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Always Striving... To Be The Best!
Editor’s Letter

It has been a landmark year for the Organic Trust celebrating 25 years since the founding of the organisation in 1992. Tribute was paid at the 2017 AGM to the founding members and to all who have since followed their remarkable lead in the ensuing years. The organisation has gone from strength to strength and it is a testament to the efforts of the many Boards of Management, the Inspectorate, Certification Panel, management and clerical staff who together make a very cohesive whole resulting in an organisation in which we can all have pride and a sense of belonging.

The 2017 AGM was a truly momentous event – held at the remarkable Rock Farm in Slane with its diversity of enterprises and activities – where beautiful organic food, a rousing musical interlude combined with a really interesting and enlightening farm walk – made the day an overwhelming success. In the afternoon Clive Bright delivered a really engaging keynote address titled ‘Designing a Farm for Life’ incorporating as its key tenets: quality of life, ecological sustainability and profitability. In essence, producing top quality organic produce within a healthy eco-system which respects the land and makes time for family life. Clive’s interactive and positive delivery ensured a captivated audience.

Very sincere thanks are conveyed to our hosts Carina & Alex Conyngham who welcomed the largest ever attendance at our AGM & Conference with a huge generosity of spirit. They willingly shared information on their integrated wetland; agro-forestry initiative; and a myriad of organic enterprises including beef, pork, poultry and vegetable production. Rock Farm is featured in this issue where all enterprises, including their unique glamping activities and on-farm events, are described in detail. A truly diverse farming enterprise in the true spirit of organic farming and its holistic approach.

On a more serious note, the Organic Trust made strong representations to government during the year regarding the very real difficulties encountered by our members – from late OFS payments to deficiencies in the Organic Capital Grant Scheme and our on-going efforts to have even a small percentage of organic food featured in Public Procurement Contracts. The Organic Trust is ensuring that the organic voice is heard in all the right places so that the sector continues to be supported for future growth – not just in the numbers converting to organic production but to ensure that markets for the healthy nutritious organic food which our members produce are available and worthy of their efforts.

We pointed out to government that there is a direct correlation between the amount of government support of the organic sector and the development of that sector as evidenced in other EU countries such as Denmark, Italy and France. We also indicated that garnering the environmental benefits of organic farming could go a long way towards helping Ireland meet its environmental obligations – it just needs the political will to see the opportunities and to act upon them accordingly. However, there is a very real challenge in trying to convince government of the very real contribution which organic food and farming can make to address environmental and associated issues.

The scientific evidence for the environmental benefits – including biodiversity, soil and water protection, and climate change – continues to grow. Food quality, health (in its widest sense) and sustainability come together in a system-based approach, which also succeeds in maintaining comparable financial viability with non-organic approaches and helps secure rural employment. In many countries, organic production and markets are flourishing and delivering real gains that are no longer niche – we must work tirelessly to ensure that Irish organic producers share in this bounty.

At no other time in the history of organic food production has the appetite within the supermarket and retail communities been greater to give store space to organic food – if Ireland does not capitalize on the momentum currently being experienced at retail level (including retail stores, farmgate sales and farmers markets), the vacuum will be snapped up by foreign imports. Therefore, we need to work together to ensure that our case is well made, supported by evidence, so that our real and enormous potential can be achieved.

Helen Scully, Editor
## Contents

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to Create Fertility without Buying Fertiliser.</td>
<td>3</td>
</tr>
<tr>
<td>Sweden Set to Join Organic’s Exclusive 10% Club</td>
<td>6</td>
</tr>
<tr>
<td>Introducing Mark Hackett.</td>
<td>6</td>
</tr>
<tr>
<td>Klaus Laitenberger - Nuffield Scholarship</td>
<td>6</td>
</tr>
<tr>
<td>Profile: Rock Farm, Slane, Co. Meath</td>
<td>7</td>
</tr>
<tr>
<td>National Organic Training Skillnet</td>
<td>8</td>
</tr>
<tr>
<td>Groundswell 2017: A Report</td>
<td>9</td>
</tr>
<tr>
<td>Profile: Baruch Scully, Ballymote, Co Sligo</td>
<td>11</td>
</tr>
<tr>
<td>Adaptation: Emulating Nature’s Selective Pressures</td>
<td>12</td>
</tr>
<tr>
<td>Profile: Drumanilra Farm, Boyle, Co Roscommon</td>
<td>15</td>
</tr>
<tr>
<td>Controlled Aerobic Composting and Compost Tea: Muck or Magic?</td>
<td>17</td>
</tr>
<tr>
<td>Profile: Dunany Flour, Andrew Workman, Togher, Co Louth</td>
<td>19</td>
</tr>
<tr>
<td>20 Years On: GM Crops Fail to Deliver on Promised Bounty</td>
<td>21</td>
</tr>
<tr>
<td>Profile: Holohan's Organic Farm, Rathdowney, Co Laois</td>
<td>23</td>
</tr>
<tr>
<td>Meeting Temple Grandin</td>
<td>25</td>
</tr>
<tr>
<td>Tullamore Show 2017</td>
<td>27</td>
</tr>
<tr>
<td>Organic Regulation Agreed</td>
<td>28</td>
</tr>
<tr>
<td>Profile: Connemara Smokehouse, Clifden, Co Galway</td>
<td>29</td>
</tr>
<tr>
<td>How Denmark is Garnering the Benefits of Organic</td>
<td>30</td>
</tr>
<tr>
<td>Farming to Address Environmental and Climatic Issues</td>
<td>30</td>
</tr>
<tr>
<td>Minister for Agriculture, Michael Creed, Visits Organic Farmer Pat Lalor</td>
<td>32</td>
</tr>
<tr>
<td>Japanese Knotweed: Tackling the Problem without Chemicals</td>
<td>33</td>
</tr>
<tr>
<td>Organic Trust 25th Anniversary - Serving our organic community since 1992</td>
<td>35</td>
</tr>
<tr>
<td>Shift the Balance</td>
<td>36</td>
</tr>
<tr>
<td>Organic Urban Farming in Cuba</td>
<td>37</td>
</tr>
<tr>
<td>Book Reviews</td>
<td>38</td>
</tr>
<tr>
<td>Number Quiz</td>
<td>42</td>
</tr>
<tr>
<td>Organic Kids Corner</td>
<td>43</td>
</tr>
</tbody>
</table>

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How to Create Fertility without Buying Fertiliser

From Caroline Grindrod

There is a common misconception in the farming world that’s harming your profits and potentially your future. We’re led to believe – in increasingly clever and technical ways – that we need fertilisers in order to increase the productivity of pasture or meadow. But just as humans aren’t ‘statin deficient’ when they have a heart attack, grasslands aren’t ‘fertiliser deficient’ if their performance is poor.

The study of soils has come on enormously in the last few years. Before the 1980s, scientists had little idea that soil organisms were important to plant health, through the ‘green revolution’ agriculture has been dominated by chemical solutions. Now, due to recent scientific findings, I’m confident that the next wave of high production agriculture will be led by those who understand the biology of our soils.

Minerals come from rocks. Every soil in the world has the potential to grow plants. Some rock is weathered into soluble forms that plants can absorb directly through their roots and then are recycled back through the decay process – this is the ‘soluble pool’ that shows up in a soil analysis test. But how do we access the limitless ‘total pool’ available in the crystalline structures of the rock that can provide the full 42 of essential nutrients plants really need to be healthy and disease resistant?

This is where your underground army is required. Every spoonful of healthy soil contains a billion or more microorganisms. In healthy grassland there’s approximately the same weight in earthworm biomass as the weight of the cattle grazing above ground, not to mention the thousands of other tiny critters all shredding, digesting, dissolving and excreting to gradually improve your soils.

The mineral cycle is that; a cycle. But to understand it we should start – as the earth did – with bare rock and some bacteria, fungi and algae. These microorganisms use enzymes and acids to break down the rock and access the nutrients. With no soil in which to reside, the bacteria, fungi and algae form symbiotic relationships to create a plant-like species called lichens. These communities can then offer a home to mosses and lower ‘successional’ species. Gradually the cycle of growth, death and decay builds enough soil for whole plant communities to thrive.

The more complex the plant community, the better the overall access to the minerals in the soil will be. Different species have different root depths, soil preferences and water tolerance. The plant will grow deep roots if the foliage can develop mature leaf; this will help it access a higher concentration and wider range of the soluble nutrients. Minerals tend to leach downwards as rain passes through the soil layers; deep roots help transport minerals back upwards.

Dead plants, excretions from grazing animals and other organic matter pass some of these recycled minerals in a plant-available form back into the top layers of the soil again. But the real potential to make free fertiliser forever is in the so-called ‘microbial bridge.’

When the sun shines, plants photosynthesise. The plant makes food, some for itself and the rest – 40%ish – is passed out of its roots as an exudate of sugar, carbohydrate and protein, or, as leading soil ecologist Dr Christine Jones calls it ‘liquid carbon.’

This juicy cocktail attracts and feeds bacteria and fungi that, through solubilising rock mineral, have a biomass filled with the essential nutrients our plants can’t access. In turn, these bacteria and fungi attract
predatory organisms like protozoa and fungal-eating nematodes that eat them, releasing nitrogen, phosphorus, sulphur, magnesium, potassium, sodium, iron, zinc and more, in a handy dandy plant-available form. The whole process takes seconds and conveniently happens right next to the plant roots where it can be easily absorbed – no waste, no leaching, just an ‘on tap’ source of everything your plants need.

But ... here’s the big but...

Most of the soils across the world – including the UK – are not able to make use of this miraculous free fertility. Because, frankly, we’ve knackered the system!

The biology in our soils is adaptable and resilient but some activities are catastrophic to our most important resource.

Inorganic fertilisers, herbicides, fungicides, insecticides, wormers, antibiotics, irrigation, tillage, overgrazing, monocultures or reduced diversity, and leaving soil bare are all hugely detrimental to our microbial army.

I recently walked the land with a cattle farmer who had noticed that the dung from some cattle she had bought in hadn’t broken down after three months on the pasture. The dung from her own herd broke down very quickly as she used no wormers or insecticides. She discovered the animals were treated with ivermectin not long before they arrived.

All wormers, insecticides and antibiotics are designed to kill; our soil organisms are an accidental victim. These pharmaceuticals don’t all break down naturally, so your muck or slurry could contain a cocktail of all the medication you have administered. You’re paying for it twice; once on the way in, once on the way out!

Inorganic fertilisers are also highly destructive to underground life. Nitrogen – even though it makes up 80% of our atmosphere – is a plant’s most limiting element. The stable triple bonded molecule makes it hard for life to access unless it is converted or ‘fixed’ into Ammonia (NH3). In a natural system, for nitrogen to be available to plants, it needs to be ‘fixed’ by nitrogen-fixing bacteria. This plant-available form of nitrogen soon gets gobbled up and, through the actions of a diverse soil food web - including bacteria, mycorrhizal fungi and their predators - is then recycled into different forms through excretions.

It’s now known that it’s not just legumes that are associated with the miraculous biological nitrogen fixing process; any green plants can be involved in exchanging liquid carbon for plant-available nitrogen. This process is very stable and happens ‘on demand’ with no leaching or wastage.

Pre-1868, 97% of all nitrogen-supporting life was fixed biologically and the only available form of manufactured nitrogen fertiliser was processed animal manures. Now only approximately 60% is provided through natural and biological processes. Through the development of the ‘Haber-Bosch’ process, it was possible to synthesise ammonia by combining atmospheric nitrogen with hydrogen under intense heat and pressure while circulating over a catalyst.

This changed the world forever and humans were no longer required to be part of a closed loop biological system – or so we thought. Over 100 million tonnes of synthetic fertiliser is now used annually; it has facilitated massive population expansion. Now, approximately two billion people rely on food produced from a high energy, unsustainable form of fertility.

**Humanity is writing cheques our planet can’t bank!**

If you use synthetic nitrogen fertilisers it isn’t helping YOUR bank account either. Up to 80% of applied fertiliser is lost and ends up in our water courses and eventually the ocean.

Nitrate runoff causes an explosive growth of algae which in turns sucks oxygen from the water as the algae decay. This sucks the life out of the seas, causing so-called ‘dead zones’, like that of the ‘Gulf of Mexico dead zone’ which extends over 20,000 square miles every summer due to the chronic overuse of fertilisers on farmland in Spring.

Even the small amount that remains to be utilised in your soil could be causing more harm than good. Every form of synthetic fertiliser disrupts the balance and damages the potential effectiveness of your soil biology. If your plants can gain easy access to soluble forms of applied nutrients, the underpinning biology doesn’t get its liquid carbon and dies off. Like a muscle that’s never used, it weakens and eventually can no longer perform well.

We know from long-running scientific
field trials in North America that the application of synthetic nitrogen has other detrimental effects on soil health including depleted soil carbon, reduced soil water-holding capacity and a reduction in soluble nitrogen levels – yes, adding a lot of inorganic nitrogen means you have less available in your soil!

Fertility applications can have a potentially disruptive effect on livestock too. Even a ‘natural’ product like lime applied to a field is often in a ratio that is not optimal for the plants. It can mess with the overall balance of magnesium, calcium and sodium and can cause calcium deficiency in your foliage which translates into animal health issues associated with changes in magnesium and calcium levels.

As leading Soil ecologist Christine Jones says, ‘inorganic nitrogen applied as fertiliser often ends up in plants as nitrate or nitrite, which can result in incomplete or ‘funny’ protein. This becomes a problem in cattle if it turns up as high levels of blood urea nitrogen (BUN) or milk urea nitrogen (MUN). Nitrates cause a range of metabolic disorders including infertility, mastitis, laminitis and liver dysfunction. There is also a strong link between nitrate and cancer. In some places in the United States, it is not safe to drink the water due to excessive nitrate levels. Milk can also have nitrate levels above the safe drinking standard, but people happily consume it, not realising it’s unhealthy.’

