. In the US over 300 million acres of public land is used for grazing and the rearing of livestock is directly accountable for 85% of topsoil depletion that occurs as a result.

The rain forests of Central America have lost large areas to slash and burn practices that clear land for cattle for cheap beef or is farmed by the land-less poor. The soil being very low in fertility is soon depleted and generally abandoned after 4-8 years. According to Earthsave cattle ranching has destroyed more rainforest than any other activity in Central America. The areas cleared are not clearly known but estimated to be presently at 15 million hectares yearly and growing.

**Monocrops:** The modern practice of monocropping severely erodes soil in numerous ways. Monocrops are grown on vast open tracks of land, upwards of millions of acres in size, which are more often than not harvested at one time leaving topsoil with no or little cover and vulnerable to the elements. With no plant cover left to protect the topsoil, it dries out, cracks and, in such an unstable state, is easily eroded by the elements. Dust storms are a very common occurrence in areas of monocrops; ask anyone who lives/lived in the US, Midwest.

The lack of wind breaks in the way of hedgerows, trees or stone walls (removed in the first place to allow for monocrops) to protect the topsoil intensifies the loss of soil through wind erosion. Not a new problem, but one that has plagued large-scale farming for generations. We have all no doubt read John Steinbeck's classic "The Grapes of Wrath" that portrays the tragedy that comes in the wake of the dust bowl and the lives ruined.

Sustainable organic farms, contrary to the large industrial farms, are very much smaller and don't impose the scorched earth mentality to the land of no trees, no hedgerows no wildlife. Rather they multi-crop and plant wind breaks and leave cover on harvested land to protect the soil.

**Mechanisation:** The heavy dependency of industrial agriculture upon large farm machinery has exacerbated erosion by causing the soil to become compacted. Healthy topsoil acts as a sponge and thanks to its porosity holds air, water, essential nutrients and microorganisms. When porosity is lost the vitality of the soil and its inability to hold

water leads to runoff thus reducing the quality of the soil, the plants and crop productivity. Runoff drains the soil furthermore by washing away topsoil into local water bodies degrading water supplies and acts as a medium for transporting agrochemical pollutants into lakes, rivers, and coastal waters adversely damaging these already stressed

systems. Machines also replace people and with no jobs people migrate to cities. Rural communities die.

Sustainable organic farming does use machinery though its use is limited and is much more labour intensive.

**Crop Rotation:** The practise of rotation enables the farmer to bring balance to soil by using plants that are nitrogen fixing reducing mineral depletion and eliminating the need for chemical fertilizers. Monocrops are often grown on large tracks of land making the use of crop rotation an improbability or limited to a very large degree. In the US, corn for example is rotated on a 2 yearly base with soya beans but it is not unusual on the large industrial farms for it to be grown year in year out without rotation, this practise soon impoverishes the soil increases the need for further use of fertilisers. Corn already accounts for 40% of fertiliser use in the US.

**Biodiversity:** The pressures on farmers to grow uniform varieties come from many sources: seed companies, agrochemical companies, food processors, transport companies, farm equipment companies and consumers. As a result modern agriculture now rests on a very weak and narrow uniform crop base. Over 90% of all wheat grown is of one variety, less than 6 varieties of corn account for half the US corn crop and more than half the world potato acreage is planted with one variety of potato: the Russet Burbank, favoured by McDonalds.

The loss in genetic diversity has severely weakened the genetic base and plants that are genetically similar make the food supply extraordinarily vulnerable to disease. In 1970, 60% of the US corn crop was lost to blight. Seeds that have been developed over centuries carrying with them genes for pest resistance, water and heat stress resistance, and even flavours that future farmers may desperately need are being lost at alarming rates. Restricting the genetic variety in the crops we grow means foregoing a cornucopia of tasty and nutritious food that may well be lost forever.

One very noticeable phenomenon about intensive chemically farmed land is the distinct lack of life. Quite the opposite to organic farms! A recent report from the British organic certifying body 'The Soil Association' on biodiversity found that the organic agriculture systems encourages a wider variety of plants, insects, birds and mammals than do non-organic systems. The report findings showed organic farms had three times as many non-pest butterflies in crop areas, up to five times as many spiders, 44% more birds in winter and autumn, and supported five times as many wild plants than the non-organic farms.