Other common modern agricultural practices such as ploughing and leaving soil bare have a hugely negative effect on the delicate yet essential mycorrhizal fungi strands which build soil structure, support the microbial bridge and are essential to effective water retention.

So how can you tell if you have a sub-optimal biology?

You can pay for a soil biology analysis, but the easiest way to tell is to see if you get a flush of grass when you use fertilisers or apply manure. If so, then your plants are not making their own fertility through symbiotic relationships; they’re waiting for you to feed them! Getting a strong plant response from a fertiliser application is a sure sign that there has been significant damage to your free fertiliser machine. In a natural ecosystem, plants can get everything they need all the time; you don’t see nitrogen deficient plants in natural environments.

It’s not that we’re taking more out of the system than would occur in nature either. Natural grasslands and ancient woodlands can support a biomass far greater than what we’re trying to achieve in livestock production today. Think of the enormous herds of wild herbivores that used to roam the earth and the mind-boggling diversity it could support.

How can we fix it and create fertility without fertiliser?

We’ve been taking our advice from those trying to sell products that are addictive, and have ended up playing with our farmland like it’s a Meccano set – this leads to many unintended consequences. Holistic management can help us better understand how to work with nature’s complex systems and maximise our most important asset. It’s the only long-term way for farmers to thrive.

In the UK and Ireland, farmers have a huge opportunity to maximise results from a tried and tested regenerative system developed in parts of the world with a less forgiving climate. Those who maximise their ecosystem processes can expect to drastically increase productivity and profitability with a few simple changes.

We need to keep the soil covered, minimise tillage and increase the diversity of species we grow. We need to ensure proper cycling of plant matter and enhance the conditions for soil microbiology through planned grazing that allows for optimal recovery and animal impact. We need to stop relying so heavily on harmful chemicals and medicines, and instead, learn how to minimise disease and pests through proper land and livestock management.

Caroline Grindrod is a holistic management consultant who combines her skills in regenerative agriculture and environmental conservation. This abridged article was reproduced with kind permission from Caroline’s website www.rootsofnature.com. If you’re interested in regenerative farming and holistic management please sign up to her mailing list or get in touch to discuss their training programmes.

ORGANIC TRUST SEEKS AMBASSADORS

Would you like to represent the Organic Trust at a variety of events? The Organic Trust intends to set up a panel of ‘Organic Ambassadors’ to represent the organisation at various events and fora – training and promotional materials will be provided. If you are interested in being involved in this new initiative, please email organic@iol.ie with your contact details and mark your email ‘Organic Ambassador’ – thank you!
Sweden Set to Join Organic’s Exclusive 10% Club

Strong growth in organic food sales look set to propel Sweden into the exclusive group of countries where organic exceeds the ‘magic’ 10% level of total food and drink sales.

New data from analyst Ekoweb shows that organic food sales rose 7-8% in the first half of 2017, taking organic’s share of total food consumption to 9.3%. Growth in public sector, food service and the state-owned alcoholic drinks operator Systembolaget has been particularly strong.

Following a number of years of exceptionally rapid market growth, this year’s solid performance by the organic market is seen as evidence of Swedish consumers’ continued interest in organic. “Sweden is beginning to belong to the exclusive group of countries around the world that have passed the magic 10% market level,” says Cecilia Ryegård, chief analyst at Ekoweb.

While the growth rate this year is significantly lower than in previous years, volumes are encouragingly high. Ekoweb predicts if sales continue to increase at the current rate, Swedes will spend 27.4 billion kronor (approximately €2.82 billion) on organics in 2017.

Ekoweb says that a lack of availability in the early part of 2017 of certain organic products limited growth – but points to big opportunities for the future. “All major players are increasing their organic food sales. But the increase could have been double if all the desired commodities were available and reached the shelves of the stores,” says Ryegård.

“Swedes, it says, want to buy Swedish, local and organic – or Svekologically.”

Ekoweb says there has been a noticeable change in focus in the marketing of organic food in retail channels. Buying local, in particular, is an increasingly strong impulse for Swedish consumers. Health and sustainability are also important purchasing motivators. To that end, says Ryegård, there is a real opportunity for organic brands to tell a wider story about their products. “Ecological, or organic, is just a part of the message that you want to convey in campaigns, and that’s a clear difference compared with the past.”

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Introducing Mark Hackett

We have great pleasure in welcoming Mark Hackett to the Organic Trust Inspectorate – Mark is an Organic Trust licensee and is involved in Organic Beef and Lamb production. Mark attended the Welsh Agricultural College where he received one of the few distinctions awarded by the College at that time when he completed his HND in Agriculture. He progressed to Writtle College for his Degree which was awarded by the University of Essex. After completing his B.Sc Degree in Agriculture, Mark worked on dairy farms in New Zealand and Australia where he says his horizons were considerably broadened. A committed organic farmer and family man, Mark is also very involved in a significant number of local community activities as well as the Offaly Organic Farming Knowledge Transfer Group and the Beef Technology Adoption Program. We are delighted to welcome him to the Organic Trust team and we wish him a long and successful career with the organisation.

Klaus Laitenberger - Nuffield Scholarship

In September 2017, Organic Trust inspector Klaus Laitenberger was awarded a much-coveted 2018 Nuffield Scholarship. After an extensive interview process, Klaus was one of only five recipients of the prestigious award – from a shortlist of twenty two. Klaus says he is “sincerely honoured at having been awarded the Nuffield Scholarship. In my 50th year I will be travelling around the globe searching for vegetables that have a potential for growing in Ireland, as well as looking for the ‘Lost Crops of the Incas’. This is an incredible accomplishment and we in Organic Trust are very excited and proud of the achievement. We will keep you posted throughout 2018 on Klaus’ adventures and discoveries.
Rock Farm is a farm of many parts, all working in tandem, feeding into each other to create a complete and wonderful whole. When I arrived I was greeted by Catherine, the hospitality manager, who walked me around the farm talking me through one of the enterprises – Ecotourism. Luxury glamping is offered in bell tents, yurts or even some shepherd’s huts. The repurposed double barrelled hay barn is now a very chic event venue. There is also Lime House; a beautiful straw-bale-constructed six bedroom house that can sleep 22 people, has open-plan living and dining space and is suitable for meetings and conferences. On site, there is a beautiful natural swimming pool, not to mention the wood fired hot tubs, pizza ovens and barbeques all at the guests’ disposal. There is plenty to do too; river rafting and kayaking on the Boyne, instructed tree climbing (with ropes), river walks and electric bike hire.

The integral farming enterprise is so well thought out that it functions on many levels. It is laid out so that it envelos the glamping site as an attraction. The multitude of animal species rotate around paddocks in a deliberate way for all the practical agricultural reasons of allowing pasture to rest and so on, but also so that there is always a diverse range of animals within view of the campsite.

At this point on my visit, I was passed over to Lucho, the farm manager who lives on the farm with his family. He – together with an ever changing team of WWOOFERS - plans and runs the farm day to day.

The farm hosts a flock of 40 laying hens and they also grow turkeys and geese for the Christmas market. Three Tamworth breeding sows and many litters of piglets at various stages are divided between the field paddocks and the woodland paddocks. There is a handsome herd of 20 Dexter cows and their progeny. There is also a group of rescue ponies, adding species diversity to the grazing rotation. A number of polytunnels line a large field garden which is intensively managed to produce a constant supply of seasonal veg and salad. Together with the animals producing eggs, pork, bacon and beef, the farm and garden provide for glamping guests, the new restaurant and bar in Slane Castle (The Gandon Room and Browne’s Bar), a growing range of events, local organic markets and the honesty-box at the end of the lane!

The most impressive part of the farm to me was the wonderfully designed agri-forestry system in Lime Field. Over five hundred fruit trees (apple, pear, plums and cherries) planted in double fenced rows 25m apart create the boundaries of long paddocks that divide up the once expansive 3.5ha field. The tree rows stop 25m short of the edges of the field to allow for turning of harvesters and other machinery at the headlands when the paddocks are in silage or arable rotation. The reason the paddocks were designed 25m wide is so that the 6m combine harvester can...
operate in four passes.

When I visited, the paddocks were mostly in clover rich pastures, with a couple sown in red clover for silage. Two of the paddocks were occupied with pigs; one had a fresh litter of 10 piglets that had farrowed outside a couple of weeks before. In fact, all the animals are managed outside all year round. Lucho tells me that "this is why we have Dexters, hardy cows that are light on the land". The pigs do relatively little damage to the paddocks because their arcs (shelters) are at one end and they are fed and watered at the other. This means they utilise the full paddock rather than congregating in one area.

Rock Farm is located across the Boyne River from Slane Castle. It was a 450 acre tenant farm, some of which was forested hunting grounds. It is part of the Slane Castle estate. Alex and Carina Mount Charles started to farm it in 2010. Currently 110 of those acres are farmed organically. This includes the glamping area and all the animal systems and the garden. The rest is in conventional arable production that is added to the harvest from the rest of the estate. The grand plan is, in time, to farm all of the estate's 1500 acres organically. This will produce a main crop of malting barley to supply the new Slane Whiskey distillery which opened on the 24th of August 2017 in the restored courtyard adjacent to the castle. Slane Whiskey is yet another exciting family venture, which to date has been developed off-site but is soon to be a complete product of the estate. It will be the only distillery in Ireland to grow, mill and malt its own barley. Growing trials of various barley varieties are currently underway. The estate plans to grow older, rare strains and organic barley to create a broader range of traditional whiskies. Their current Triple-casked Slane Whiskey is distilled with the expertise of their partners at Brown-Forman (the makers of Jack Daniels) and is delicious!

The Organic Trust are delighted to maintain ongoing involvement with NOTS, the National Organic Training Skillnet, who are once again offering a varied and exciting range of training opportunities for anyone involved - or considering involvement - in the organic sector. NOTS provides high quality, low cost training across a broad spectrum of organic topics, as well as facilitating networking opportunities for organic farmers, growers, processors and other interested parties. The programme of courses aims to increase indigenous production and encourage producers to take advantage of new market opportunities and ranges from cheese making to organic egg production to the MSc in Organic Agriculture through SRUC in Aberdeen. NOTS is funded by member companies as well as Skillsnet, which is supported by the Department of Education and Skills. It is managed through a steering committee with representation from the organic certification bodies, including Organic Trust.

For details of current courses, news and events, visit www.nots.ie or like their Facebook page www.facebook.com/nationalorganicskillnet/
Groundswell is an independent farming conference in the UK, designed ‘by farmers for farmers’ to focus on emerging methods of soil regeneration, reducing inputs and increasing profitability in arable and mixed farming situations.

This year Groundswell was a two day event. The first day was the Grass-Fed Day which focused on putting livestock back into the rotation, growing and fattening animals on a pasture diet. The second day was the No-Till Day with a conference and field scale demonstrations from leading direct drill manufacturers.

Grass-Fed day (which was also a soil biology day) offered an exciting line up of speakers including Nuffield scholar Tom Chapman, whose knowledge of all things mob-grazing and livestock in arable systems is vast, world renowned soil scientists like Joel Williams and Christine Jones, authors of The Hidden Half of Nature David Montgomery and Anne Biklé, who shared their research about microbiomes and the fundamental relationships that reveal
the parallel worlds of a plant’s roots and a person’s gut.

The No-Till-Day was attended by Ben Colchester who kindly reported back with his thoughts and observations.

Early in 2016, eighteen organic tillage farmers in South Leinster and Munster formed a Knowledge Transfer group. Our quest was to investigate if we could make organic no-till work along the lines of that which was pioneered by the Rodale Research Institute using a crimper roller. So it was appropriate, that in the last days of June, John Geraghty, John Lalor of Kilbeggan Organic Foods and I travelled to the Groundswell show in the UK.

There were demonstration plots of cover crops and direct drilling with no ploughing.

This is a ‘Conservation Agricultural’ show with dependence on Roundup but a group of innovative organic farmers were trialling methods of terminating cover crops with mechanical means similar to our Irish group. At any one time there were four lectures taking place in the farm buildings so one had to choose carefully which ones to go to.

The speakers, including some soil scientists, all seem to agree that not only is the plough damaging the soil biome but also fungicides, pesticides and water soluble fertilisers. To me it was hugely validating to hear ADAS, the UK advisory service who, in the early 70s used to disregard organic farming, speak about the damage that has been done to the soil by the farming practiced in the last few decades.

I will list some of the points that stayed with me:

- Maintain soil cover always, there is no bare soil in nature;
- Soil cannot be made without plants and vice versa;
- Feed the soil with cover crops;
- Always apply any nutrient with a carbon source to optimise nutrient balance for better photosynthesis. So, if applying trace elements always add some molasses or humic acid or other form of carbon;
- Soil with a good population of earthworms yields about 25% more than soil with a poor population;
- An earthworm will travel about 1 meter per day underground and 5 above;
- In soil with a high level of biological life and high mycorrhizal fungi, crops will grow that will withstand pest and disease attacks and only require low levels of nutrient supplementation, if any. This was well illustrated by a photo of a barley plant in six different cups. The first one was in biologically active soil taken from a forest, going down to the last one that was in soil from intensive agriculture. The size and vigour of the plants corresponded to the soil quality and the last two plants had BYDV (Barley Yellow Dwarf Virus);
- Plants that have to scavenge for nutrients send their roots down deeper and have more root matter, making them stronger and better at withstanding drought;
- Nature does not do monoculture and greater yields and biomass can be achieved by growing diverse species. A photo showed a crop of barley that looked deficient in nutrients. However, beside it, the barley was planted in a mixture and was thriving. Different plants scavenge for different nutrients and thereby make them available to their companions. Grasses provide carbon and broad leaves provide trace elements for their neighbours;
- A single poppy plant can produce 50,000 seeds;
- One speaker described organic no-till as The Holy Grail if it could be achieved;
- Plants communicate above ground and below, warning other plants of pest and disease attacks. This enables them to activate an immune response. It was discovered that when two tomato plants were grown in separate bubbles above ground, they were able to transfer their messages through the mycorrhizal fungi. Presently it is being investigated if this response can be used to protect plants by other methods;
- Selenium (Se) and Molybdenum (Mo) result in thickened cell walls, making the plant more resistant to disease and pests. Potassium (K) deficiency is linked to many diseases. K mobilises nutrients in a plant and a deficiency can be detected by testing different parts of a plant where a greater than 10% variation will denote a shortage. If these trace elements have not been mobilised to all the cells then the plant is susceptible to attack.

There was a demonstration unit graphically comparing how the rain washes soil particles and nutrients out of soil that had been ploughed, whereas no-till had minimal leaching.

One soil scientist said that 20 years ago it was considered that we knew about 5% of what goes on in the soil. An enormous amount has been discovered since, especially recently, so now it is estimated we know 1%! I came home from the show and estimated I probably only got 5% of the information present, but if I go again next year I may have to revise that figure.
Every morning before work, Baruch Scully - accompanied by his young son Fiachra (dressed for the weather) - walk out across the fields to move the cows to a fresh paddock. This happens every day, all year round. Baruch farms a small herd of Angus X cattle on a 25 acre organic holding around his family home in Ballymote, Co Sligo. Some might say such a small cattle farm is hardly worth talking about, but the way Baruch has chosen to farm is quite unique. It is a very low-input, profitable, part-time farm. The land came with the house when Baruch’s parents purchased it in the 1970s, his father kept some horses and “dabbled in cattle just to eat the grass” but had never considered himself a farmer. Baruch returned home after many years of traveling and working abroad with little or no farming experience. With a lot of research and a systematic approach he planned a farm that would suit his busy family and work life without becoming a money pit!

The farm, which has some plantation history, consists of a dry hill of heavy clay soil which is surrounded by peaty bottom fields “with their fair share of rushes”. The small fields are well sheltered with diverse hedgerows and some beautiful old growth beech and lime. There is a partly walled field which was once a stunning orchard. Baruch ran pigs in here for the first season as it had gone wild and was an impassable thicket. With the pigs, some help from a chainsaw and the small mob of cattle it could now be described as savannah. Lush grasses carpet the ground around an understory scattered with patches of soft fruit that have survived years of neglect and have regenerated into their own sort of wildness. Every tree in the orchard has blown down but they are still alive and producing a bounty of belly aching fruit every year on their sides.

Baruch operates at the minimum stocking rate allowed for the organic farming scheme of 0.5LU per ha. The unique thing about his farm is that he grazes all year round without feeding hay, silage or grain. The only infrastructure used on the farm is two simple handling yards at either end of the land. Four cows, a couple of yearlings and the current calf crop carefully mob graze through the fields in a rotation designed to use the wettest areas in the driest summer weather. The dry hill is orientated east/west with the west face being exposed to the prevailing wind and the east being very sheltered from the worst of the winter winds. This hill is managed so that the winter-grazing or foggage* is allowed to build up from July. This is then carefully grazed throughout the winter months. Baruch has planned his winter grazing to make best use of existing shelter-belts and the natural topography. He times the rotation so the cows are calving in the most sheltered paddocks with easy access to handling facilities. To date all his animals have calved unassisted in the field.

Although mistakes are made, he is constantly learning and fine tuning his system. Due to its size the output of this farm is not high. But he does manage relatively poor land very well with appropriate animals that are suited to the land and farming system. His animals are healthy and fat all winter and
his input costs per head are miniscule. Occasionally, due to the wet nature of the bottom fields, the animals require treatment for fluke during the summer grazing. To ensure good health the herd have constant access to mineral licks in the winter months. In the first few years Baruch bought in three or four bales of organic silage to fill the hungry-gap in April and if there is heavy snow he will get some fodder to make sure the animals don’t go hungry. Last winter his grazing went so well that he was grazing new growth through the last of his foggage* in early May.

Baruch says this is what farming should be about; “working with the land’s natural capabilities and designing a farming system to suit those capabilities, while yielding a profit.” For braving the weather all year around, Baruch keeps all of his payments and makes a small profit from his farming output. He believes this farming model is completely scalable.

“For braving the weather all year around, Baruch keeps all of his payments and makes a small profit from his farming output. He believes this farming model is completely scalable.”

Adaptation: Emulating Nature’s Selective Pressures

by Clive Bright

Nature uses the blunter but more holistic mechanism of natural selection. Selection is a powerful but simple tool that growers and livestock farmers can and do use year to year without an in-depth knowledge of genetics. Jerusalem Artichokes are a simple example of the concept, a high yielding but often knobbly tuber which can be quickly improved by selecting the biggest and smoothest tubers to use as the ‘seed’ for the following year’s crop. By repeating this over a number of years a notable change in the quality of the tubers can be achieved. This is not creating a new variety; it is simply improving a variety by limiting genetic variation within that strain.

In the plant world, seeds sold are often from plants that were grown in more favorable conditions. Regardless

*Foggage is a term used to describe grass grown for winter grazing.

**Adaptation: Emulating Nature’s Selective Pressures**

Genetics is a fascinating science with endless complex permutations that can be explored and unraveled. Plant and animal breeders carefully cross and interbreed, measuring the results to develop new varieties and improve breed traits.
of the variety, these seeds struggle and sometimes fail in our climate and environment. In organic systems, plants need to have natural hardiness and resilience against pests, disease and climatic conditions. This hardiness can be obtained through seed saving and a very simple technique is to select seed from the best plants growing on the worst ground. This is the opposite of choosing seeds from conventional systems that are harvested from plants grown with synthetic fertilisers, propped up with pesticides and fungicides in a climate-controlled greenhouse.

An alternative to seed saving is to buy from a trusted company from a similar climate with a similar ethos. Brown Envelope Seeds is an Organic Trust-certified seed company. All of their seed crops are grown outdoors which quickly selects for natural hardiness. Irish Seed Savers have a similar policy but focus more on heirloom and threatened varieties. These companies are doing something wonderful, which is often undervalued. They need to be cherished and supported because choosing seed grown in this way lends resilience to the nucleus of any growing system.

Selection works equally well with animals. Choosing animal breeds that are known for desired traits is important. Honing a group of breeding animals to suit a particular farming system or environment is possible with selection. A practical way to do this is to start with a plan for a desired farming system, with all the ideals clearly listed. Implement that plan, and then cull the animals that do not conform. For example, when I decided I wanted to grow 100% grass-fed beef, I simply stopped feeding grain and carefully managed my grazing.

Selection works equally well with animals. Choosing animal breeds that are known for desired traits is important. Honing a group of breeding animals to suit a particular farming system or environment is possible with selection.

Any animals that were not thriving in summer and, at least, holding condition over the winter were culled. Within three years there was a notable change in my ‘cow type’ and performance. The cows had a slightly smaller frame, with depth (large gut capacity), shorter heads and broader mouths. They are generally well balanced and proportioned and thrive on their grass-only diet.

The ecological mechanism this mimics is adaptation. Adaptation or Darwinian evolution is evolution’s speedier cousin and is driven by natural selection. A textbook example of adaptation is that of the peppered moth. The white peppered moth rests on birch trees; it has evolved to be camouflaged from bird predation on the white, papery bark. During the industrial revolution, the soot from coal-fired factories blackened the tree bark of forests surrounding cities so that the moths became a contrasting target for predators. There was a known dark variation in the moth population estimated at about 2% in 1848. The selective advantage was now in the dark moths’ favour because it was camouflaged on the darkened trees. Within fifty years the population of dark moths had shifted from 2% to 98%. After the industrial revolution the trees regained their natural pale hue and the white moths became the dominant phenotype again.

This example is an elegant illustration of how nature can adapt quickly to a change in environment or to predator pressure. In an agricultural system, the farmer or grower is the main selective pressure. We can choose to work with nature and select for productive ‘types’ that are suited to the environment or we can supplement that environment with expensive additional nutrition and compete with other environmental pressures such as pests and diseases.
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It is a still, bright day as I trundle down a local winding road that passes between Lough Arrow and Lough Key and crosses the Sligo/Roscommon county border. I have travelled this road many times before and always admired its beauty and stunning lake views but today I paid special attention to the land with an agricultural eye. The fields are small and rarely rectangular surrounded with thick hedges, some boggy with rough scrub and others carefully maintained by some 'tidy farmer'. It is the sort of land that agricultural contractors hate because the ‘gaps’ are seldom wide enough to pass through and their big machines struggle to turn in acute corners. The wonderful thing about this landscape is that the only way to farm here is with nature because only a fool would try to fight it. Here in the rolling fields with a dozen soil types it is overwhelmingly evident that nature will always rule. The air heaves with the hum of trillions of tiny invertebrate wings and the scent of innumerable plants mingle and change momentarily in the gentle air currents.

This is the place that Liam and Justina Gavin came back to with their young family. They left behind successful businesses in the UK with a solid amount of capital to inject into an ancestral farm of forty acres in the wilds of Roscommon. Yes, that may sound like financial suicide, but not when you have their pioneering vision.

As I talked to Liam it became very evident that vision was not in short supply. The farm is beautiful not only because of its natural assets but the carefully considered farm infrastructure: fences follow ancient field boundaries and hedgerows, drainage is subtle and effective and pockets of wildness are left where appropriate because “that patch of ground is too poor” or it acts as a well-designed shelter belt. This no doubt helps maintain the diversity of wild life; I counted nine species of butterfly during my walk with Liam and that was without even trying.

The farm, which was idle for thirty years, was “completely wild” when the Gavin’s began their new venture five years ago. With the help of a flail mower and a polyculture of animals the fields are now neat and improving with every season.

On the farm there runs a herd of pedigree Dexter cows which produces the meat for their Burger Bar café’s signature dish, the Dexter Burger. Later in the day I treated myself to one; it is especially delicious when topped with a slice of crisp organic bacon from their herd of free-ranging pigs. The Dexter meat is fine-grained, tender with a subtle gamey flavour.

The livestock continues with a flock of Jacob sheep which at present over-supplies their lamb requirements and a new flock of 50 laying hens which are rotated around the land with mobile
housing and electric netting (the flush of grass behind the hens is incredible). The farm also hosts a sizable market garden and tunnels which supplies the café with greens and a host of seasonal veg throughout the year.

The attention to aesthetic detail continues in the farmyard with a typical four-bay dry shed but entirely constructed and clad in timber. There is also a staff canteen, egg packing and veg prep shed, which are all neatly arranged inside another timber clad building. The building plans continue with a well-designed future layout to house the ever expanding enterprises.

The Drumanilra business model is idealistic made realistic. The farm grows the food, the farm-shop and café sell the food. In fact, it is so realistic that the farm is growing in size with additional land purchased this year to supply their busy retail outlet. The expansion plans don’t end there; another farm-shop and café are in the pipeline shortly with hopes for others in the future.

This is not a low cost start-up enterprise; it has taken a lot of capital, courage and (I’m guessing) blind faith to grow this business. It is a high risk venture that is driven by a love of good food and good farming. This business has had a broad, positive community impact. It carves a pioneering path and makes the finest organic produce accessible and abundant in a small town and surrounding area. This is not some flimsy advertising spin; it is truly a farm to fork experience.

As we stood in Liam’s favourite spot on the farm, a hidden, tranquil ‘picnic field’ where the land meets the shores of Lough Key, I chatted candidly with him about finding time for family in their very busy farming/business life. Instead of scaling back, he believes getting big enough to employ more people is the answer to creating family and leisure time. In the future he sees the farm growing further and having a full time farm manager. This will supply a dedicated organic butcher and a number of farm-shop/cafés in high population areas. In turn, this will create further employment and a trusted retail outlet for other organic producers. All in all, the organic movement in Ireland is very lucky that the Gavins returned to Drumanilra.
Controlled Aerobic Composting and Compost Tea: Muck or Magic?

The Organic Research Centre is working as researchers with the Land Gardener’s controlled aerobic compost (CAC) field lab (an initiative supported by the Innovative Farmers network and incorporating the findings of 10 farmers from around the world), examining whether CAC can be used to fully digest and humify organic matter in 6 to 8 weeks under varying conditions, and whether the end product contains a proper diversity of humifying aerobic microbial life.

While compost can be bought in, it is far better to use farm-produced material to act as a feedstock for compost tea and so the method used to make the compost becomes very important. Austrian scientists have pioneered the approach known as CAC, which relies on accurately monitoring temperatures and carbon dioxide levels in the pile in order to turn it whenever certain thresholds are reached to keep the process as aerobic as possible. The Luebke-Hildebrandt method of composting should, they claim, ensure compost of the highest quality with a rich and diverse microbiology that will lead to the best possible compost tea.

The method can be used at all scales, either in a small hand turned pile in a back garden or at a more commercial scale with a mechanical turner; but where the true scalability comes from is by using the aerobic compost to make a tea which can cover and treat much larger areas than the compost alone.

Luebke and Hildebrandt, the scientists who have developed the method, are convinced that all soil health is underpinned by biology and everything else follows from that. The compost produced by their method will, they say, transfer humifying abilities to the soil to help in the natural conversion of raw organic matter into highest quality humus. The end product, it is hoped, will help create a balanced healthy soil ecosystem providing for healthy crop growth.

**Compost Tea**

Compost teas have been the subject of a lot of attention recently and many bold claims have been made about the benefits for crops and soils, but there is very little academic research proving their efficacy.