**Pest Control:** When an ecosystem has balance you'll find that all in that system from the soil up and the wildlife down are in the right proportions maintaining an essential balance. When this balance is lost we have to deal with the consequences; this is when insects become pests, wild plants weeds and fungi blight. Modern farming pays absolutely no heed to this symbiotic balance. To remedy any pest or fungi outbreak the response is immediate - the spraying of a pesticide or fungicide. This works to a point, but eventually insects and plants develop resistance to the sprays and then additional spraying is required. This further degrades the environment of not only the area in question but also all areas of the ecosystem.

Sustainable agriculture understands the importance of a balanced system and when this is lost take less invasive action to correct it. By examining the soil in the case of fungi outbreak or introducing friendly insects to remedy an explosion of unwanted insects and applying environmentally sound biological based pesticides and fungicides. The practise of multi-cropping also helps to prevent and reduce the impact of an outbreak. Whereas in monoculture an entire crop can be lost, in sustainable practises that intercrops you may lose one crop but the chances are that the other crops will be unaffected as pests and fungi very rarely attack different plants with a broader unconnected genetic base. Naturally crops are lost in both systems as this is at times, whatever approach you use, unavoidable, but one system doesn't degrade the environment and our health.

## Viability & Efficiency

How many times have we heard from the so-called experts that large farms are more productive than smaller sustainable farms? Another familiar trumpet call is that sustainable agriculture would take us back to the medieval Middle Ages and would take massive areas of land, wilderness and nature reserves to do so, are simply not based in fact but one of keeping the present status quo.

Organic sustainable agriculture is a profound art that has been building slowly but surely on centuries of experience in getting the best from the natural world without degrading it. With the aid of science we are beginning to better understand our living ecosystems and to respectfully work in them to sustain and enhance, not deplete or degrade them.

If we are to compare small and large farms then to be fair we should, as a more accurate measure, use total output rather than yield. Yield means the production per unit of a single crop, for example metric tons of corn per hectare, and is the basic measurement used by economists to assess productivity of farmland. To achieve the highest yield a crop is planted alone in a monoculture. Monoculture may allow for higher yields of one crop, but it produces nothing else of use to the farmer. The bare ground between the crop rows invites weed infestation, which means the farm must invest time in weeding or capital for herbicides. Large farms tend to be geared towards monoculture being the easiest to manage with heavy farm machinery and chemical inputs. Smaller farms on the other hand are more likely to capitalise on this by intercropping wherever an empty niche appears that otherwise would produce weeds. This integrated farming system produces far more per unit area than monocropping though yield per crop may be lower but the crops produced overall can be far higher.

## Our Health

In 1990, the world health organisation estimated that there were at least 3 million acute, severe cases of pesticide poisoning - not including the chronic cases- and 20,000 unintentional deaths each year, mostly in developing countries. A study by Jayaratnam also in 1990, estimated that 25 million third world agricultural workers are poisoned every year. These figures only reflect the direct affects of these environmental toxins that are now known hormone disrupters, mutagenic and carcinogenic poisons. However, if we take into account the amounts running amok in our waterways, air and soil, bio-accumulating up through the food chain, you can be sure the figures would go off the scale and that is just in human costs. To consider all life that falls victims to intensive chemical agriculture is mind numbing. More so when you consider that so many governments endorse it. Again the health costs are not passed onto the industries that produce these poisons or the farmers that spread them, or included in conventional food prices but again come from our taxes and direct income.

## Is Sustainable Agriculture The Future?

From 1994-97 The Organic Research Foundation in Santa Cruz, California estimated the number of organic farms in the US jumped by 23% to approximately 10,000 (certified and not). The average size being 139 acres, which means at that time there were roughly 1,390,000 acres under organic production. The Welsh Institute for Rural Studies estimates that for the same period the number of organic farms in Europe jumped from 33,000 to 88,000 with 2 million hectares of land under organic production.

These statistics indicate a growing worldwide movement back to more sustainable methods of agriculture and that movement has been accompanied by a substantial increase in the number of ways people have forged closer links with farmers through community supported programmes.