Compost tea is made by ‘brewing’ compost in water and consists of a dilute solution of microbes and some nutrients that can be applied as a spray to the soil or to the crop. The theory is that beneficial bacteria and fungi present in mature compost are multiplied by the brewing process and can then be applied as a tea to help improve and correct any microbiological deficiencies in the soil and balance out the ratios of microbes to provide a healthier ecosystem. This in turn is supposed to improve plant health by creating microbiological associations and increasing nutrient availability. The beneficial microorganisms are also supposed to compete with pathogens in the soil and on the crop to help suppress both soil-borne and foliar diseases.

Another Innovative Farmer’s field lab group has been set up to look into some of the possible effects on arable cropping. After the first year, testing on three UK farms, attention was focused on a farm in Dorset where the farmer has invested in her own brewer and is now regularly applying homemade compost tea to her spring cereal crops and plans to continue doing so.

In the first year, farmer Sophie Alexander applied compost tea three times in spring to a crop of spring barley and this year used the same approach on a spring oat crop. She makes her own tea on farm using a brewer designed by Growing Solutions, incorporated in the USA and distributed by Martin Lishman in the UK. The brewers provide oxygen that acts as a catalyst for microbes.
The field lab, as well as looking into the compost tea making process and soil testing, has sought to investigate effects on the crop and most importantly on grain yield. Experimental design has been very simple in order to allow testing to take place within the farming system and to fit with commercial scale equipment and the contractor who takes care of all the spraying. This year, two fields were included in the trial, with a central strip left untreated and compost tea applied to the rest of the field. While this sort of trial design doesn’t really allow for advanced statistical testing of treatment effects, it can provide an element of pseudo replication to help with preliminary, introductory observation.

In early summer, assessments of root length and mass, crop height and canopy (LAI) were measured. Later on in the season, close to harvest, destructive sampling was performed to look into yield traits such as spikelets and grains per panicle as well as grain and straw dry weights to determine harvest index. At harvest, combine strips were cut and weighed to compare 0.5ha areas of treated and untreated crop in both fields. Thousand grain weight and specific weight were also measured post-harvest.

Crop effects have been limited so far with only one significant trend observed, although the trial is of a very basic design which would be unlikely to tease out any significant treatment differences. One result that was encouraging from this year’s trial on the spring oats was an apparent improvement in specific weight that may have implications for achieving the milling premium, though this effect needs investigating much more thoroughly.

The soil biology results are starting to look compelling, with improvement in active fungi from compost tea application having been observed in both years. It’s often fungi that arable soils are most deficient in given that tillage practices tend to destroy them, so potentially being able to manipulate soil fungi populations could have implications for arable soil health.

**The Luebke-Hildebrandt Method**

**Compost Windrows**
The windrows of composting material are 1-2m wide and about 1.2m high, with a steep profile to increase the surface area. This helps oxygen penetration and creates a chimney effect with air being drawn in at the bottom. Ideally, the gaps between the windrows are at least 1m to give space for access and turning.

**Getting the Right Mix**
The aim is to create a mix of composting materials of a final C:N ratio of 30:1 with 55 to 60% moisture and a minimum of 5% oxygen to ensure aerobic conditions.

**You Should Include**
- A mix of green and brown locally available composting materials to create a final C:N ratio of 30:1, of which about 40% should be fresh green materials to provide a source of sugar and nitrogen and bioactive substances. You can use grass clippings and kitchen food waste, but these are best added over a few days to a maximum of 30%. An alternative is silage. Similarly, you can add chicken manure, but again over a few days.
- 10% by volume of clay, which is important to establish a clay-humus complex (this can be in the form of a clay or clay loam soil).
- 10% by volume of finished compost (if available) to provide an inoculum of microorganisms. Alternatively, you can use an inoculum powder to kick start the process at a rate of 30g per cubic metre, reactivated in water and applied as a mist to coat all the materials.
- Some people like to add rock dust or bio char at a rate of 2kg per cubic metre.

**Monitoring and Turning**
Temperature and oxygen need to be monitored daily. The temperature must not exceed 65°C so turn when the temperature reaches 60°C. The aim is to achieve 58°C for 10 days to ensure complete hydrogenation and destruction of all the pathogenic organisms. A poor temperature rise can be expensive, so a less costly option is to monitor carbon dioxide as this displaces the oxygen in the windrow. During the first 10 days, the pile is turned if the CO2 levels reach 8 to 10% and thereafter if the CO2 levels reach 15%.

**The End Results**
This method ensures that weed seeds and pathogens are eliminated, the nutrients are tied into the clay-humus complex so will not leach out and all is achieve within 6 to 8 weeks. This method should not produce or contain any putrefaction, emit offensive odours or create any environmental pollution. The finished compost should have organic matter up to 22%, O2 19 to 20%, CO2 level <1%, temperature 5°C above soil temperature, pH 7 to 8, total nitrogen of 0.8 to 1.2% (nitrate max 100ppm in winter or 300ppm in summer, no nitrite, ammonium max 2ppm) and no sulphides.
Dunany Flour, Andrew Workman, Togher, Co Louth

Andrew Workman, with his wife Leonie and their son Matthew, has been farming organically since 2004. They began to mill their own grains, pack and direct-market their flours in 2009. It is an inspiring, self-contained family business. The motivation to start processing the grain came when their friend and sole outlet for their organic grain sadly passed away.

They worked for a short time with a local water mill to process the grain. Because they mill the flour to order, they found timing and planning around another business to be cumbersome and inefficient so they began exploring other options. While travelling to Matthew’s wedding in Poland, Andrew and Leonie stopped off at Jena in Germany. On a chance visit to a local market they met a farmer selling his own flour. They got talking about the inner workings of his business and the rest is history. After being inspired in Germany, the Workman’s invested in a Skjold, a micro stone-mill and so began Dunany Flour.

The farm itself is stunning. It is a 400 acre peninsula north of Drogheda surrounded by the Irish Sea. The property is rich with old woodland while 290 acres of it is in productive arable land. Their large family home, once the summer house for Bellingham Castle Estate built in 1840 has been in the Workman family for many generations. The farm has a warren of roads running through it. I got lost more than once and even stumbled upon Andrew’s mother who also lives on the farm. Behind the main house there is a carefully restored stable courtyard in which a livery business is run by a third party. Behind that is the farmyard with the grain-stores and all the equipment for dehulling, cleaning, grading and drying the grains – this is an organised assemblage of home built, improvised and customised machines, all of which have a wonderful air of Heath Robinson. At the heart of all of this there is the clean, sealed milling room were the magic happens.

Two small mills process batches of flour to order. Like coffee roasters, Dunany’s flours are all about freshness; “that’s where the taste is” Leonie tells me. Once the grain is milled the clock starts ticking – they put a use by date of seven months on their flour to ensure they can stand behind its quality.

I imposed my visit on the day of the spelt harvest and the farm was buzzing with activity. Andrew kindly took time during his lunch break to speak to me. He climbed down from his combine, still vibrating, saying it was like “being in a glass house, sitting on a V8 diesel engine”. He explained the good and the bad points of their spelt crop and quickly talked me though their whole farming system.

They operate a stockless arable farm and so rely on cover-crops, rotations and mulching all the straw from the crops back on the field. They cut as high as possible with the combine just taking the seed head and the top half of the plants. This is mainly to avoid taking weeds or an under-sown crop...
Profile - Dunany Flour, Andrew Workman, Togher, Co Louth

(like white clover) into the combine. It is less strain on the machine and also makes it easier to clean the grain. The standing straw and any undergrowth is mowed down with a mulcher behind the tractor. All this plant matter is then tilled in before the next crop is sown.

The crops include winter and spring wheat, rye, spelt and oats (oats are considered a productive break crop because it is not a ‘hungry’ plant). Complete break crops include green manures of red and white clover. White clover is often under-sown, which works as a weed suppressant as well as a nitrogen fixer. Andrew is finding that red clover can often make the more fertile fields too rich in N and sometimes causes a vigorous weed problem. He said this season was a conventional farmer’s year because it was so mild diseases like yellow dwarf virus can be

an issue. When dealing with unseasonal weather conditions, chemical inputs can bridge the gaps that organic farmers have to run and jump across.

They are constantly learning, fine tuning and experimenting, working to improve fertility and resilience. They grow a broad range of crops both winter and spring sown so that if conditions are poor for one, they may be more favourable for the other.

The future for Dunany is mainly to continue to do what they do but better, and expand their market outlets. Currently they supply many artisan retailers like Sheridan’s Cheesemongers, other processors like The Regale Biscuit Company, restaurants and bakeries nationwide. They also provide a courier service for both large and domestic orders. They are in discussions with a local distillery about supplying them with organic rye and working with an Australian food laboratory who are experimenting with extracting the sugar from organic rye.

Milling their own flour and setting up Dunany Flour has made this farm viable enough to support two families. Michael’s wife - who was due with their third child at the time of my visit - is also involved in the business when not on ‘maternity rest’. As with many organic farms, it is always inspiring to see that a piece of land, farmed well with some innovation can sustain generational family livelihoods.
20 Years On: GM Crops Fail to Deliver on Promised Bounty

by Colin Keogh

For 20 years the Organic Trust has fought against the proliferation of Genetically Modified Crops and through the lobbying efforts of many environmental and like-minded groups Europe has by and large avoided the contamination of the food chain in Europe with this unwanted “technology”.

Far from being simple luddites, the Organic sector raised genuine concerns regarding the methods used to produce GM crops and the potential risks of placing the future of international harvests in such a small group of seed varieties. To date, few, if any, of the concerns raised have been genuinely and independently researched and addressed.

Opponents of GM Foods were accused of obstructing the opportunities offered through increased yields to feed the growing population of the planet. The organic sector in particular was attacked for failing to see that GM technology would result in a major reduction in the use of pesticides.

Now, 20 years on, the assessment of the performance of the success or otherwise of GM shows that the promised bounty from Monsanto et al has just not materialised.

In October 2016 the New York Times reported that “genetic modification in the United States and Canada has not accelerated increases in crop yields or led to an overall reduction in the use of chemical pesticides”.

The Times goes on to state, using United Nations data, that the United States and Canada have gained no discernible advantage in yields — food per acre — when measured against Western Europe, a region with comparably modernised agricultural producers like France and Germany. Also, a recent National Academy of Sciences report found that “there was little evidence” that the introduction of genetically modified crops in the United States had led to yield gains beyond those seen in conventional crops.

So what about the promise of the vast reduction in the use of pesticides and insecticides? Well, herbicide use has increased in the United States, even as major crops like corn, soybeans and cotton have been converted to modified varieties. And the United States has fallen behind Europe’s biggest producer, France, in reducing the overall use of pesticides, which includes both...
herbicides and insecticides.

One measure, contained in data from the United States Geological Survey, shows the stark difference in the use of pesticides. Since genetically modified crops were introduced in the United States two decades ago for crops like corn, cotton and soybeans, the use of toxins that kill insects and fungi has fallen by a third, but the spraying of herbicides, which are used in much higher volumes, has risen by 21 percent.

By contrast, in France, use of insecticides and fungicides has fallen by a far greater percentage — 65 percent — and herbicide use has decreased as well, by 36 percent.

In conclusion, if we strip away all of the environmental and food safety concerns about GM crops we are now faced with the fact that GM crop yields have not met their expected targets and there is some evidence that even the lower yields being achieved are decreasing with each harvest. We also now know that GM crops require not lower but higher usage of pesticides and insecticides than their conventional counterparts according to the UN Survey quoted by the New York Times.

All of this information questions the wisdom as to why the state continues to spend vast amounts of money in researching this technology and in particular in out-planting GM potatoes at the Oak Park facility in Carlow! All to what end? So Ireland can finally find out what the rest of the world appears to already know – GM crops do not perform as well as ordinary conventional crops in terms of yields, they cost more to produce in increased chemical inputs and, after all that, no one in Europe wants to buy them!

Conventional (no pun intended) wisdom would suggest that the dismal performance of GM crops in the key target areas of increased yields and lower costs through reduction in using petro-chemical sprays would finally signal the death-knell for this unwanted technology – WRONG!! The GM industry is so huge and through political patronage has the ears of many regulators and decision makers; it is far from ready to wave the white flag.

The concerned consumer and the organic sector must remain vigilant in opposing the creeping legislative changes and prospective international trade deals that aim to introduce GM ingredients into the EU food chain through the back door.

GM hasn’t gone away you know.
Holohan’s Organic Farm, Rathdowney, Co Laois

Eamonn Holohan won the prestigious Zurich Beef Farmer of the Year Award in 2017. This award is contested between farmers of all stripes, so the fact an organic farmer was acknowledged for their innovation and excellence was great for the sector. In fact, organic farmers were very prominent nominees throughout many of the categories.

Firstly, Eamonn makes it very clear that, although it was he who was put forward for the award, his farm is a three man operation as he jokes that he is retired. His sons William and Edward insisted he took the glory, as it was he who laid the ground-work for what the farm has become today. Struggling to find a profitable future for his conventional suckler farm nine years ago, after a lot of research and some organic farm walks Eamonn made the brave and pioneering move to organic production.

The most salient thing about this farm is how central family is to the whole operation. Eamonn’s wife Mary is very much the proud matriarch. Although both sons have some off-farm work, William and Edward are heavily involved in the farm. The third son, Michael, is a butcher currently working in Norway, but he is roped into any jobs that need doing when he is home. The sons do most of the machinery work. Eamonn considers himself the stockman.

The Farm

There are three farms totalling 250 acres on which the Holohan’s run 140 cows and calves. The main business is producing weanlings less than 8 months and over 300Kg for Good Herdsman’s rose veal market. It is a niche and specialist outlet which pays above the standard organic market price for weanlings, but it has strict parameters and demands steady supply for 6 – 8 months of the year. The Holohan’s have tailored their system to provide.