Unlike industrial agriculture, which sees the farm as no more than an outdoor factory, organic agriculture is firmly based in sustainability. Its approach is holistic with the emphasis being on the integrated whole not a set of inputs and outputs. An agroecosystem made up of elements of soil, plants, insects, animals and man. A way of farming that encourages the small and diverse, supports biodiversity, local communities, and is a natural reciprocal process whereby the communities supports the farmers and farmers the community. It is often said you are less likely to poison people you know with pesticides than people you've never seen living several thousands of miles away!

The role of organic agriculture is to work closely with nature not degrading but by enhancement that incorporates sound soil conservation and management, rotation of crops, multiple & inter cropping, planting cover crops, green manuring, composting, mineralising with rock and shell, letting land lie fallow, protecting biodiversity, woodland and watersheds and saving & keeping traditional heirloom seeds. The use of GMO seeds are shunned and banned and use of hybrid seeds limited, whenever possible. The use of heavy farm machinery is restricted, as multiple & inter cropping make mechanisation impractical. Chemical inputs are prohibited, except those deemed naturally biological and permitted by the certifying body, if certified. The expenditure on these agrochemicals is not there nor is the untold environmental degradation that goes hand in hand with their application.

This makes sustainable agriculture much more labour intensive thus creating more jobs locally and further adding to the vitality of their respected communities by bringing people back to the land and repopulating the countryside. Farmers have a more immediate market and are paid fair prices for produce and the local communities pay a fair price with no hidden costs to themselves, the environment and the health of all.

## Change of direction

Today, the organic food industry is a booming multi-billion concern with a growth rate of 20-30% annually. Organic produce is often double that of conventionally priced produce but as the market grows and if true costs are eventually reflected we would see prices balancing out and organic being the cheaper. However prices are falling as

production techniques improve and availability make organic produce more readily available to the lower income families that unfortunately as a rule generally find themselves with the worse end of the stick.

A complete undertaking of conversion with government assistance from our present day conventional farming practises to smaller scale sustainable organic may never become a reality in our lifetime. Perhaps it may never be possible, but certainly more sustainable practises could be adopted by mainstream farms lessening their impacts on all life. However, we won't know unless we try and governments get behind it!

Like the "Farm for Profit" organisation in the US that has a membership of 10 thousand farmers in North America. They are not organic and depend upon machinery over labour but still farm to good degree sustainably and only use pesticides when needed, in much lower quantities and the less toxic variety. But what is unique about this group is they work with the soil and spray natural bacteria solutions to remove traces of pesticide, fertiliser and herbicide residues from the soil and test produce to show it is free of these before marketing it. The bacterial solution applied can be used in organic farming and they actually claim that their produce is healthier and less toxic than some certified organic produce. For organic certification farmers have to wait 3-5 years to be certified but as some chemicals can persist for years in the soil the chances are you will still find traces in some organic produce but not theirs they claim!

Changes are happening though organic is still minuscule in relation to conventional farming practises; 97% of farmland in the UK is still farmed with chemical inputs. Austria, Germany and Norway are looking at 20% or more of their land being converted to organic over the next decade. Another point to be cheered by is numerically small farms in the US are still in the majority and in the Third World still central to food production.

Farming should never have become the mass production monocrop machine it is today. We are talking about the very system that basically supports us and should be one of harmonising with nature, working with and supporting the biodiversity of the land being farmed through sustainable practises. We should be farming smaller scale, meeting the needs of the community at hand, and only when needs call, exporting the excess to where it is truly needed. Not allowing cheap imports to undercut the importer country's own farmers, eventually bringing about a disenfranchised farming class. We need to pay a fair price to the farmer and a fair price to the consumer, one that reflects all costs.

Just imagine what could be achieved if governments linked the real costs of conventional farming to supermarket prices! The agrochemical industry and farmers were made financially responsible for chemicals and the damage they have caused and continue to cause. And, if sustainable organic farmers were given the same subsidies that conventional farmers get! Imagine!

We need to look at what we buy and to understand that that the perfectly formed, golden delicious apple, imported all the way from France, may in actuality be costing you triple the price of that locally grown organic russet apple priced at double that of the golden delicious. It may also be costing you your health and, furthermore, the Earth.

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