The Herd

The cows are calving all year round and are divided into small herds across the three parcels in a complex rotation that was incomprehensible on a short farm walk. Depending on the stage of gestation and the time of year, the herds are kept in different areas to suit their needs at that time. With the help of his two dogs to hold the cattle back, Eamonn repositions the temporary electric fence to give each herd access to fresh grazing daily. The herds with the bulls are pregnancy scanned every six weeks to monitor their status closely. They select maternal cows with longevity and replace about 10% of the herd annually. They utilise the 10% allowance to buy non-organic nulliparous females for breeding purposes. William says it would be ideal to breed their own replacements for many reasons but in their case it doesn’t add up. “We can buy an in-calf heifer for a similar price as we sell an eight month weanling. Keeping a weanling heifer for two years and eight months to produce a saleable animal just doesn’t make sense”. That being said, they do hold back the occasional batch of heifer weanlings as it can be difficult to buy the type of animal they require.

No grain is fed as their forage quality is high and their cows are low maintenance animals. The calves get all their protein requirements from milk and the clover rich pastures. The
calves average 1.5kg per day live-weight gain and often exceed 360kg at slaughter. They run two Saler bulls and have recently bought a Blonde d’Aquitaine. The main criterion for the bulls is ease of calving and the ability to breed fast growing heavy weanlings; this is the reason for using continentals. Salers have been delivering well on these objectives but Eamonn says “that growing them to finished cattle would be a different story”.

Grass, Land and Nutrient Management

The Holohans take advantage of living beside a Glanbia dairy processing plant, from which they take up to 200 tonnes of dairy sludge* annually. This is spread with priority on all the silage ground with any excess on the pasture fields.

During winter housing they use up to 400 bought-in round bales of straw to bed the animals, which are cleaned out daily. The resulting farm yard manure is spread from September onwards at approximately five tonnes to the acre covering as much of the farm as possible. The slurry is focused on the silage ground in spring.

Being former dairy farmers, the Holohans know how to graze grass effectively. The grass is managed to a 21-28 day rotation. To keep pastures fresh and productive they aim to till and reseed around 20 acres per year with clover rich-mixes. Early this summer they also sowed 6 acres in red clover for silage, which yielded 10 bales to the acre for the first cut in early August. Eamonn hopes to get a second cut toward the end of September.

The rotating herds are followed closely with a disciplined ‘topping’ regime. Eamonn confesses to sometimes topping fields three times a year. He is so fond of topping that, on pasture that has gone too heavy, if the forecast is for fine weather he will ‘top high’ before the cows graze. He says the mowed grass sweetens and the cows love it. The result of all this work is very clean, weed free fields. To add to the tidiness of the farm, Edward, who does all the farm hedge-cutting (as well as a little contract work) runs the flail under thousands of metres of electric fencing a few times a year. This ensures that the fence voltage is not compromised by plant growth along the margins.

Speaking later to William he said the farm has a sizable turnover but they have very high machinery costs. “The maintenance and diesel bills are not small but we love machinery and we do all our own work, everything apart from baling”. He suggests that in some cases contracting out the work could make more financial sense but they enjoy the work and the control over when things get done. We also talked about how secure the rose veal contract is? William said that they do very well supplying this market, but the farm produces weanlings very efficiently and they have other outlets too, so he is not overly worried.

The Holohan’s have embraced a niche market and supply it to the highest standard. They have developed a sustainable farm business that provides cash flow year round but, most importantly, is a generational business with a future.

*The milk water washings from the dairy processing plant are treated through membranes and results in water and a solid dairy sludge. This sludge is essentially made up from the solid nutrients found in milk and as such is a nutrient rich material.
Temple Grandin, a professor in the Department of Animal Sciences at Colorado University, a renowned animal behaviourist, and a pioneering advocate for autism awareness, is known worldwide for her contributions to the livestock industry.

Her insights into animal behaviour have shaped innovative approaches to livestock handling, including methods and designs for humane slaughter that have become the industry standard. She has just celebrated her 70th birthday this September and in the concluding speech at her birthday celebrations her colleague said she was simply “A giant force for good”. Grandin’s life and work has revolutionised the study of autism, reflected in the title of her Ted Talk: The World needs all kinds of Minds.

My wife Shelley is a Behavioural Analyst, she has worked with people on the autism spectrum for over 16 years. Shortly after we met she told me about Temple Grandin. Due to my love-fuelled elevated interest in autism, and my own connection to cattle, my curiosity spiked. I read many of her books, watched hours of her speaking on the internet and went through her animal handling website www.grandin.com with a fine tooth comb. The more I explored, the more interested I became. I was completely captivated by her mind, her thought processes and ultimately her design work - beautiful, eloquent and outstandingly clever cattle chutes!

When I heard Dr Grandin was coming to Ireland earlier this year, I fixated on the goal of going to see her speak. The meeting was advertised on the Northern Ireland Veterinary Association website as a member’s only event. After exhausting a few convoluted avenues to get a ticket I simply emailed Queen’s University who were hosting the event and they kindly allotted me a place. Dr Grandin was gracious and generous with her time. Before her talk, she seemed unphased by the polite clutch of people following her around shuffling to speak with her. She afforded everyone time for their questions. I even passed her leaving the toilet in full flight - explaining how important non-slip floors are in handling facilities. We chatted for a few minutes, I told her the influence she had on my own farming, and how simply sheeting a few gates (to shield distractions) and putting a window in the exit door (to eliminate the “dark cave effect”) had completely transformed how my handling facilities performed. She reiterated that the simplest changes can make all the difference: “get into your chute, bend down and see what the cattle are seeing”.

Before taking my leave I complimented her on her shirt, she smirked and said “people send them to me all the time now”. She carries off wearing shockingly garish cowboy shirts with such poise or perhaps nonchalance that her look has become iconic. She started wearing them because they were the only fabric she could bare against her skin. Often people on the autistic spectrum can be affected by sensory overload, the sensation of fabric, the flashing of lights or the jumble of noises in public places. It is this sensitivity that Dr Grandin has used to her advantage when it comes to designing for animal handling facilities. She explains, that she experiences things like a prey animal, she can think like a cow. “Animal thinking is very specific because it is sensory based and not word based”.

She has visited Ireland twice this year and filled her time with a hectic schedule, fulfilling speaking engagements on both autism and animal welfare and handling. She visited abattoirs and animal handling facilities in an advisory capacity. She even managed to squeeze in the Balmoral Show in County Antrim, where she was greatly impressed by the genetic diversity and number of rare breeds preserved on the island. She also added this whole country is beautiful and its largest resource is grass. “Use it, and don’t mess it up with US-style dairies and zero grazing feedlots (she wagged her finger at the crowd)! That stuff was designed for the desert”.

Temple Grandin has completely revolutionised meat industry welfare standards in the US and worldwide. While bespoke designs for abattoir handling systems are sophisticated and eloquent, her solutions to problems with existing facilities are often shockingly simple. In one abattoir she visited in Ireland on this trip, there were multiple small round holes in the shed door opposite the exit to the cattle chute. They were having a lot of difficulty getting cattle to go up the chute. Temple simply put tape over the holes that were shining beams of light at the cattle and “spooking them” After this the cattle walked up the chute without difficulty. Temple explained
that it is good if the cattle see light a head of them and important that the chute does not create a dark cave effect; but in this case the light was wrong. It was shining like headlights into the cattle’s eyes. A skylight above the chute exit however, will often improve cattle movement by letting more soft light into the building.

The basis of all her work is the science of animal behaviour. She designs systems to work with those behaviours in order to reduce or eliminate stress. This makes for healthier, more productive and profitable animals. Abattoirs by their nature are stressful places because (apart from the obvious inevitable slaughter), cattle are (i) transported there, before (ii) being mixed together in sometimes crowded pens, from where (iii) they are handled by strangers through strange gates, alleyways and chutes. Force and electric prods are often used to keep the line moving. If the handling facilities are badly designed, all of this is amplified. There may be slippery floors, poor use of light, awkward turns, rough handlers, high pitched noises or even very simple distractions which can cause huge problems. An example of this could be something as inconspicuous as a flapping piece of plastic or a dangling shiny chain. A strong feature of Grandin’s design work is the iconic curving chute. The chute makes the cattle feel like they are turning back to where they came from. This takes advantage of a strong behaviour that cattle express when they are herded; they like to return to where they last felt safe. These chutes have a natural calming effect on animals and they have solid sides so they are not stressed by any novel distractions.

Temple designs out all these stresses and scores behaviour as cattle pass through a facility with an easy-to-implement measurement checklist. This is called Objective Scoring. It focuses on easy-to-measure actions that gather crucial data. This makes it clear where the problems are and what needs to be designed differently in order to address them. “The use of this objective scoring system for auditing animal welfare has resulted in great improvements.” To give an idea of her influence, 60% of abattoirs in the US use her auditing system. In 1999 when they began using Grandin’s auditing criteria, only 30% of abattoirs passed, while today, over 90% pass consistently.

“People manage what they measure”

Auditing of the critical control points of handling will help maintain handling standards to ensure good animal welfare and help preserve meat quality. Grandin developed an objective scoring system for handling and stunning at slaughter plants. The system is simple and can be easily implemented. It was essential to find the important critical control points, but to not have too many things to measure. The variables measured are:

- The percentage of animals stunned correctly on the first attempt;
- The percentage of animals insensible on the bleed rail;
- The percentage of cattle that vocalize (moo or bellow) during movement through the chute and restrainer or the percentage of time that pigs are squealing in the stunning area;
- The percentage of animals electrically prodded;
- The percentage of animals that slip;
- The percentage that fall.

The lecture I attended was entitled ‘Understanding Animal Behaviour’ and did not focus much on her mammoth influence on the meat industry. Instead, she talked about using objective scoring on farms to self-regulate animal welfare, saying it is very easy for “bad to become normal”. In her view, “people manage what they measure”. Simple monitoring will lead to action being taken to ensure higher welfare and increased profits within the sector. Through routinely scoring the flock or herd for lameness, swollen joints, dirtiness and poor body condition and by noting the percentage of each of these criteria on a monthly basis, changes can be made based on real data to improve the welfare of animals.

Other key points from Grandin’s talk included learning to observe and recognise behavioural cues, which is crucially important as stress has a direct effect on profits. Fear is the prominent cause of stress in livestock. It is the most primitive emotion for survival. The first signs of fear are tail swishing or ears turning back in horses. Seeing the whites of an animal’s eyes is a sign of heightened fear. Prey animals are very good at hiding pain because it makes them a target in the wild. We as animal husbands need to watch for subtle signs like ‘lying on one front leg out’ or ‘dog sitting’. These are sure signs of joint pain in cattle.

Breeding was another dominant theme of the lecture. Genetic defects that cause animals’ distress and discomfort should not be tolerated. For Grandin, “modern bull dogs are (animal) welfare crime; this is a fine example of bad becoming normal.”

She concluded by saying we should not over-generalise with jargon and terms. She stated, “what is animal welfare? Dealing with practical real life issues like lameness and cutting out all the fuzzy stuff. Keep it simple; measure and manage. Don’t allow bad to become normal.”

Another admirable aspect of Grandin is the fact that she has deliberately never patented any of her work. As the crowd stood with a round of applause she returned to the stand and silenced the room to make one more point: “When you find solutions, put them out there, don’t be hiding them away so no one can copy them. Share ideas and everything will happen much faster, we aren’t around for that long”. Words to live by.

![Clive Bright, PR & Development Officer Organic Trust with Temple Grandin](image)
The annual Tullamore and AIB National Livestock Show took place on 13th August this year on a dry, fine day.

With an attendance in excess of 60k, it was another huge success story for the organisers, and made for a vibrant and lively atmosphere for attendees. Organic Trust was represented in very capable fashion by inspectors Eveline Gill and Mark Hackett, who spent much of the day engaging with existing and future organic operators: answering queries, distributing information and merchandise and generally enjoying the sense of camaraderie and curiosity.

The Show has something for everyone. In addition to the remarkable display of livestock and a machinery section to make anyone covetous, there were over 700 stalls offering all manner of clothing, gardening, health, beauty and home products. There were food options as far as the eye could see: from fast food to international cuisine to quality artisan products including plenty made by the gifted hands of Organic Trust licensees. The public had every opportunity to partake in the activities of the day through the various competitions and displays and this makes for an interactive experience for young and older participants.

Despite the degree of uncertainty around the opening of a new Organic Farming Scheme, it was encouraging and exciting to note the level of interest in organic conversion expressed by visitors to the Organic Trust tent. It seems clear that there are large numbers of farmers genuinely ready for the re-opening of the OFS. These farmers have more than a casual curiosity: they have been doing their research, attending organic farm walk demonstrations, mentally planning for the changes that will be required and considering the financial implications. But equally, there are considerable numbers of individuals who own smallholdings for whom the current ambiguity around the
re-opening of the OFS is not a barrier to conversion – small horticultural ventures, for example, which are witnessing the growing demand for organic produce within the country and are keen to make a contribution. Indeed, very many have been following organic practices in an unofficial way for years and, in these cases it is often merely a matter of taking the plunge and taking the formal steps towards organic conversion.

What struck me was the amount of visitors who wanted to know more about where to source organic produce directly. We spoke to many women, in particular, who want to know where in their own locality they can make contact with an organic producer who can supply their meat, veg, eggs and dairy needs without necessarily going down the supermarket route. These are the everyday shoppers, the people feeding families and making deliberate food-buying choices who now view organic as the preferred option. They want that connection between field and fork, they want to know that their families are eating in the best possible way for fair prices and they want to personally engage in making these connections. They see direct purchasing as being more environmentally sound, supportive to the producer and their family and as a way to come full circle: that is, to move back towards the land by actively deciding to source their ingredients in a conscious manner.

Anecdotal evidence abounds regarding the superior taste and quality of organic food but these factors are hard to quantify for the lay person. As organic leaders, readers of this magazine believe, on a profound level, in the value of organic methodologies and in the integrity of the physical output. But it is just as fundamental, that which calls the consumer to our products and processes. It is the sense of security in consumption, the trust in the system, an individual need to be an integral part of a more sustainable food industry. Every consumer has a right to the very best quality food; nurturing, health-giving and environmentally viable. And it was clear from a day interacting with passersby at Tullamore Show that, to constantly increasing degrees, organic products are no longer a luxury but an essential.

By the end of the day, a light dust had risen from the land, such were the numbers of attendees, each trying to see and experience as much as possible from the wealth of offerings. There was a sense of a day well spent; neighbours and relatives had caught up on the news, shopping bags full of goodies were loaded up, rosettes and awards were safely tucked away for the journeys home and inspiration had been gained by the many innovations on display. It won’t be long until August 12th next year.
Perched on the edge of the vast Atlantic Ocean at the end of Bunowen Pier in Ballyconeely in West Connemara sits a beautiful white washed building that houses Connemara Smokehouse. The smokehouse is the pride and joy of the Roberts family who have been practising the art of exquisite smoking here since 1979.

John and Bridget Roberts founded the smokehouse almost 40 years ago and it is now run by their son Graham and his wife Saoirse. Producing artisan seafood is in the Roberts’ family blood and Graham and Saoirse’s children are already showing a keen interest in the work of their parents and grandparents.

Located on the Wild Atlantic Way, the Roberts family welcome visitors to the smokehouse through arranged guided tours where they display the art of traditional smoking. The process of dry curing their seafood involves salting the fish over 8 hours and then gently smoking it to achieve an intensive pure flavour that can only be appreciated when tasted.

Connemara Smokehouse & Visitor’s Centre was the first Irish seafood company to be recognised as an Économusée, which is an internationally recognised concept that originated in Quebec over 20 years ago to recognise rural industries that contribute to the maintenance of local skills and knowledge in traditional artisan crafts. Seven Northern European countries are involved in the project with 50 artisan businesses involved.

Graham has produced excellent Organic Smoked Salmon products for many years. Environmental concerns are very important to the family and organic production was a natural progression for the business to take.

What does it mean to be an organic salmon?

Firstly, the fish are located in the open, exposed sea. There are only 2 fish per tonne of water, which means there is a lot of space to swim freely. The fish have a similar diet as the wild salmon, which consists of herring, mackerel and plankton. The salmon are reared according to strict organic principles.

The fish are fed an organic diet, which contains all organic or natural ingredients and is free from genetically modified organisms. The pigment used in the feed is a yeast based pigment called “Phaffia” and is a natural source of astaxanthin. The farm and its related sites are audited on an annual basis by the organic certifiers, Organic Trust.

The Connemara Smokehouse Organic Salmon Range is available in 800g & 200g sliced packs, Roast Smoked Organic Salmon, Honey Roast Smoked Organic Salmon and Gravadlax. All of these delicious organic products can be bought at the online shop on the Connemara Smokehouse website. Visit www.smokehouse.ie for more information.
How Denmark is Garnering the Benefits of Organic Farming to Address Environmental and Climatic Issues

from Organic Denmark

We can do better

Today, organic farming offers significant advantages in relation to the climate. There are, however, still many issues that need to be dealt with. Research shows that:

- there is a massive potential in organic farming to sequester the air’s carbon dioxide (cO2) in the soil whilst also improving and enhancing the soil’s fertility and biodiversity;
- organic farms have a lower emission of greenhouse gases per hectare than conventional farms;
- organic food production integrates considerations for the environment, nature, animal welfare and climate;
- improved methods make organic farming an obvious tool to reduce the negative, climatic impact of farming.

Regarding climate changes, farming has a great responsibility to make significant changes in order to become a part of the solution instead of being a part of the problem. Organic farming has already made a headstart and makes an effort to find and develop solutions. Organic farms have:

- better nitrogen management and therefore less impact on the environment;
- more fertile soil with a larger storage of carbon;
- more room for nature and a more hardy production that is resistant to extreme weather and erosion;
- smaller consumption of fossil fuels, including energy used for producing chemical fertiliser and pesticides.

The serious changes to our climate demand that we take action now. We do so by uniting and integrating our focus areas into one strong climate strategy. It is a strategy that will enhance the positive impact of organic farming on climate changes. Hence this strategy puts ecology in the lead in the fight for a better climate.

Danish organic farmers want to:

1. Phase out the use of fossil fuels by 2025;
2. Decrease the energy consumption significantly by means of energy accounts and action plans;
3. Increase the production of renewable energy – and produce a surplus of renewable energy;
4. Sequester carbon in the soil and thereby reduce the amount of cO2 in the atmosphere whilst enhancing the fertility of the soil and the biological diversity;
5. Create more shelterbelts and wildlife refuges to retain more cO2 and to provide habitats for wildlife and plants. We want to ensure that the natural balance in the agricultural ecosystem continues despite changes in the climate;
6. Improve the handling and utilisation of manure, green manure and cover crops, e.g. by means of biogas technology, so that the emission of greenhouse gases is reduced and a higher yield is obtained;
7. Improve the balance between livestock production and plant production;
8. Reduce the loss of carbon to protect the environment from nitrate and the climate from laughing gas;
9. Use the latest technology and treat the soil with caution by adding organic material and applying a healthy crop rotation so that the soil emits less of the greenhouse gases damaging to the climate.

What is Organic Denmark doing?

We are already in the process of making organic farming more climate friendly. Take a look at our climate projects:

A better crop yield to minimize climate changes

When organic farmers increase their crop yield, the emission of greenhouse gases per kilo of harvested crop will fall. In this project, analyses, focus groups and evaluations will focus on organic farmers’ possibilities to improve their crop yield.
Taking care of nature – because we depend on it

Climate changes have a brutal effect on nature, while ecology treats nature with caution. The goal of this project is to have more nature and a larger sequestering of carbon in the organic plant production. Through active and focused initiatives, there will be more biotopes (habitats) for the wildlife living in and around organic farmland by establishing more refuges for wildlife with limited cropping and embankments for insects etc. The project will provide better conditions for certain animal species whose numbers are fast declining – amongst others larks, partridges, hares, papilionoides and bees.

Biomass and recirculation equal more CO2-neutral energy

This project promotes the use of organic biogas as a tool that combines a reduction in the emission of greenhouse gases and a better protection of the environment with improved organic production, a larger self-sufficiency regarding nutrients and more production of renewable energy. We want to examine several organic farms to see if it is feasible both financially and ecologically to produce biogas and organic fertiliser. Furthermore, we also want to examine whether green kitchen waste (which complies with the regulatory requirements of course) and other forms of biomass from public institutions and companies can be included in the production of organic biogas and organic fertiliser.

The carbon school

This project promotes climate neutral organic farming by providing farmers with specific instructions on how to use renewable energy and save energy. In this project, we have developed a prototype of a simple and user-friendly tool that can calculate the CO₂ emissions of a farm. The tool is now being tested on 10 organic farms. Through this project, we want to improve the carbon sequestration on organic farms by communicating knowledge on how different changes of farming methods affect both the storage and loss of carbon in the soil.

Reducing the emission of greenhouse gases

On four different farms, we are demonstrating the possibilities available to an organic farmer to reduce the emission of greenhouse gases. We especially want to identify the initiatives that are most compatible with running a successful organic farm. We focus on this project in order to motivate organic farmers to reduce the emission of greenhouse gases on their farms. Furthermore, this project should also provide us with the means to evaluate the effect on the climate of an organic farm compared to that of a conventional farm.

Farrowing pens with energy crops and a better crop rotation

In this project we are testing the growing of willows for renewable energy in a new concept that includes pig production. The goal is to combine the production of willows for energy in groups of organic sows in a system that is well-functioning - both work-related and in connection with the environment and animal welfare. In this project, a new crop rotation is included in which the nutrients are exploited better and thereby burden the environment less. More precisely, the excess of nutrients will be reduced through a higher yield, thus reducing the buying of feed.

See Denmark’s first organic biogas plant in the village of Bording

With this project, we want to demonstrate the synergy between the production of organic foods and biogas in the first biogas plant in Denmark which is run on the basis of biomass from organically grown crops. We want to demonstrate how the transformation of biomass takes place, the energy yield and the manure yield etc. The project will deliver the documentation on how much the biogas plant reduces the evaporation of ammonia, the washing out of nitrogen and the smell nuisance from manure. Furthermore the project will show that biogas plants make farmers capable of being self-sufficient in organic fertiliser without having livestock.

Climate plans on organic farms

With this project, we want to ensure that organic farming will get a headstart in working for a better climate without compromising the aspects of environment and animal welfare. The project will develop and test a concept for counselling which helps the organic farmers to reduce their emission of greenhouse gases from fields and stables, to decrease their energy consumption and to increase the storage of carbon in the soil. The project will be very practically oriented and will be carried out in close cooperation with 15 farmers.

The focus Area of Energy and the planet’s climate

Organic Denmark wants organic farmers to actively take part in facing all the challenges concerning energy consumption and man-made climate changes. Organic Denmark wants to launch initiatives that contribute to organic farmers and consumers of organic goods sharing the responsibility of limiting man-made climate changes and that the production and the processing on organic farms match the values of Organic Denmark regarding energy.

Read more about Organic Denmark’s work at www.organicdenmark.dk
State support for organic farming must be reintroduced to stimulate the sector, Kilbeggan (Co Westmeath) farmer Pat Lalor said recently. Irish organic farmers cannot meet the demand from retailers for oats and milk and the Organic Farming Scheme (OFS) has been closed since 2015.

"In tillage and dairying there's a market crying out for more operators and because the organic scheme is closed nobody is coming in" said Pat Lalor, the Ballard farmer behind Kilbeggan Organic Foods. Speaking to Agriculture Minister Michael Creed, he said Flahavans have to import organic oats and the milk producers cannot meet the growing demand for organic formula.

Mr Lalor said the support scheme, which spreads payment to farmers over five years and is crucial in the initial two-year changeover period, need not be re-opened to cattle and lamb producers initially.

Mr Lalor converted his farm to organic in 1999 and now grows at least 80 acres of winter oats each year, in addition to his 150-acre organic cattle enterprise. On his arable land he runs a two-year winter oats and red clover rotation system. He takes two cuts of silage each year and fertilises his own land by cutting and mulching the red clover regularly. His oats yield this year was three tonnes per acre and he would be disappointed any year if it dropped below 2.5 tonnes.

"It's a no-brainer, I don't know why conventional guys don't do it. I don't even know the price of conventional fertiliser – I wouldn't have a clue", said the farmer.

Oats grown on his own farm are sold in the smaller shops, health food outlets, delis, butchers and fruit and veg sellers. Mr Lalor does not have the scale to be able to supply the supermarkets.

Mr Lalor also told the Minister that an expansion of organic farming would reduce the damage being done to water by conventional farming. There is no-run off from slurry and emissions from machinery are much lower. "Organic definitely ticks the boxes for the environment, big-time", he said.

It is expected the next round of CAP (Common Agricultural Policy) reform will shift the focus from production to sustainability. Mr Lalor said Ireland still has a very low rate of farmers involved in organic production, with only tiny Malta trailing behind in Europe.

Minister Creed told Mr Lalor that the Rural Development Programme funding was committed to various schemes until 2020. "If we were to reopen organic now, bearing in mind the level of funding we've put into organic has been doubled under the current programme, we'd have to close some other scheme", said Minister Creed. He said the next round of CAP will reflect the climate change agenda and will impose sustainability obligations.
Japanese knotweed has attracted a lot of press coverage in recent times, and with very good reason. Its dense stands of tall stems can be seen along the sides of roads and in old gardens all over the country, and it is spreading. Japanese knotweed is a handsome plant – growing to over 2 metres tall with large flat leaves and drooping trusses of white flowers in the summertime.

By 1870 it had spread into the wild, and people came to realise that it was a problem.

Like most invasive plant species, it spreads readily along roads and riverbanks. Recognised as an Invasive Alien Species in Irish legislation, it is not an offence to have knotweed on your property, but it is an offence to spread it, including any viable parts of the plant, or any soil which could be contaminated with the rhizomes.

The most efficient way of treating it is with herbicides, by spot spraying or stem injection over a 2 to 3 year period. But what about a non-chemical option for organic farmers? One option is to get a licence, dig out all infested vegetation and soil and send it to a registered waste facility. This is expensive and requires careful planning, but if done correctly should ensure that the area is completely clear of the plant.

Another management technique is to exhaust the plant by continuously cutting back the aerial parts and not letting it get an opportunity to build up its underground stores of energy. This is probably the preferred method for most people, but with a long-established stand, it is unlikely to be completely successful. The important points to remember are not to disturb any soil within a 7-metre radius of the plant, and to ensure that all cuttings are gathered up and securely contained until they are completely dead. A sharp blade must be used (not serrated), and never strim it. Cutting should be repeated a minimum of 3 to 4 times per growing season, and will take at least three years to show any impact on established stands. It’s a good idea to rope off the infested area to avoid vehicles or animals accidentally spreading pieces of stem or rhizome-infested soil.

As a way of speeding up the process of exhausting the rhizomes, some management methods suggest rotavating and feeding the area to encourage new growth, and then treating. This is supposed to trick the plant into drawing from that underground store of energy. This measure is risky and would require a biosecurity zone to be carefully set up to ensure that no plant material can be accidentally moved off the infested site on machinery or equipment.

Even where strong chemical treatment of Japanese knotweed is used, it takes 3 to 5 years to be able to declare an area clear. Even then, great care must be taken if disturbing the soil. Where cutting is the main method of control, it will take a lot longer than that, and the area may never be completely cleared.

Do:
- Remember that the rhizomes can extend 7 metres out from
the visible stems of the plant;

- Remember that very small pieces of plant material are capable of developing into a new plant;
- Rope off infested areas to guard against the accidental spread;
- Store cuttings away from light and soil until they are completely dead and decaying;
- Remember that it is an offence to allow Japanese knotweed to spread outside of your property.

Do Not:
- Leave cuttings lying where they can reroot or blow to another spot;
- Disturb the soil within a 7-metre radius without putting biosecurity in place to contain it;
- Ignore it and hope it will go away. It won’t!

Ecologist Eithne Davis BSc is currently undertaking a PhD in the Prevention, Control and Eradication of Invasive Species at IT Sligo Department of Environmental Science.

Transport Infrastructure Ireland has produced a helpful handout entitled Identification of Invasive Alien Plant Species (IAPS), the text of which is reproduced here.

‘Alien’ or ‘non-native’ species are defined as those species that have been introduced, either intentionally or unintentionally, outside their natural range. Many of these species live in harmony with native species causing no adverse impacts. However, a few alien species become ‘invasive’ as they thrive in our habitats and out-compete native flora and fauna. They not only have negative environmental impacts, but they can also adversely impact on recreational activities and have significant associated economic costs. IAPS are so-called as they typically display one or more of the following characteristics or features:

- Prolific reproduction through seed dispersal and/or re-growth from plant fragments;
- Rapid growth patterns and/or;
- Resistance to standard weed control methods.

They have the ability to spread aggressively by seed or vegetative means, particularly in open or disturbed sites. They can produce large colonies which threaten biodiversity. Typically, they do not provide a habitat for native fauna and so these may be lost too.

**Identifying Himalayan Knotweed**

Himalayan knotweed is a member of the Polygonaceae (docks and rhubarb family), native to the Himalayas and the western temperate regions of Asia. It is an herbaceous perennial, rarely exceeding 1.5m in height. Similar to other knotweed species, Himalayan knotweed grows vigorously, creating widespread stands that exclude native vegetation. It is most likely an escapee from cultivation that is established widely on roadsides in Ireland.

**Identifying Bohemian Knotweed**

Hybrids between Japanese knotweed and Giant knotweed also occur. This species is commonly misidentified as one of its parents. The hybrid is a particularly large plant, up to 3m tall, with hollow bamboo-like red/purple mottled stems and its inflorescences are similar to either of its parent plants. Its leaves are smaller than Giant knotweed but larger than Japanese knotweed. Unlike its parents, Bohemian knotweed produces viable seed in the UK and Ireland, although germination and establishment is a rare occurrence. Like Japanese knotweed, Giant knotweed and Bohemian knotweed are most often spread by rhizomes and eradication of these species is equally as problematic. The root system of the hybrid (extending 15-20m in length) acts as a storage organ allowing for rapid growth in spring.

**Identifying Giant Knotweed**

Giant knotweed is a member of the Polygonaceae family, native to Japan and Sakhalin Island (Russia). It is a tall (up to 5m) herbaceous perennial with green, bamboo-like stems that form dense patches which exclude native plant species thereby reducing biodiversity. The leaves of Giant knotweed are cordate (i.e. notched or indented at the base) and can grow up to 30cm in length. Giant knotweed is relatively widespread in Ireland but is not found to the same extent along roadsides as Japanese knotweed.

Useful resources for identifying the different types of knotweed

http://www.fisheriesireland.ie/Invasive-species-list/japanese-knotweed.html
Silver Service - Celebrating 25 years of service to the Organic Sector

On this, the 25th anniversary of the Organic Trust, it is an opportune time to take stock of where we as an organisation have come from, where we are now and the aspirations we have for the future.

From very humble beginnings the organisation was built on the founding principles of:
- Protecting the integrity of organic standards;
- Offering a fair and robust inspection and certification regime to our members;
- Advocating for our organic operators at Government and EU level;
- Achieving excellence in service to our members;
- Operating a fair, transparent and cost-effective fee structure;
- Implementing a programme of continuous improvement;
- Listening to the feedback of our members when shaping our policies for the future.

Now, some 25 years later, these founding principles are as relevant as ever. They are still at the heart of what the Organic Trust strives to achieve day after day on behalf of our members:

**Representation**
Whether it is assisting with the concerns of individual members or addressing the Joint Oireachtas Committee, the Organic Trust dedicates significant resources to representing all of our members. Through regular meetings with the Department of Agriculture, Bord Bia and many other state agencies, the Organic Trust ensures that the voice of the organic operator is heard.

**Protecting Standards**
The Organic Trust spearheads the resistance to the dilution of the Organic Standards, insisting that the credibility of the Standards must be protected from commercial and other influences that could potentially cause damage to the integrity and principles of organic production. At State, EU and International levels, our legacy in insisting on the maintenance of high standards is widely recognised resulting in Ireland being awarded lucrative overseas contracts for organic meat.

**Fairness & Transparency**
The Board of Management proportionately represent the general membership of the organisation. Ordinary members elected at the AGM, the Board of Management ensures that their fellow members’ interests are fully considered in all policy decisions. Fee structures for the membership are reviewed annually and through prudent management of resources the Organic Trust continues to offer competitive fees balanced with the highest levels of provision.

**Excellence in Service**
Always committed to providing the very best service to our members, the Organic Trust is delighted to be shortlisted in the 2017 Agri-Business Awards in the category for Excellence in the Provision of Professional Services. The award winners will be announced shortly - we will keep you posted.

The Organic Trust was the first Irish certification body to be accredited by INAB to the ISO 17065 series of quality standards.

The foundation of excellence is anchored in the people responsible for the delivery of a service. The Organic Trust has assembled a team with unrivalled experience, professionalism and dedication to the organic cause that day after day devotes all of their energy to not just meeting but exceeding expectation.

**The Future**
Committed to continuous improvement, the Organic Trust invests vital resources in ensuring that we have the requisite tools to maintain our position as Ireland’s premier certification body.

Through a programme of continuous assessment, the organisation identifies areas of training for our highly qualified team to ensure we are always abreast of emerging developments in regulation, technology and innovations. Investment in technology through the building, maintenance and improvement of our bespoke database guarantees the highest level of efficiency. Technological improvements in recent years have included the introduction of iPads into the inspection process to improve the accuracy and promptness of the procedure.

To remain relevant, the organisation understands our presence in the public eye must be promoted. To this end, the Organic Trust commits considerable resources to attendance at a range of national and international events. We continue to invest in our website and social media presence. Our professional identity is circulated and reinforced through an exciting range of promotional merchandise and informational materials. We also offer branded items to our members at cost price.

**Conclusion**
Twenty five years on it is clear that the Organic Trust has stuck faithfully to the founding principles of the original pioneers who had a vision of how the organic sector should develop into the future. It is not just the growth in our membership that is a measure of our success but the retention levels we maintain and value.

The Organic Trust is not just an organisation: it is a community, a family and a society of concerned citizens who have devoted their lives to making the world a better place.

If you or someone you know is considering conversion to organic production or manufacturing an organic product, we would be delighted to assist them in this process by contacting our office on 01 8530271 or emailing us at organic@iol.ie
Disease can be considered as an equilibrium between a host, a pathogen and the environment. As vets and animal husbandry experts (farmers), our aim is to shift the equilibrium in favour of the host, through manipulation of the environment and the host’s immune system. There are many factors we can control and they all have one thing in common; attention to detail. Farmers sometimes seem disappointed when the answer doesn’t come in an injection form. Maybe it’s an embarrassment at their own oversight, or maybe it’s easier not to change the way they have ‘always done things’.

Host factors

1. Vaccination: this is where an individual’s immune system is stimulated to develop an adaptive immunity to a disease. Good examples are the vaccination for Black Leg, and the respiratory viruses IBR, PI3, and BRSV. Any of the clostridial disease vaccination data sheets clearly state the primary course in the first year is two injections, four to six weeks apart. Lots of farmers only give the first injection, and many get away with it. However, in practice, each year I see Black Leg in calves who received just one injection. Instead of finding them dead, these calves take three or four days to die. In each case there is a dilemma – to treat or euthanase. In any of the survivors, there is always a point where euthanasia may have been preferable; rotting muscle masses sloughing off and ultimately a disfigured animal that nobody will ever want.

2. Stress: competition for food, water, even lying space are all stress triggers, increasing the likelihood of sickness and disease. It is vital at housing to batch stock according to size. No matter how much silage is piled in front, the stronger animals will choose the best quality; the lighter, weaker animals which actually need the best quality, get the leftovers. And if lying space is at a premium, you can be assured the strongest get the best lie, while the weaker have to stand and wait, spending too much time standing, leading to increased incidence of lameness. It is no surprise therefore as the winter passes to hear the comment “that animal just isn’t thriving” as the gap between the strong and the weak widens.

3. Parasites: if uncontrolled, parasites cause debilitation and weakness, again shifting the equilibrium towards disease. Coming into the winter, lice are a good example. Heavy infestations of lice will cause blood loss and lack of thrive through an increased proportion of time spent licking and scratching, and less time spent eating and relaxing. But lice is not an urgent problem, and invariably the treatment gets put on the long finger, until it can’t be ignored any longer, by which time animal welfare and profits have suffered.

4. Colostrum intake: new born calves and lambs receive passive immunity from colostrums. This is rich in antibodies made by the mother, and the new-born can absorb these through the gut wall for the first four hours of life. This will give protection lasting for up to twelve weeks, by which time the new-born will be producing his/her own antibodies. This is a brilliant system, but it is dependent on the dam producing good quality colostrum and enough of it, and having the instinct to allow the new-born to suckle. It also depends on the new born being strong enough, and again having the instinct to suckle. A good stockman will be observant of all these things, and intervene if necessary – otherwise nothing stands between the new-born and disease.

Environmental factors

1. Lower Critical Temperature: this is the temperature below which the animal is thermally stressed. In other words, below this temperature the animal is using too much energy just to maintain his/her body temperature, thereby causing the body stress. In a calf under three weeks old for example, the LCT is 10°C. If the calf is lying in a draught, this will feel like 2°C, and if the floor is wet it will feel like -5°C. While we cannot control the air temperature, we can eliminate draughts and wet beds. If you cannot sit in the calf accommodation for half an hour without your coat on, the calf is almost certainly thermally
stressed. The counter argument is: what about a calf born in the field, skipping around through the frost and the driving rain, is he not thermally stressed? Well he probably is, but he is in an environment where he will not be overwhelmed by infectious agents, so the incidence of disease is lessened.

2. Moisture in the environment: high humidity prolongs the life-span of pathogens. Sloping floors to provide drainage and avoiding leaking drinkers are just two examples of how to reduce humidity and thus decrease the disease challenge.

3. Minerals: some minerals are essential for normal body-system functioning, including the immune system. Recognised signs of mineral deficiencies include retained placenta, poor quality of colostrum produced, poor conception rates, poor thrift, and weak or deformed new-borns. Any of these problems should be highlighted to your vet, who can take blood samples for a laboratory diagnosis.

What we cannot control

The viruses and bacteria and parasites have their own lives to lead, and their evolution and development will affect their success and spread. A good example is the Myxomatosis virus in rabbits. When the virus was first introduced, it killed rabbits very quickly and very efficiently. But of course the virus can only multiply and spread from a living creature, so it evolved to become less severe, thereby killing rabbits more slowly, giving more time for multiplication and spread. Meanwhile, the rabbits were also evolving, with those with exceptionally strong immune systems surviving and breeding a new generation with inherited strong immune systems; hence survival was possible.

Antibiotic resistance is predicted to kill more people in Western Europe in 2050 than cancer. Anything we can do to reduce the need for and use of antibiotics will help prevent the development of antibiotic resistance. In 2016, for the first time ever, respiratory virus vaccinations out-sold the antibiotics commonly used to treat cattle for pneumonia, surely a step in the right direction.

In the public’s perception, organic farming is the polar opposite to factory farming, and represents the highest possible animal welfare standards. Through attention to detail and carefully examining the individual animal and its environment, we can fulfill the public’s expectations, plus shift the disease equilibrium in everybody’s favour.

John Robinson is an Organic Trust member and large animal vet based in south Sligo. He contributes monthly to Organic Trust News and writes his own blog on family farming matters, which can be found on www.farmreared.com

Organic Urban Farming in Cuba

Report from Colin Keogh

The Cuban revolution in 1959 brought sweeping land reforms and social programs aimed at eradicating rural poverty. However, agricultural policies were deeply influenced by the global trend toward industrial agriculture known as the Green Revolution.

The negative effects of the Green Revolution eventually began to show despite the social protections put in place by the Cuban government. In 1956, 56% of the population was rural. By the mid-1990s that number had dropped to just 20%. Ecological degradation was also apparent in the form of large-scale deforestation and soil erosion.

With rising global fuel prices and increased awareness of the harm caused by industrial agriculture, Cuba began establishing research centres to focus on organic production in the 1970s. The gradual shift away from high input farming methods in the 70s and 80s, however, was insufficient to address the crisis that befell Cuba in 1989. With the collapse of the Soviet Union came an abrupt end to Cuba’s primary trade relationship. Its access to agricultural inputs ended
overnight, propelling Cuba into what is now known as the “Special Period.” Imports plummeted and hunger escalated. To combat the crisis, the nation embarked on a massive and rapid conversion to agroecological agriculture in an attempt to simultaneously reduce inputs (petroleum and agrochemicals) and boost food production.

Not far from Havana’s iconic Revolution Square, a Green plot of land offers a welcome break from the skyline and “hubbub” of Cuba’s capital. More importantly, it guarantees the people an assortment of fresh Organic fruits and vegetables year-round.

This urban farm, and numerous others like it, grows leafy greens, such as cabbage, lettuce, chard and occasionally arugula, ensuring fresh vegetables feature on local dinner tables. Thanks to a government program begun 30 years ago, urban farms today produce more than 1m tonnes of Organic crops.

“The produce goes from the plot to our plates,” says a retiree, who “at least once a week” visits the urban farm near her home in a populous Havana neighbourhood. It is a good source of Organic vegetables to complement the typical Cuban dish of rice, beans and pork, she said.

By 2020, the government plans to invest more than $96m, 80% from international financing to expand urban farms, according to the program’s executive director.

“The investment will be earmarked to develop irrigation, seed production, organic fertilisers, agro-ecological management and use of renewable energy, among other aspects,” he recently told a Congress of urban, suburban and family agriculture in Havana.

As part of the program, locals will receive training “to produce Organic vegetables and fruits,” including local production of seeds, organic fertilisers, farm implements, bio-control and other factors.

Director of development for Cuba’s Agricultural Business Group, Alina Beltran, said the program has in the past year produced 70% of the lettuce seeds it needs, 80% of the Chinese cabbage seeds and 40% of radish seeds.

The program also teaches children how to plant and harvest vegetables, herbs and fruits.

By 2019, officials expect to produce around 1.2m tonnes of Organic fruits and vegetables on 10,000 hectares of urban farms throughout Cuba. Agricultural production is a priority of the national push to modernise the economic and productive system, with the goal of producing up to 60% of the country’s food needs.

Cuba currently spends some $2b a year on imported food products, according to government officials.

Eat healthy, Be healthy, Live lively

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**Book Reviews**

by Clive Bright and Jennifer Byrne

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**101 ORGANIC GARDENING HACKS**

by Shawna Coronado

A hack is a trick, a new or innovative way to solve or accomplish something – and this book surely contains at least a few hacks to surprise even the most proficient organic gardener. It is full of quirky but interesting ideas around composting, upcycling items to create useful garden features, planting tips, pest control and much more. Beautifully illustrated and photographed, this would make the perfect gift for any creative gardener or a pretty addition to a coffee table book collection.

*Published by Cool Springs Press. Available through amazon.co.uk*

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**ORGANIC REVOLUTIONARY**

by Grace Gershuny

Grace Gershuny is a founding member of the American organic agricultural movement. A long-time organic grower herself, she was at the forefront of the drive to standardise organic regulations at a national level, overcoming what must have sometimes seemed like insurmountable bureaucratic, political and corporate interference. Her account of the journey is vivid and critical and she is not afraid to direct judgement where she sees fit. Her writing style is straightforward and honest, as is her approach to telling the story of American organic regulation. At the heart of this broad and sweeping coverage of a national movement is one individual’s life-story. Grace’s personal experiences in life, love and self-sustainability run concurrently with her professional challenges, lending a tone of warmth and spirited argument to the tale.

*Published by Joe’s Brook Press. Available through amazon.co.uk*

**THE INVISIBLE POWER WITHIN FOODS: A COMPARISON OF ORGANIC AND NON-ORGANIC**

by A.W. Danzer

This book aims to illustrate the compositional difference between organic...
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WWW.NATIONALORGANIC.COM
and non-organic foods through the use of high quality magnifications of crystallised extracts of liquid taken from fifty everyday food items. The foods photographed for the purposes of this Swiss-based research are all plant or plant-derived and the result is a fascinating glimpse into what appears to be the almost otherworldly make-up of everyday fruit and veg. We see crystallised elements of an apple magnified from 50x to 1000x times and the results are like a mini constellation; ethereal and delicate. The images of the organic and non-organic foods are placed side by side and it is hard to refute the visual evidence offered here – it certainly doesn’t require a scientific background to instantly recognise the vitality of the organic foodstuffs as captured. This is a stunning piece of work and will surely give even the most sceptical something to mull over.

Published by Bewusstes Dasein
Available through amazon.co.uk

TEAMING WITH FUNGI: THE ORGANIC GROWER’S GUIDE TO MYCORRHIZAE
by Jeff Lowenfels

A staggering 80 to 95 per cent of all terrestrial plants form symbiotic relationship with mycorrhizal fungi. In these relationships, or mycorrhizae, the host plants supply the mycorrhizal fungi carbon and in return, the fungi help roots obtain and absorb water and nutrients that the plants require. Thus begins the opening chapter of Teaming with Fungi, the third in the trilogy of soil science manuals by this author. It is a scientific but straightforward read, utterly gripping in its descriptions and providing countless ‘aha’ moments for the reader. The writing is supported by excellent diagrams and visual explanations, making it accessible to even the least scientifically-minded among us. Where this book is of pertinence to the organic grower is clearly in the list of benefits to the plants from this symbiotic engagement: the increased nutrient supply, the drought tolerance, protection from pathogens, improved soil structure and carbon storage...applicable to small and large scale growers alike. I found it to be fascinating and absorbing, useful and practical. Lowenfels includes methods for growing one’s own mycorrhizal inocula, suitable for indoor and outdoor conditions. So, for anyone curious about how fungi can work with you to produce healthier and hardier plants (and let’s face it, who isn’t?), this is a worthwhile investment.

Published by Timber Press
Available through amazon.co.uk

TEMPLE GRANDIN’S GUIDE TO WORKING WITH FARM ANIMALS
by Temple Grandin

This book has a lot of the same material as one of Grandin’s previous publications, Humane Livestock Handling, the difference being that this book is tailored to smaller farms while the former was written for large ranch operations. Either book is well worth owning. This is a reference book of sorts, but her unique approach and fascinating insight into livestock handling makes it an absorbing cover to cover read. Is it packed full of ‘how to’ advice, all backed up by interesting research, There is even a detailed design chapter with technical drawings, specifications and instructions for building her type of handling facilities. This is coupled with descriptions of how to use these facilities most effectively by using low-stress livestock management techniques and understanding animal behaviour. As welfare is a major issue, this book is simply a ‘must have’ for all organic livestock owners.

Published by Storey Publishing
Available through amazon.co.uk

HIDDEN NATURE
by Alys Fowler

Alys Fowler is a garden and food writer for the Guardian newspaper and the author of a host of gardening books. She is a self-confessed nerd of all things ecological and, I have to say, one of my favourite writers. This favouritism was strengthened last summer when I had the pleasure of having Alys for tea! What I love about her writing is the paradox wherein she manages to conjure up vivid imagery with a flourish of words while using simple, efficient language. In this book, she maintains three strands of narrative. It is a very personal work documenting the self-discovery of her sexuality together with the breakdown of her marriage. This story unfolds in tandem with her exploration of Birmingham’s canals in an inflatable kayak which is her escape and distraction. This sometimes sad, personal story mixed with a slightly odd, humorous pastime is enriched with snippets of random discovery and tales of nature in the industrial heart of Birmingham. Alys is at her nerdy best, describing in captivating detail the reproduction mechanism of mussels or the life cycle of fresh water mussels. This is a heart-breaking, shockingly brave and honest book from which you will learn the most peculiar and fascinating facts.

Published by Hodder and Stoughton
Available through amazon.co.uk

DIRT: THE EROSION OF CIVILIZATIONS

The HIDDEN HALF OF NATURE: THE MICROBIAL ROOTS OF LIFE AND HEALTH

GROWING A REVOLUTION: BRINGING OUR SOIL BACK TO LIFE

by David R Montgomery

These books are not necessarily written as a trilogy, but they all explore similar
CREATE A CABIN
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INSULATED METAL PANELS DELIVERED READY TO ASSEMBLE, MADE TO MEASURE, ASSISTED BUILD

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Cloonfad, Ballyhaunis, Co. Mayo.
broad themes in very individual ways. Dirt is very much a deep history of civilisations and how they have damaged soils throughout the ages. Montgomery is an extraordinary researcher, his knowledge is vast and in-depth. He writes in a clear, engaging way, explaining complex subjects simply and describing the basics with a flourish that will keep you turning the pages. He builds his arguments in a balanced way, exploring the counter-arguments fairly. With a weight of historical background, a swath of cutting-edge research and a lyric log of his own travel, experience and interviews he takes the reader on a well-informed journey of discovery. As a whole, this is a positive book; although it documents the destruction of soil it also offers solutions as to the potential for its regeneration.

The Hidden Half of Nature is co-written with his wife Anne Bikle. It is a clever book which simultaneously explores soil and gut biology. It documents both of their personal journeys of discovering the themes as they build beautiful microbe-rich soil on their garden of compacted sub soil while simultaneously discovering what good food and feeding the gut microbiome can do for your health. This book takes many fascinating detours covering everything from the historical developments in microbiology to fermentation to the soil-food web.

Growing a Revolution is a well-travelled research journal exploring ‘conservation agriculture’. Topics include no-till, cover-crops, rotations, composting, bio-fertilisers, bio-char and introducing livestock into arable rotations. Again this book delves deep into history and a broad range of sources as illustrative examples. The case for conservation agriculture is built slowly with a weight of evidence and interesting studies. This is interspersed with lyric accounts of visiting places like the no-till trials at the Rodale Institute and time spent with long time no-till pioneer Gabe Brown on his farm.

All in all, inspiring and encouraging books to add to one’s winter reading list.

Dirt is published by the University of California Press

The Hidden Half of Nature and Growing a Revolution are published by WW Norton & Company

All three available through amazon.co.uk

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**NUMBER QUIZ**

For this 25th anniversary edition of Clover we have decided to move away from word quizzes and embrace the numbers!! This is a simple quiz – on the left hand side there is a number that stands for a factual statement and the initials of the first word in this statement are directly adjacent to the number. You simply have to work out what these initials stand for:

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Solution Page 44
1. Honey bees are super-important pollinators for flowers, fruits and vegetables. This means that they help other plants grow! Bees transfer pollen between the male and female parts, allowing plants to grow seeds and fruit.

2. Honey bees live in hives (or colonies). The members of the hive are divided into three types:

   **Queen:** One queen runs the whole hive. Her job is to lay the eggs that will spawn the hive’s next generation of bees. The queen also produces chemicals that guide the behaviour of the other bees.

   **Workers:** These are all female and their roles are to forage for food (pollen and nectar from flowers), build and protect the hive, clean and circulate air by beating their wings. Workers are the only bees most people ever see flying around outside the hive.

   **Drones:** These are the male bees, and their purpose is to mate with the new queen. Several hundred live in each hive during the spring and summer. But come winter, when the hive goes into survival mode, the drones are kicked out!

3. What are these buzzing bugs most famous for? Delicious honey! But did you know they produce honey as food stores for the hive during winter? Luckily for us, these efficient little workers produce 2-3 times more honey than they need, so we get to enjoy the tasty treat, too!

4. If the queen bee dies, workers will create a new queen by selecting a young larva (the newly hatched baby insect) and feeding it a special food called “royal jelly.” This enables the larva to develop into a fertile queen.

5. Honey bees are fab flyers. They fly at a speed of around 25km per hour and beat their wings 200 times per second!

6. Each bee has 170 odorant receptors, which means they have one serious sense of smell! They use this to communicate within the hive and to recognise different types of flowers when looking for food.

7. The average worker bee lives for just five to six weeks. During this time, she’ll produce around a twelfth of a teaspoon of honey.

8. The queen can live up to five years. She is busiest in the summer months, when she can lay up to 2,500 eggs a day!

9. Honey bees are also brilliant boogiers! To share information about the best food sources, they perform their ‘waggle dance.’ When the worker returns to the hive, it moves in a figure-of-eight and waggles its body to indicate the direction of the food source. Cool, huh?

10. Sadly, over the past 15 years, colonies of bees have been disappearing, and the reason remains unknown. Referred to as ‘colony collapse disorder,’ billions of Honey bees across the world are leaving their hives, never to return. In some regions, up to 90% of bees have disappeared!

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**Save the Honey Bee**

We can all do our bit to support these brilliant bugs, gang!

Why not plant flowers rich in nectar, such as lavender and bluebells, which will help bees find the food they need?

Also, be sure to choose organic and local Irish honey, too, which will support our honey bees and their beekeepers!
1. The oldest evidence for soup is from 6,000 B.C. and calls for hippopotamus and sparrow meat.

2. Apples belong to the rose family, as do pears and plums.

3. One of the most popular pizza toppings in Brazil is green peas.

4. Chocolate was once used as currency.

5. The tea bag was created by accident, as tea bags were originally sent as samples.

6. If improperly prepared, fugu, or puffer fish, can kill you, since it contains a toxin 1,200 times deadlier than cyanide.

7. Coconut water can be used as blood plasma.

8. Ketchup was used as a medicine in the 1800s to treat diarrhoea, among other things.

9. The most expensive fruit in the world is the Japanese Yubari melon, and two melons once sold at auction for €23,500.

10. The twists in pretzels are meant to look like arms crossed in prayer.

11. Apples float in water, because 25% of their volume is made of air.

12. One of the most hydrating foods to eat is the cucumber, which is 96% water.

13. The most popular carrots used to be purple.

14. The ice pop was invented by an 11-year-old in 1905.

15. Peanuts aren't nuts, they're legumes - members of the pea family.

16. Casu Marzu is a cheese found in Sardinia that is purposely infested with maggots.

17. Ripe cranberries will bounce like rubber balls.

18. Almonds are a member of the peach family.

19. Egg yolks are one of the few foods that actually contain Vitamin D.

20. In Kentucky, it is illegal to carry an ice cream cone in your back pocket!!

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**NUMBER QUIZ**

For this 25th anniversary edition of Clover we have decided to move away from word quizzes and embrace the numbers!!

This is a simple quiz – on the left hand side there is a number that stands for a factual statement and the initials of the first word in this statement are directly adjacent to the number. You simply have to work out what these initials stand for:

1. 108.4
2. 9
3. 5
4. 7
5. 11
6. 25
7. 36
8. 18
9. 147
10. 3600

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**20 WEIRD FOOD FACTS**

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**Clover**

Would you like your farm or product featured in Clover magazine?

Do you have a specific story to tell about conversion to organic production which you feel would be of interest to Organic Trust members? Have you read an interesting article, book or seen a film of interest to the organic sector? If so, we would be very grateful if you would contact the Organic Trust office for details:

**01 8530271**

All contributions and enquiries to info@organictrust.ie
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